

EDUCATIONAL MIGRATION ENVIRONMENT IN CARPATHIAN REGION: MAJOR PROCESS MANAGEMENT DIRECTIONS

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Abstract

The manuscript addresses the problem areas of the educational migration environment in the oblasts of the Carpathian region and the main directions of their regulation. The educational migration environment is examined across main components: educational migration capacity (characterizes educational and informational conditions); academic environment quality (characterizes educational-scientific conditions); educational migration motivation (shows socio-economic, socio-demographic, and political conditions); cooperation of universities and industry in research (innovative conditions); and institutional conditions in the educational domain. The aggregate estimate of the components (integral index) shows the positions of the oblasts of the Carpathian region by the state of the educational migration environment. The conclusion on the objective need to monitor the condition of migration activity and form the system of its informational and analytical framework is made. The tools and measures to regulate educational migration are suggested to reduce the paces of educational migration and prevent possible losses of human capital. Implementation of suggested public policy measures will minimize the risks for the country and its regions caused by devaluation and loss of resources capacity and human capital of domestic higher education institutions and scientific schools and collapse of socio-cultural foundations of labor markets and educational services development. The main directions of regulating the educational migration environment in the domains of public social, scientific-technological, economic, educational, and informational policies are outlined.

Keywords: migration, educational migration, environment, integral index, Carpathian region, regulation.

JEL Codes: F22, O15, R23.

Introduction

Among the types of migration, the first wave of which was launched back in the mid-19th century, the current stage of globalization and Europeanization of socio-economic

processes is characterized by the fifth wave – the so-called educational migration. Boosted academic mobility, expanded opportunities to study in foreign countries, and growing

demand for the diploma of the foreign university are its peculiar features.

Ukrainian students, young teachers and scientists, and talented postgraduate students as the participants of educational programs, scientific grants, and various research projects are highly motivated to not only gain new knowledge but also be employed by Western employers and have an opportunity of permanent residence abroad.

This mobile active part of the population is included in educational migration based on their desire to acquire new knowledge and skills, fluency in foreign languages, and their openness to intercultural communication. Education abroad is also quite important as a step towards the permanent residence in the country of study and job. In this regard, the Directive of the European Parliament is the institutional condition that establishes the right to reside in a European country to search for a job or self-employment for extra nine months after graduation from a local university for two years (European Parliament News, 2016).

Over several decades, the issues of peculiarities and interstate differences in the processes of educational migration are the focus of attention of Ukrainian researchers and experts and a part of activity plans of national and international educational institutions (UNESCO Institute for Statistics, European Parliament, Ministry of Education and Science of Ukraine, independent non-partisan non-commercial analytical center CEDOS, International Institute of Education, Culture, and Relations with the Diaspora of the National University "Lviv Polytechnics", informational websites of various educational agencies). With regard to educational migration, the interest in this modern phenomenon is observed in a range of studies of Ukrainian researchers.

Literature review

The specific features of educational migration and its place in the structure of migration flows, namely the classification of its peculiarities, are examined by V. Filatov and Y. Romashov (2014). They argue that educational migration stipulates temporary stay at the territory where the educational

institution is located with the further return of a migrant to the previous place of residence. A. Shevchuk (2013) suggests measures to prevent the outflow and motivation mechanisms to return the specialists to Ukraine after study abroad. Among the measures, the author offers to prevent the outflow, attract the students abroad to cooperate with their Motherland, measures directed at returning after graduation and attracting the specialists abroad not intending to come back to cooperate with their Motherland. Ukrainian students abroad are the subject of scientific research of Y. Stadnyi (2016), including the real figures and prognosis evaluation of the process, factors explaining the volumes and directions of student migration, benefits and losses from educational migration, and motives of movement by educational factor. The author emphasizes the need to differentiate the public policy measures, which in any case should aim to increase the positive effect from the educational one like an efficient use of gained human capital and promotion of the creation of qualitative jobs in Ukraine, etc. I. Khomyshyn (2018) examines the causes and consequences of educational migration for the economy of the country hosting foreign students and for the "donor country" and analyzes the displays of educational migration and legal regulation of academic mobility in Ukraine as an institutional form of educational migration. L. Zhurakovska (2014) researches international educational migration as human movement between the countries to receive education of various levels regardless of the period of stay outside the country of origin.

Bil, M. et al. (2021) argues that internal and external migration of the population in Ukraine is the result of the public policy implementation. The quick growth of educational emigration in the 2000s and falling quality of Ukrainian education stems from the long-term absence of reforms in education and deteriorating socio-economic environment in the country, etc. A. Smaliychuk considers educational migration in conditions of the labor market transformation and emphasizes the need to regulate it (Smaliychuk, 2014). The author proves that the development of educational migration is an important part of

migration policy in Ukraine under the labor market transformations. O. Hrynkevych (2013) outlines the main directions of educational migration regulation in Ukraine based on evaluation and comparative analysis of development and impact of various types of educational migration regulation institutions in the EU Member States. Moreover, O. Hrynkevych et al. (2020) and Y. Zhuravel et al. (2021) with co-authors develop a conceptual model to analyze the competitiveness of higher education systems by quality, social responsibility, and economic efficiency criteria taking into account educational migration. The suggested model is used to analyze the competitiveness of regional higher education systems in Ukraine. S. Panchyshyn et al. (2020) emphasize educational migration when modeling the payment for education considering internal and external factors of higher educational institutions' activity. The authors select the changing models based on theoretical research and classification of pricing factors in higher education. The empirical part of the research is grounded on the analysis of 35 Ukrainian educational institutions. I. Markina et al. (2020) partly consider educational migration when examining the model of forming the system of inclusive education management. In particular, the research proves the need to improve the management of the contemporary educational system following the principles of humanization and individualization that show the nature of assistance to students with special needs in a particular educational institution.

The article aims to reveal the problem areas of the educational migration environment in the oblasts of the Carpathian region and substantiate the directions of their regulation; suggest methodological approach to evaluating the educational migration environment in the oblasts of the Carpathian region; outline the features of its main components (decisive factors), namely: educational migration capacity, academic environment quality, educational migration motivation, cooperation of universities and

industry in research, and institutional conditions in the educational domain; calculate the Regional Index of Forming the Educational Migration Environment (RIFEME) for the oblasts of the Carpathian region in 2020-2021; interpret the results across the integrated groups of parameters and integral rate of forming the educational migration environment; suggest the tools and measures to regulate the educational migration environment to reduce the paces of educational migration and prevent possible losses of human capital.

Methodical approach

The Regional Index of Forming the Educational Migration Environment (RIFEME) is calculated by the method of multidimensional (cluster) analysis. It stipulates reduction in the number of properties of objects under research by reduction of multidimensional elements to representation in one-dimensional form and construction on this ground of the aggregate parameter that linearly normalizes the objects under research at distance to a certain point called the development reference standard.

The calculation of relative RIFEME parameter (d_i) defines a certain sequence of calculation stages related to two blocks: calculation of integrated groups of RIFEME parameters and integral representation of results by each group.

Based on the set of parameters selected for calculation, the observation matrix is formed (Ukrainian oblasts and the city of Kyiv are its elements – 25 territorial units). Each administrative territory can be considered as a point of n -dimensional (25-dimensional) space. The values of parameters selected for RIFEME evaluation are its coordinates. The observation matrix is:

$$X = [X_{ik}],$$

where: $i=1,2, \dots, w$;

$k=1, 2, \dots, n$;

n – number of cities and oblasts;

X_{ik} – the value of the k parameter for i oblast or city.

The properties (parameters) forming the observation matrix are heterogeneous and have different measurement units because they show various characteristics of the migration activity environment. Therefore, a procedure of standardization is carried out to bring all the properties to a comparable form:

$$Z_{ik} = \frac{X_{ik} - \bar{X}_k}{S_k},$$

while:

$$\bar{X}_k = \frac{1}{w} \sum_{i=1}^w X_{ik},$$

$$S_k = \left[\frac{1}{w} \sum_{i=1}^w (X_{ik} - \bar{X}_k)^2 \right]^{\frac{1}{2}},$$

where: X_{ik} – the value of k parameter for i oblast;

\bar{X}_k – arithmetic mean of k parameter;

S_k – standard deviation of k parameter;

Z_{ik} – standardized value of k parameter for i oblast.

A procedure of normalizing the distance to a certain deliberately constructed point – the development reference standard – is an important stage in structuring the RIFEME parameter (d_i). The elements of the standardized observation matrix are divided into stimulating and destimulating based on their impact (positive or negative) on the property under research.

Division of the elements of the standardized observation matrix into stimulating and destimulating is the basis to construct the RIFEME reference standard. The reference standard is the ideal level characterized by the highest parameters among the stimulators and the lowest among the destimulators. The stimulators and destimulators are selected from the set of parameters that characterize various aspects of the migration activity environment. The reference standard of its development is the point P_0 with coordinates:

$$Z_{01}, Z_{02}, \dots, Z_{0n},$$

where: $Z_{0s} = \max Z_{rs}, \text{ if } s \in I,$

$Z_{0s} = \min Z_{rs}, \text{ if } s \notin I \quad (s=1, 2, \dots, n),$
 $(r=1, 2, \dots, w);$

I – a set of stimulators,

Z_{rs} – standardized value of s property for r oblast.

The next step includes the classification

of educational migration conditions based on normalization of calculated distances (C_{i0}) between them and reference standard by the formula:

$$C_{i0} = \left[\sum_{s=1}^n (z_{is} - z_{0s})^2 \right]^{\frac{1}{2}}, \quad (I=1, 2, \dots, w)$$

The calculated distances are the output values to calculate the integral parameter d_i :

$$d_i = 1 - \frac{C_{i0}}{C_0},$$

where:

$$C_0 = \bar{C}_0 + 2S_0$$

$$\bar{C}_0 = \frac{1}{w} \sum_{i=1}^w C_{r0}$$

$$S_0 = \left[\frac{1}{w} \sum_{i=1}^w (C_{i0} - \bar{C}_0)^2 \right]^{\frac{1}{2}}$$

An economic interpretation of the parameter d_i is the following: RIFEME value is the highest for the territory the closer to 1 the integral parameter is. The relative parameter can be negative only with close to 0 probability. It shows its extremely low value.

The RIFEME integral parameter is calculated by the formula:

$$I = \sum_{i=1}^{l=9} I_{ij} W_{ij},$$

where: I_{ij} – calculated relative parameter that characterizes the components of the RIFEME index;

W_{ij} – the weight of i parameter in the calculation of the integral parameter – the RIFEME index.

The integrated groups of parameters and integral parameter of forming the educational migration environment are calculated based on the parameters selected for analysis that sufficiently characterize the environment of educational migration. The weight coefficients are calculated based on the factor analysis method.

Results

Ukraine does not keep official statistical records of the number of educational migrants and their return. The data provided by

UNESCO helps to overcome the information vacuum. According to experts' estimations, in the 2020/2021 academic year, over 88,000 Ukrainian students studied abroad (8.2% of the total number of those studying in Ukraine) (UNESCO Institute for Statistics, 2021).

Annual paces of the growth of Ukrainian students' contingent that fills the European market of educational services confirm that Ukraine has the powerful capacity by volumes, growing dynamics, high intellectual content of the fifth migration wave. The scale and irregularity of educational migrations stipulate the differences in providing educational services to Ukrainian students across countries (quality of educational programs, payment for study and accommodation, level of socio-economic development of the country, and cultural values, etc.) and different motivation of selecting the educational institution and country for study by the educational emigration participants. Therefore, on the one hand, foreign educational institutions secure the attractiveness and advantages of study abroad for Ukrainians. On the other hand, the fact that volumes and growing dynamics of the annual increase in educational migration of Ukrainian youth determine the *conditions* of forming its *environment* in the regions of Ukraine is undeniable. The negative phenomena and processes in the political and socio-economic development of the country define and will further form the movement of the working-age population abroad, including by educational factor.

The 2021-2031 Higher Education Development Strategy in Ukraine emphasizes the growing trends of educational emigration (Ministry of Education and Science of Ukraine, 2020). Political, institutional, educational, academic, socio-economic, socio-demographical, and informational, etc. conditions are essential for young persons or their parents to decide over educational emigration. They boost the annual growth of flows of Ukrainian educational migrants. The sociological survey conducted among the senior year pupils and students of educational

institutions of various accreditation levels in the oblasts of the Carpathian region (2020) shows that 12.5% of students of vocational education institutions, almost every 6th pupil of general secondary education institutions, and each 7th student of higher educational institutions intend to leave abroad for education (Vasyltsiv et al., 2020).

Educational emigration is, in the first place, the chance for the representatives of the Ukrainian intellectual elite to fulfill the living, intellectual, and labor capacities abroad. Therefore, the thorough examining and outlining the problem areas of forming the educational migration environment in the regions of Ukraine will contribute to developing the system of informational-analytical support of monitoring and predicting the migration activity of the region's population.

To evaluate and analyze the environment of educational migration like the one pushing the students to leave abroad, the methodology of calculation of the *Regional Index of Forming the Educational Migration Environment* (RIFEME) is suggested. The concept of calculating the RIFEME includes the following provisions:

- 28 parameters selected for calculation characterize various conditions of forming the educational migration environment: educational, educational-scientific, informational, socio-economic, political, socio-demographic, innovative, institutional, etc.;

- the system of parameters is open and the list of basic parameters can be changed depending on the research objective;

- integral RIFEME index comprises 5 groups of parameters, namely educational migration capacity, academic environment quality, educational migration motivation, cooperation of universities and industry in research, and institutional conditions in the educational domain. Each group (component) shows the quality of the educational migration environment;

- integral RIFEME index is the basis to develop the rankings of Ukrainian regions by quantitative and qualitative properties of the educational migration environment in each region and carry out its detailed analysis in the oblast of the Carpathian region.

The system of indicators to evaluate the educational migration environment, substantiation of the system of statistical parameters, calculation of integral RIFEME index, and interpretation of results for the 2017 data are covered in studies (Vasylytsiv et al., 2019; Semiv, 2019).

Continuation of the RIFEME calculation for 2018 launches the systemic monitoring of quantitative and qualitative parameters of the educational migration environment. Therefore, it forms the informational base to monitor the migration activity environment, in particular, the condition of the educational services market considering the academic mobility of students, teachers, and researchers, and cross-border mobility. The methodological approach is essential when comparing and interpreting annual RIFEME parameters, detecting on this basis the problem areas of the educational emigration environment, and defining the directions of its regulation.

The first group of parameters characterizes the educational migration capacity based on relative rates reflecting the educational and informational conditions of the educational migration environment, including the contingent of students of higher educational institutions as a demographic base for educational migration environment, the network of educational institutions as material foundation of securing access to educational services, academic staff of higher educational institutions as the foundation of staffing in the educational process, the spread of online learning as a way to expand access to educational services, and informational-computer technologies and Internet for learning and education.

Calculation based on the 2021 data shows the falling rankings of the oblasts of the Carpathian region, which indicates a certain falling capacity of educational migration (Fig. 1).

While the rankings remained the highest for Kyiv and the lowest for Kirovohradska oblast in 2021, the rankings of all other regions, including the oblasts of the Carpathian region, were lower, especially in Lvivska and Zakarpatska oblasts. If in 2020, the capacity of educational migration of Lvivska oblast secured its higher positions compared to Cherkaska and Dnipropetrovska oblasts, in 2021, it was lower than in Cherkaska, Dnipropetrovska, Ternopil'ska, Zhytomyr'ska, Odeska, and Zaporizka oblasts. The same conclusion can be made for Zakarpatska oblast. Problem areas of the environment. A substantial decrease in the number of higher educational institutions and reducing contingent of students and graduates, and therefore – the academic staff – will likely lead to a growing number of educational emigration carriers. The start of these processes is related to the annexation of Crimea and war in the East of Ukraine (since 2014). The policy of the Ministry of Education and Science of Ukraine regarding the closedown of a network of higher educational institutions' subdivisions that do not comply with license requirements and labor market needs has a substantial impact. Starting from 2019, the Ministry of Education and Science of Ukraine has been leading the policy of consolidating the universities as a way to increase their funding (Kvit, 2020). When characterizing this environment component, it is worth emphasizing the falling share of Internet users for learning and education. Meanwhile, the share of households that have the access to Internet services at home is growing each year. The number of people using Internet resources for research related to higher education courses and distance learning, including online, is reducing in the oblasts of the Carpathian region (excluding Zakarpatska oblast). Instead, the share of the population preferring other types of activity in addition to learning and education (video- or computer games, mass media, communication, and search for information according to preferences, etc.) is growing.

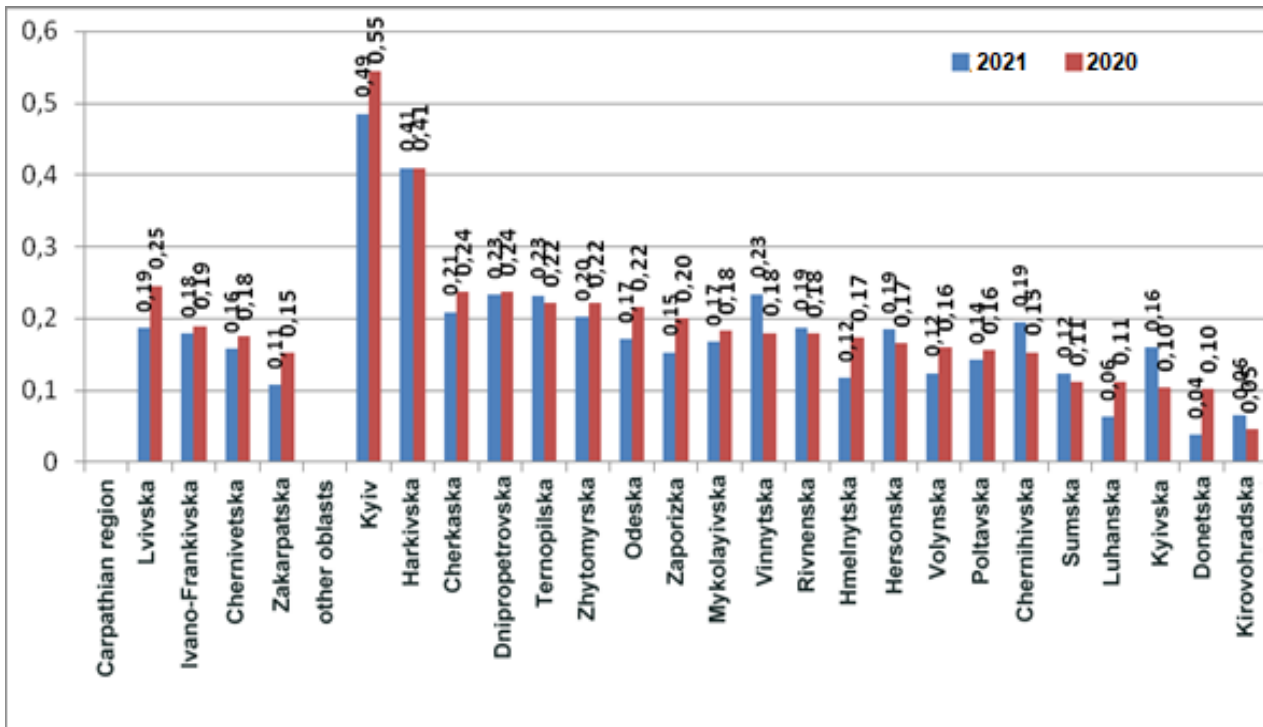


Figure 1. Change in the rankings of the Carpathian region oblasts by the value of the educational migration capacity component, 2020-2021

*Source: calculated by authors (State Statistics Service of Ukraine, 2022).

The *academic environment quality* component is represented by relative rates that form the educational-scientific conditions of the educational migration environment. They are related to the number of academic staff with PhD and doctor degrees (shows a high level of qualitative composition of academic staff), a network of higher educational institutions that prepare postgraduates and doctoral candidates, a cohort of talented young scientists (postgraduates up to the age of 35, doctoral candidates up to 40). The rankings show the falling quality of the academic environment in 2021 against 2020 in Ivano-Frankivska and Chernivetska oblasts and its growth in Lvivska and Zakarpatska oblasts. The academic environment quality in Lvivska oblast in 2021 secured its higher positions than that of Kyivska, Hersonska, Odeska, Vinnitska, and Hmelnytska oblasts. Zakarpatska oblast moved up the rankings above Donetska and Volynska oblasts, while it was last in 2020.

The situation in the oblasts of the Carpathian region remained almost unchanged in 2021 by several parameters of the qualitative composition, namely the share of academic staff with PhD and doctor scientific degrees and postgraduates' preparation. Yet, the processes related to the preparation of doctors play an essential role in the decrease in the rankings by the educational environment quality, namely substantial fall in the number of postgraduates up to the age of 35 and doctoral candidates up to 40 and fall in the number of postgraduates and doctoral candidates per 100 of academic staff.

Problem areas of the environment. When providing the details of the academic environment quality, it is worth paying attention to a very small percentage of people completing postgraduate and doctoral studies with the defense of a thesis, low interest of academic staff in doctoral studies, which stipulates limited opportunities for teaching and secondary employment, and problems with securing the proper living conditions for

young teachers, postgraduates, and doctoral candidates (Ministry of Education and Science of Ukraine, 2020). The prestige of scientific jobs is further declining, the share of science funding is falling, and wages are decreasing at the background of knowledge-intensive production phaseout in the recent decades and low demand for high-level professionals. There are rather essential causes of the falling capacity of higher educational institutions to keep Ukrainian intellectual capital. Academic staff with high scientific level and young talented researchers become increasingly motivated to change jobs in the country or continue their research activity in foreign institutions.

The educational migration motivation component helps to determine the features of socio-economic, political, and socio-demographic conditions of the educational emigration environment. Its calculation includes the parameters that show the general employment level of higher educational institutions' graduates, indicate the graduates' employment across non-professional jobs, represent economic aspects of employment in the region (labor remuneration and unemployment), characterize the political situation in the country with an internal displacement of population from the East of Ukraine as its indicator, characterize migration situation in regions, and provide a general characteristic of human development by the respective regional index.

Compared to the previous year, the improved rankings of the oblasts of the Carpathian region (Lvivska, Chernivetska, Ivano-Frankivska) can be considered as an indicator of positive changes in the environment that generates educational emigration. Only Zakarpatska oblast fell substantially in rankings and was fourth-to-last.

Problem areas of the environment. The motivation of educational migration in 2021 was perhaps the most important among other components determining the educational migration component. It reflects the set of socio-economic, political, and demographic problems faced by Ukrainian society that push students and young researchers towards

educational emigration. The share of graduates with job referral by specialty is very low – 15% in Zakarpatska, 13% in Chernivetska, 11% in Ivano-Frankivska, and 8% in Lvivska oblast, and the highest rate in Kyivska oblast – 21% (State Statistics Service of Ukraine, 2022). Not finding satisfactory options of employment at home with decent labor conditions, they are eager to continue education and research and find a job abroad. The solution to the problem is closely related to a set of issues concerning the relationship between the educational services market and the labor market.

Comparison of the abovementioned costs of study with average wages in the region (e.g. UAH 11,937 in Lvivska oblast in 2021) shows the obvious advantages of education (free of charge) in a range of European countries. For example, Ukrainian applicants can study in Polish higher educational institutions for free if they have a residence card or Polish card, win the competition at the university, and comply with certain specific requirements. Ukrainians also can study for free in Slovakia, Czech Republic, Germany, Austria, Norway, and France (in public institutions).

This trend is confirmed by Fig. 2 that shows that Ukrainian students choose the countries with low education mobility for their education, especially the universities with free education for Ukrainians or just student fees. Conditionally formed clusters on the correlation field confirm the thesis (Stadnyi, Slobodyan, 2016) that attractiveness of European countries with low student mobility is various for Ukrainians and is not subject to unambiguous conclusions, in particular regarding Ukrainian students as a source of financial revenues for universities, a growing number of human capital carriers, and in the future – the growing number of the economically active population in the most productive age in foreign countries.

The labor remuneration level for graduates and academic staff is much lower than its average amount in the regions. The following data testify to the labor remuneration level and low prestige of a teaching job. In the 2020/2019 academic year, annual wages of the most qualified staff – professors – were \$ 5,700

in Ukraine, \$ 116,700 in Great Britain, \$ 99,500 in Germany, while teachers (lecturers) earned \$ 4,700 in Ukraine, \$ 54,200 – in Great Britain, and \$ 58,800 – in Germany (Ministry of Education and Science of Ukraine, 2020). The problem of teacher’ academic mobility and their participation in scientific research, conferences, and publications should be solved on national level in close relationship with the problem of higher education funding. The problem of labor remuneration in education is connected to the issues of educational capacity quality as an important integral feature of educational migration environment.

Cluster 1 includes the countries with a low outbound mobility ratio. Educational mobility range of 0 to 5% was peculiar to Ukrainian students studying in Iceland (0.13;

16 students), Spain (0.44; 418 students), Luxemburg (1.42; 24 students), Norway (2.64; 236 students), Belarus (4.34; 363 students), Romania (4.54; 435 students). Slovakia is also within this range (4.47). In 2020, 1,965 Ukrainians studied in its universities. Germany is also in the cluster (2.25; 6,481 students).

Cluster 2 with the range of 6.0% to 20.0% mobility level includes Bulgaria (6.41; 850 students), Poland (7.89; 26,864 students, the data is not in the Figure due to the scales), Hungary (8.02; 1,168 students), Finland (8.77; 176 students), Latvia (9.31; 252 students), Belgium (10.45; 106 students), Cyprus (13.61; 77 students), Austria (17.49; 1,426 students), Sweden (17.7; 182 students). 323 students studied in the country with a high student mobility level – Latvia (47.74).

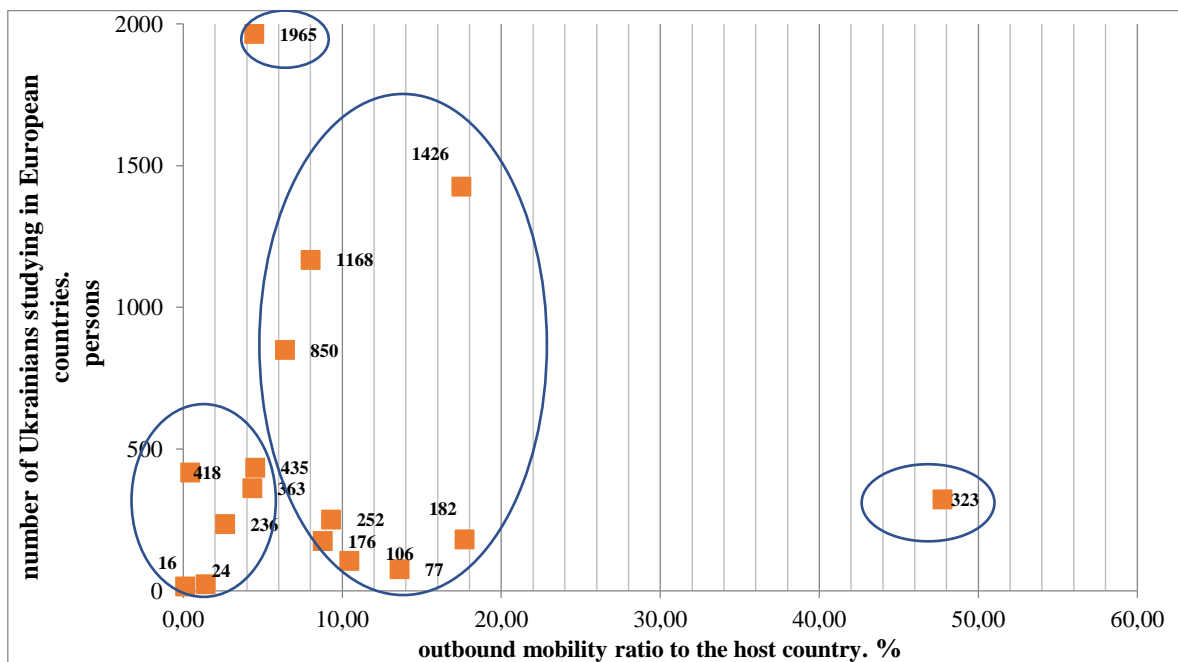


Figure 2. Correlation field of relationship between the number of Ukrainians studying in European countries and the outbound mobility ratio to the host country in 2020

*Source: calculated by authors (UNESCO Institute for Statistics, 2021).

Note: according to the UNESCO methodology, mobility level in the host country is the share of students from a given country studying abroad in the total tertiary enrolment in that country.

The high cost of education in Ukraine is the considerable reason to choose to study abroad. For example, in 2018, a bachelor in Ukrainian Catholic University had to pay UAH 146,000 for 4 academic years; in Danylo

Halytskyi Lviv National Medical University – UAH 192,600 for 6 academic years; in Ivan Franko Lviv National University by international law specialty – UAH 25,600 per year, foreign languages – UAH 25,000. In Lviv

Polytechnics, a bachelor of Law and Psychology Institute had to pay almost UAH 86,000 for 4 years (Hryhoryeva, 2018).

Political conditions of the educational migration environment are tracked through the number of internally displaced persons from the East of Ukraine. Russian aggression is not only the cause of mass outflow of the working-age population and capital from the territories adjoining the temporary occupied ones and growing migration burden of the regions, but it can also contribute to educational and scientific emigration.

The crisis state of the economy and respective territorial misbalances in the level and quality of life intensify the external and internal migration processes. Although the oblasts of the Carpathian region were leaders in the national rankings by the regional human development index in 2020 (according to the methodology of the Ministry of Communities and Territories Development of Ukraine (Ministry for Communities and Territories Development of Ukraine, 2020), still the extended choice opportunities for people and the acute problem of social inequality do not conceal the issue of labor and educational emigration, especially when analyzing the peculiarities of the oblasts of the Carpathian region by human development level in the retrospective (2004-2013). According to the study (Libanova, 2015), Lvivska oblast belongs to the group of regions with development without the signs of regress and demonstrates the stability of regional human development parameters. Meanwhile, in the same period, Zakarpatska, Ivano-Frankivska, and Chernivetska oblasts were assigned to the group of regions with the signs of regressive development by one of the regional human development aspects and were characterized by aggravating social environment.

The institutional conditions in the educational domain component describes the properties of the educational migration environment from the viewpoint of public and private ownership forms co-existence in the system of higher education and solution of a range of important issues regarding the sources

of funding the education – public and private. The processes of inbound academic mobility in Ukraine play an important role among the institutional conditions of the educational migration component. In the 2020/2021 academic year, 75,605 foreign students from 154 countries studied in 443 Ukrainian higher educational institutions, most of them from Asia and Africa. In the oblasts of the Carpathian region: 2,057 persons in Lvivska oblast, 1,833 – in Chernivetska, 1,767– in Ivano-Frankivska, and 1,724 – in Zakarpatska (Ministry of Education and Science of Ukraine, 2020a). Calculations of the index by the component show the improved conditions in Ivano-Frankivska and Chernivetska oblasts and their deterioration in Lvivska and Zakarpatska oblasts (Fig.3).

Problem areas of the environment. The issues of selecting the sources of higher education funding can be solved through the reforms of the higher education economy that should lead to the growing number of students by the contractual form of education. In this regard, the introduction of indicative cost of education (cost of education for contractual students corresponds to the level at which the government funds the education of government-subsidized students) should prove its right to life (Kvit, 2020).

Positive dynamics of providing educational services to foreign residents (studying at the second and third levels of higher education) leads and will continue to lead in the future to the growing income of Ukrainian educational institutions and growing export of educational services. In this regard, the issues of security-related political and socio-medical nature concerning foreign students should be settled (Russia's military aggression and Covid 19 expansion). The rankings of the higher educational institutions, based on which a foreign citizen concludes the contracts on education, are quite important for foreign students, same as improving the conditions of education and accommodation in dormitories of particular higher educational institutions.

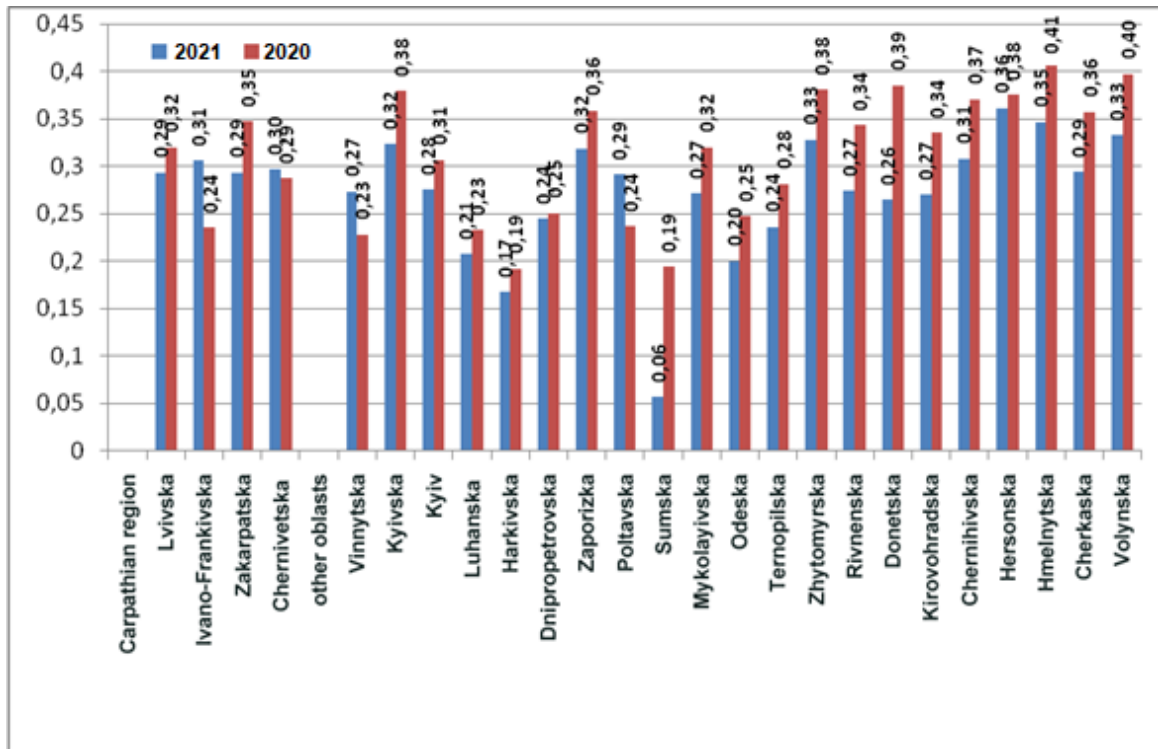


Figure 3. Positions of the oblasts of the Carpathian region by the institutional conditions in the educational domain component, 2020-2021

*Source: calculated by authors (State Statistics Service of Ukraine, 2022).

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Calculation of the *integral RIFEME index* contributes to determining the rankings of Ukrainian regions by quantitative and qualitative characteristics of the educational migration environment in each region and providing its detailed analysis in the oblasts

under research. According to the authors’ methodology, the weight of RIFEME components is calculated. In 2021, the motivation component and educational environment quality component had the strongest impact on forming the educational migration environment by the weight rate in the order of importance. Meanwhile, calculations for 2020 show that institutional conditions in the educational domain and cooperation of universities and industry in the research had the strongest impact on the resulting integral parameter.

The rankings of Ukrainian regions by the integral RIFEME parameter in 2021 show the growing rank values of the oblasts of the Carpathian region by a set of parameters of educational migration environment. The position of *Lvivska oblast* remained changed (1st place in the Carpathian region, 4th place in Ukraine). *Ivano-Frankivska oblast* was 2nd and 12th, *Chernivetska oblast* – 3rd and 17th, *Zakarpatska oblast* – 4th and 24th). Meanwhile, in 2020, the positions in the national Ukrainian

rankings were the following: *Lvivska oblast* was 1st and 4th in Ukraine, respectively, *Ivano-Frankivska oblast* – 2nd and 15th, *Chernivetska oblast* – 3rd and 21st, *Zakarpatska oblast* – 4th

and 24th. Comparison of positions in rankings shows the improved conditions of forming the educational migration environment in the oblasts of the Carpathian region (Fig. 4).

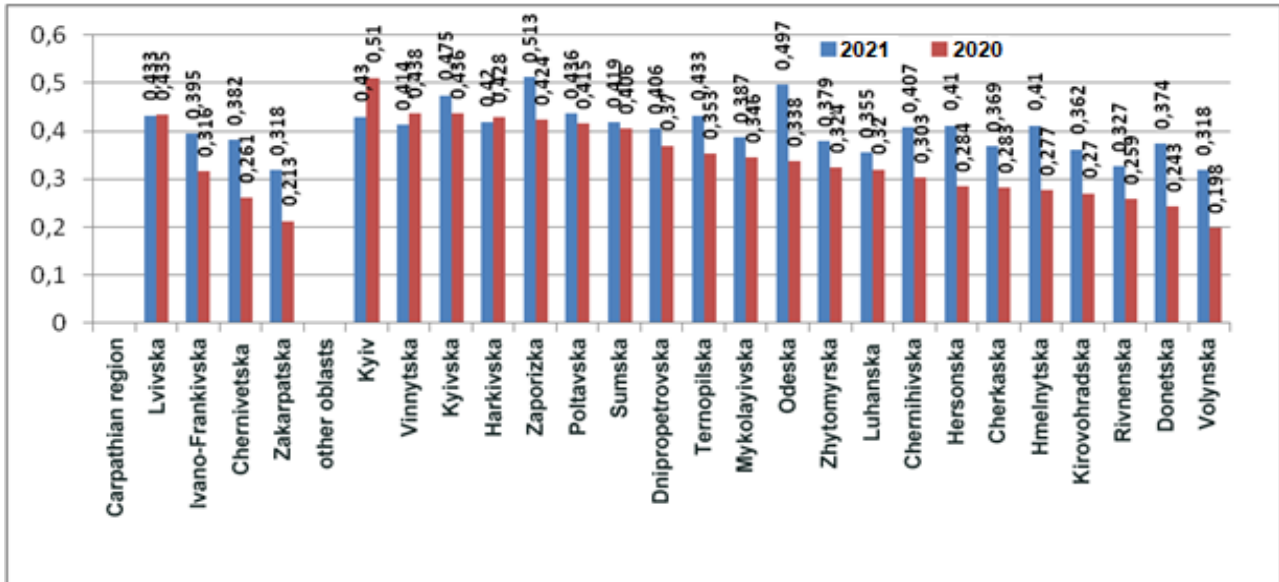


Figure 4. Positions of the oblasts of the Carpathian region in the rankings of Ukrainian regions by the integral RIFEME index, 2020-2021

*Source: calculated by authors (State Statistics Service of Ukraine, 2022).

Summing up the conducted research, it is worth mentioning that the monitoring of the educational migration environment in the Carpathian region illustrates and confirms the continuous interest of Ukrainian youth in getting higher education abroad. Demographic problems faced by the world and, in particular, European countries, and lack of staff of various qualification levels push Ukrainian students, researchers, postgraduate students, and professional academic staff to search for education, job, and decent living conditions abroad. It is obvious that such a trend will continue. Foreign countries have developed the respective legal framework and proper institutional conditions in the socio-labor relations domain aimed at retaining and increasing the number of educational migrants, researchers, and professional staff to use and enrich the professional-intellectual capacity of the country (Semiv, 2015). By building the rankings of parameters, the monitoring has contributed to estimating possible demographic capacity losses in the oblasts under research (I calculation component),

determining the factors leading to devaluation and loss of human capacity (II and III components), tracking the risks for the country caused by the loss of resources capacity of domestic educational and scientific schools and the collapse of sociocultural development foundations of labor and educational services markets (II, IV, V components). The monitoring can serve as an analytical base for the development of recommendations to improve the efficiency of migration policy in the Carpathian region.

Conclusions

The conducted research has contributed to suggesting the following directions of educational migration environment regulation in the domains of public social, scientific-technological, economic, educational, and informational policies.

1. Promoting economic recovery from the current crisis caused by COVID-19 pandemics, stabilization, and further macroeconomic growth by developing the long-term strategy of socio-economic

development of Ukraine (elaboration and implementation of an economic development strategy based on the innovation model, prognosis of medium- and short-term economic and social development parameters in Ukraine, forming the legislative framework for developing the integral national innovative system, introduction of an efficient system of economic stimuli (tax incentives, credits, insurance) regarding the creation and commercialization of industrial property objects, etc.).

2. Creating the technology- and knowledge-intensive jobs as the ground for the employment of professional staff, reducing the unemployment, increasing the productive employment of the population (creating the highly efficient technological and knowledge-intensive industrial enterprises in perspective economic sectors with high added value, restoring the productive and human capacity of the military-industrial complex, and initiating the development of engineering developments in eco-friendly and energy-efficient technologies, etc.).

3. Securing the proper level of funding the educational, scientific, and scientific-technological domains as a key to efficiency of innovative functioning model and public regulation of economy as well as creation and development of technology-intensive production in Ukraine (gradual ensuring the funding of scientific and scientific-technological domains from all sources at the level of 3 % of GDP, observance of the provision of the Law of Ukraine “On Scientific and Scientific-Technological Activity” regarding the budgetary expenditures on scientific research at the level of 1.7 % of GDP, creation and practical implementation of efficient system of funding the higher education, transition from the subsidies ideology to investment in education ideology, stimulation of permanent motivation of students for quality education, compliance with the higher education standards, providing financial assistance to scientific and educational institutions by creating the

transparent system of grants, improvement of the prestige of scientific and scientific-technological activity, etc.).

4. Mismatch between the structure of professional training in higher educational institutions and current and perspective needs of the labor market, the mismatch between the skills of higher educational institutions’ graduates and the needs of employers, and a weak relationship between higher educational institutions and research and business require adjustment at all levels (permanent coordination of professional training in the higher educational institutions and the needs of Ukrainian employers, reintroduction of the practice of research in universities, ensuring the growth of innovative activity rates for industrial enterprises as a prerequisite of overcoming the lingering fall in cooperation between higher education, science, and industry, promoting the students’ secondary employment on the labor market, development of various models of the dual form of higher education, etc.).

5. Forming the system of measures to regulate the labor market in conditions of labor informatization and computerization (promoting the development of digital employment, intensification of forming and continuous increase of the digital labor market segment, updating the ways of hiring intellectual staff working online in conditions of digital employment, etc.).

6. Forming and strengthening the progressive role of the middle class as the foundation of sustainable development of the country’s economy and political system as the dominating factor in overcoming the crisis condition of the economy (implementation of public policy of promoting the development of middle class in Ukraine, orientation of public middle class policy on harmonization of labor remuneration and the cost of labor force across professions, protection of intellectual property and strengthening the positions of professional employees, support of entrepreneurship, and abandoning the “cheap labor” policy).

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