Integrated assessment of the attractiveness of the EU for intellectual immigrants: A taxonomy-based approach

Integrated assessment of the attractiveness of the EU for intellectual immigrants: A taxonomy-based approach

Olena Oliinyk[a], Halyna Mishchuk[a], Yuriy Bilan[b], Marinko Skare[c,*]

[a]*The National University of Water and Environmental Engineering, Ukraine*

[b]*Tomas Bata University in Zlin, Czech Republic*

[c]*Juraj Dobrila University of Pula, Croatia*

[*]*Corresponding author: E-mail addresses: o.o.oliynuk@nuwm.edu.ua (O. Oliinyk), h.y.mischuk@nuwm.edu.ua (H. Mishchuk), y.bilan@prz.edu.pl (Y. Bilan), mskare@unipu.hr (M. Skare).*

ABSTRACT

This study proposes a method to comprehensively assess the factors that attract intellectual migrants to certain countries. The authors propose a system of pull factors that characterise the attractiveness of living conditions, intellectual employment, research and professional development to potential migrants. Evaluation of its impact on the main indicator of the attractiveness of countries for intellectual migrants ('brain gain' in the Global Talent Competitiveness Index) was conducted using the example of EU countries. To this end, the authors developed a two-stage evaluation procedure, which combines correlation and taxonomic analysis methods. The system of indicators formed was used to make an integrated assessment of the attractiveness of countries based on taxonomic analysis. This assessment helped identify the group of countries (Luxembourg, Ireland, Sweden, Finland, Denmark and the Netherlands) with the highest migration attractiveness in the EU. The proposed methodology allows us to group countries by the level of their attractiveness for intellectual migrants and assess the possibilities of regulating the institutional environment of migration processes.

Keywords: Migration, intellectual migration, push factors, pull factors, European Union

1. Introduction

With the development of the global economy, intellectual migration and the factors determining it have been attracting increasing attention. Highly developed countries that build their economic success on knowledge and innovation are increasingly competing for talent, recognising that 'talented and skilled individuals have a key role to play in the future prosperity of countries. They hold jobs that are key to innovation and technological progress and ultimately contribute to stronger economic growth with other employment opportunities and better living conditions for all' (**OECD, 2019a**). The intellectual potential of three specific categories of talented migrants is particularly highly valued: highly educated workers (those with master's and doctoral degrees), foreign entrepreneurs and university students. In the struggle to attract talent and knowledge, countries are constantly improving migration policies and the living and working conditions of intellectual migrants.

Assessing the attractiveness of a country for migrants is not new in demographic research. These assessments are now made mainly based on the 'push-pull' theory, where pull factors are justified based on current changes in labour markets and the environment of economic and social support for

migrants (**Aytac** and **Aydin, 2019; Fries-Tersch et al., 2021; Ho et al., 2018; Labanauskas, 2019**). At the same time, for intellectual migrants, not only are the economic factors that determine the quality of life of migrants and their families important but so are their perceptions of the new environment via overcoming cultural, ideological, and other barriers. It is important for this group of migrants to have the opportunity to realise their creative potential through the demand for and support of research, creating opportunities for professional development and self-realisation, which is reflected particularly in many works in this economic field (**Batyk and Rzeczkowski, 2020; Khan, 2021; Sekliuckiene et al., 2019**). Besides the research on factors attracting migrants to individual countries, similar research is being actively conducted in international analytical projects; in particular, intellectual migration is part of relevant international indices that illustrate current changes in the migration of skilled migrants and their contribution to the formation of elements of the competitiveness of countries via the nurturing of talents (**INSEAD, 2021; IMD Business, 2021; MIPEX, 2021**).

Given the importance of intellectual migration in the formation of competitiveness and the consequent economic success and social wellbeing of countries, research on the pull factors affecting migrants is constantly relevant. The results of this research and the study of the experience of countries that attract migrants are important in improving the migration policies of those countries that experience a loss of intellectual potential.

Therefore, our research goal is to identify the modern determinants of intellectual migration for an integrated assessment of the attractiveness of countries. The impact of our study on the field of migration knowledge is presented in the novel methodological approach for defining the comprehensive indicator of the attractiveness of countries that is developed specifically for intellectual migrants.

The research methodology is based on a two-stage analysis. In the first stage, we assess the correlation of factors and identify the system of the most influential determinants of intellectual migration, which is used for the formation of a comprehensive indicator of attractiveness for migrants. In the second stage, we consider the reference values of each partial factor, using the technique of taxonomic analysis. Thus, it is possible to assess the current situation and assets for improving the attractiveness of countries for migrants with respect to the reference values in each area of regulation of the living and working environment of intellectual migrants.

The article is structured as follows. Section 2 includes a review of the literature on the factors of intellectual migration and the methods of their analysis. Section 3 includes the methodology, and Section 4 presents the findings of the study, highlighting the most essential pull factors of intellectual migration and the distribution of countries according to their attractiveness for intellectual migrants. Section 5 discusses the results of this study in a border context, and Section 6 presents the conclusions.

2. Review of the literature

The phenomenon of intellectual migration contributes to the economic development and competitiveness of the host country (**Oliinyk et al., 2021a; Mishchuk et al., 2019**), stimulates qualitative changes in migration policy (Alshoubaki and Harris, 2021) and is considered an important prerequisite for the knowledge economy (**Akimov et al., 2021; Oliinyk et al., 2021b; Sekliuckiene et al., 2019**). The multi-faceted nature of intellectual migration is reflected in the factors that contribute to its spread. In general, such factors are divided into two groups: the expulsion factor (aspects of the donor country that force intellectual migrants to leave) and the attraction factor (aspects of the recipient country that motivate intellectual migrants to move there). To understand the complexity of

intellectual migration, it is important to analyse these categories, as migration is driven by several factors that are usually interdependent and complementary (**Urbanski, 2021**).

Franc et al. (**2019**) propose dividing the motives of intellectual migration into three groups: economic, political and socio-cultural, within which we can distinguish different push factors for emigrants and pull factors in the recipient country. The most common triggers are poverty, unemployment, low wages, high birth rates, low health and education (**Bilan et al., 2019; Volintiru et al., 2018**). The most common pull factors in the country of immigration are the prospects of higher wages, opportunities to improve living standards and personal or professional development (**Aytac and Aydin, 2019; Ho et al., 2018; Laba-nauskas, 2019**).

Although economic factors have traditionally been considered the main determinants of migration, the relationship between noneconomic factors and intellectual migration is also analysed. Brain drain can be fuelled by high levels of corruption and the existence of a democratic deficit (**Mihaila, 2018; Mishchuk** and **Grishnova, 2015**). Based on empirical analysis, Popogbe and Adeosun in their study (**Popogbe and Adeosun, 2020**) identify social factors that force intellectual migrants to leave their home country. The simulation results show a positive relationship between population growth rates and migration rates but a negative relationship between life expectancy and migration rates. Migration rates are also exacerbated by unemployment.

In addition, there is a wide range of academic publications devoted to certain professions of intellectual migrants. The migration of medical personnel is attracting increasing attention from the international community (**Walton-Roberts et al., 2017; Apostu et al., 2020; Tang-charoensathien et al., 2018**). **Pantenburg et al.** (**2018**) attempt to identify the factors that motivate German physicians to emigrate. Their cross-sectional survey examines socio-demographic indicators, job satisfaction, the desire to emigrate and the likelihood of moving abroad soon. Variables related to the desire to emigrate were estimated using multi-variate logistic regression models, and it was determined that the factor ‘workload’ plays a crucial role in doctors' emigration. Simultaneously, the study revealed that the most desirable European destinations are Switzerland and the Scandinavian countries.

The growing scientific interest in intellectual migration has been exacerbated by the recent crises, including the COVID-19 pandemic, as evidenced by empirical research (**IOM, 2022; EU, 2018; WBG, 2019**). In particular, ingrained problems with the shortage of medical staff emphasise the significant contribution that migrant doctors and nurses make to the health workforce in many European countries. For example, the proportion of foreign-trained doctors amounts to approximately 40 % in Norway and Ireland. The proportion of foreign-trained nurses is approximately up to 20 %-25 % in Switzerland (**OECD, 2019b**).

In light of globalisation, international mobility and collaboration of scientists and researchers are also becoming more widespread, as an important impetus for their career progression (**Batyk** and **Rzeczkowski, 2020; Khan, 2021; Kosch** and **Szarucki, 2020**). Among the main factors influencing such migration are attractive wages, short- and fixed-term contracts for early-stage researchers, an attractive migration policy and unfair hiring procedures in the home country (**Khan, 2021**).

The main internal factors stimulating migration are low and low-quality employment parameters, including the level of wages, which differs sharply from the minimum wage in the EU, a lack of jobs or employers' non-compliance with the criteria of decent working conditions and their low social responsibility (**Oliinyk, 2020; Kryshtanovych et al., 2021**). At the same time, pull factors are more important to intellectual migrants than push factors. Pull factors describe the attractiveness of the destination, in terms of the availability of jobs that correspond to the employee's field and level of

education, the ability to realise their scientific potential and the socio-economic conditions (economic growth, higher wages and the quality of social security) (**Fries-Tersch et al., 2021**).

3. Methodology

An analysis of the research concerning the identification of factors affecting migration processes allowed the compilation of a list of drivers of intellectual migration (**Table 1**).

As a rule, the push factors for intellectual migrants are the direct opposite of the pull factors. Open countries with a high level of democracy and inclusion, better career opportunities and more high-paying vacancies are more likely to fill their working population with intellectual migrants. Of course, this list is not exhaustive, but it demonstrates the main factors that come into play when deciding on a change of residence and employment.

The pull factors listed in Table 1 were used to select quantitative indicators to assess and rank the attractiveness of EU countries for intellectual migrants. To quantify the attractiveness of countries for intellectual migrants according to certain factors, the authors of this study organised indicators that illustrate both general living and working conditions in the country as well as specific conditions that can be drivers of intellectual migration (**Table 2**).

The level of economic development of a country, the basic indicator of which is GDP per capita, and the level of income of its citizens are key factors that drive the selection of a country for intellectual migration. In this context, the interrelated push factors are also noteworthy, as specialists from poor and developing countries often go abroad to work, hoping to earn higher wages and realise their intellectual potential.

Table 1 Drivers of intellectual migration.

Push factors	Pull factors
1. Financial and social insecurity. 2. Deterioration of the level and quality of life. 3. Economic instability. 4. Uncertainty of the future. 5. Political instability. 6. Poor conditions for research. 7. Low prestige of intellectual work. 8. Lack of opportunities to work on interesting projects. 9. Increase of the shadow sector of the economy. 10. Structural changes in the economy. 11. Inconsistency of qualifications of graduates of educational institutions with the needs of the labour market. 12. Lack of "social elevators", career opportunities. 13. High unemployment. 14. High level of corruption.	1. High level of GDP per capita. 2. High wages. 3. Economic freedom. 4. Political stability. 5. Integration into the host society. 6. The best conditions for employment, research and education. 7. Access to the international scientific community. 8. Realisation of creative and professional abilities. 9. Career opportunities. 10. Development of the small and medium business sector (self-employment as an alternative to employment).

Source: author's own research.

Economic freedom is a basic right that enables people to control their own work and property. In an economically free society, people are free to work, manufacture and consume products and services and invest in any way. In economically free societies, governments allow human, physical and intellectual capital to move freely (**Miller et al., 2021**). Therefore, it is necessary to consider the Economic Freedom Index when assessing the attractiveness of countries for intellectual migrants as this indicator includes 12 quantitative and qualitative factors grouped into four broad categories of economic freedom: rule of law (property rights, government integrity and judicial efficiency), government size (public spending, tax burden and fiscal health), regulatory efficiency (freedom of enterprise, freedom of employment and freedom of money) and open markets (freedom of trade, freedom of investment and financial freedom).

An important factor in attracting intellectual migrants is the political stability of the country, as this is the basis of its sustainable socioeconomic development. For people from countries where hostilities occur, such as Ukraine, or where the government changes frequently, this factor gains special importance. The index of political stability and the absence of violence or terrorism measures the perception of the likelihood that public power may be destabilised or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism (**WBG, 2021**).

A comprehensive assessment of the attractiveness of the country for intellectual migrants is impossible without considering their integration into the host society and the tolerant attitude of residents towards immigrants. In the case of successful adaptation of immigrants to the host society, they become full citizens of the country, as well as the bearers of its values and norms. However, this integration depends not only on the immigrants themselves but also on several other factors, including the country of departure, the integration policy of the host country, the normative value model and public opinion about immigrants (Ander-sson, 2019). The Migrant Integration Policy Index was developed to create a multi-dimensional picture of the opportunities for migrants to participate in society. This index is a useful tool for assessing and comparing the ways by which governments are trying to promote the integration of migrants in the 56 countries analysed in the index (**MIPEX, 2021**).

When assessing the attractiveness of the country for intellectual migrants, it is necessary to consider the factors that will promote the professional development and career progression of such professionals.

The motives of intellectual migrants have always included factors such as poor material, technical and information support for research; insufficient funding for research; low prestige of science in society; dissatisfaction with their social status in society; insecurity of their rights to intellectual property and a frequent inability to implement developments in the homeland.

Self-employment by intellectual migrants is an alternative to working as hired labour. If the current conditions of paid employment do not correspond to the educational level and experience of foreign citizens, by starting their own business, they can create a job for themselves that would reflect their knowledge and competencies. In this case, selfemployment becomes a strategy that avoids retraining and creates conditions for the complete realisation of their professional goals.

Table 2 Pull f actors for intellectual migrants and relevant indicators for their evaluation.

Pull factor	Indicator	Source	Measuring instrument	Symbol
Level of GDP per capita	GDP per capita	Eurostat	Euro	X_1
High wages	Annual net earnings euro	Eurostat	Euro	X_2
	Minimum Wages	Eurostat	Euro/ month	X_3
Economic Freedom	Economic Freedom Index	The Heritage Foundation	Score	X_4
Political stability	Political stability index	The World Bank	Points	X_5
Integration	The Migrant Integration Policy Index	MPG and CIDOB	Score	X_6
	The Global Talent Competitiveness Index. sub-index «Tolerance of immigrants»	INSEAD	Score	X_7
Conditions for employment, research and education	Gross domestic expenditure on R&D	Eurostat	% GDP	X_8
	Share of R&D personnel and researchers in total active population and employment	Eurostat	% population in the labour force	X_9
	Participation rate in education and training (last 4 weeks) by citizenship	Eurostat	%	X_{10}
Career opportunities	The Global Talent Competitiveness Index. sub-index «High-level skills»	INSEAD	Score	X_{11}
Realisation of creative and professional abilities	The Global Talent Competitiveness Index. sub-index «Talent impact»	INSEAD	Score	X_{12}
Access to the international scientific community	Membership and ratification of international agreements	The U.S. Chamber of Commerce	Score	X_{13}
Development of the small and medium business sector (self-employment as an alternative to employment)	The Global Talent Competitiveness Index. sub-index «Ease of doing business»	INSEAD	Score	X_{14}
	The OECD indicators of talent attractive-ness «Entrepreneurs»	OECD	Score	X_{15}

Source: author's own research.

4. Results

All the proposed indicators are stimulants, i.e. their growing importance affects the level of attractiveness of countries for intellectual migrants. The 'brain gain' indicator (Y) in the Global Talent Competitiveness Index was chosen as a criterion to assess the strength of such influence. This indicator is calculated based on the average answer to the question: 'How much does your country attract

talented people from abroad?' [1 = not at all; 7 = to a large extent, the country attracts the best and brightest from around the world]. This survey is part of the World Economic Forum's Executive Opinion Survey that is conducted on an annual basis to collect information from business leaders on topics for which hard data sources are scarce or nonexistent (**INSEAD, 2021**).

To investigate the closeness of this relationship, the authors calculated the Spearman rank correlation coefficient. The expediency of using this correlation coefficient is explained by the objectives of this research, namely, the assessment of the level of attractiveness and ranking of EU countries by intellectual migrants. The calculation of the Spearman coefficient is based on the relationship of variables in ascending order of their values. The calculation method contains the following stages:

1) Ranking the series of variables
2) Comparing the ranks of two variables to calculate the differences between them
3) Squaring each difference obtained and then determining their sum
4) Calculating Spearman correlation coefficient using the formula (**Schober et al., 2018**)

2

Table 3 Indicators for assessing the attractiveness of EU countries for intellectual migrants and Spearman's correlation coefficient.

Country	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	Y
Belgium	33 950	28 530,01	1626	68,9	0,59	69	60	3,52	2,0503	13,8	63,81	65,52	*	79,17	0,47	67,71
Bulgaria	6 380	4 905,58	332	70,2	0,47	40	32,31	0,86	0,8177	*	45,54	52,24	*	73,84	*	25,46
Czechia	17 340	10 172,47	579	74,8	0,92	50	35,38	1,99	1,5497	10,6	44,46	65,39	*	81,56	0,46	41,62
Denmark	48 150	29 534,62	*	78,3	0,94	48	84,62	3,03	2,1242	27,7	57,75	81,14	*	97,39	0,54	64,88
Germany	34 310	31 229,74	*	73,5	0,67	58	75,38	3,14	1,7393	13,0	56,29	62,61	6,45	87,52	0,56	73,01
Estonia	15 010	11 129,97	584	77,7	0,71	50	35,28	1,79	0,9732	13,1	64,56	68,61	*	89,12	0,51	57,01
Ireland	62 980	25 921,88	1697	80,9	0,98	64	93,85	1,23	1,392	14,6	66,36	74,37	6,5	87,28	0,54	75,64
Greece	16 170	13 162,33	758	59,9	0,13	46	32,31	1,49	1,2607	5,3	51,33	50,44	6,25	67,55	0,36	17,55
Spain	22 350	17 493,79	1108	66,9	0,4	60	87,69	1,41	1,0312	11,4	52,76	53,02	7	84,38	0,49	43,01
France	30 610	24 082,89	1555	66	0,31	56	61,54	2,35	1,6116	13,8	60,17	66,55	7	82,38	0,46	54,82
Croatia	11 720	7 998,66	563	62,2	0,61	39	23,08	1,27	0,8796	*	41,62	54,62	*	76,75	*	12,5
Italy	24 890	19 890,25	*	63,8	0,44	58	73,85	1,54	1,4267	5,5	42,09	55,33	6,75	75,39	0,42	34
Cyprus	23 770	12 971,19	1218	70,1	0,29	41	50,77	0,85	0,5023	8,4	54,86	74,75	*	76,27	*	50,73
Latvia	12 150	8 015,98	500	71,9	0,46	37	30,77	0,7	0,7028	2,7	54,96	60,96	*	88,53	0,42	36,77
Lithuania	14 030	8 359,77	642	76,7	0,87	37	33,85	1,17	1,0117	15,6	62,26	54,92	*	90,9	*	39,21
Luxembourg	82 250	33 013,10	2202	75,8	1,23	64	95,38	1,13	1,8278	19,6	62,66	77,97	*	69,64	0,49	92,81
Hungary	12 680	8 418,04	442	66,4	0,86	43	0	1,62	1,3042	9,0	43,97	53,37	6,75	76,39	0,44	32,02
Malta	20 410	14 634,63	785	69,5	0,95	48	75,38	0,66	0,6967	11,3	55,29	75,61	*	63,51	*	79,18
Netherlands	40 160	30 799,56	1685	77	0,85	57	76,92	2,29	1,7892	29,0	60,95	71,31	7	81,14	*	81,19
Austria	35 390	31 155,44	1200	73,3	0,85	46	66,15	3,22	1,8314	16,5	53,55	58,22		85,81	0,54	59,96
Poland	12 700	7 981,42	614	69,1	0,57	40	50,77	1,39	1,0445	15,1	51,83	43,65	6,75	81,36	0,43	29,82
Portugal	17 070	12 051,86	776	67	1,03	81	92,31	1,58	1,3327	16,8	52,29	56,66	*	81,78	0,47	53,47
Romania	8 810	6 884,02	458	69,7	0,59	49	35,38	0,47	0,3805	*	33,11	55,6	*	76,24	*	16,25
Slovenia	19 720	12 618,25	1024	67,8	0,71	48	15,38	2,15	1,5553	8,9	57,16	54,75	*	81,87	0,52	28
Slovakia	15 180	8 593,40	623	66,8	0,64	39	38,46	0,92	0,8385	*	42,66	54,9	*	80,22	0,47	18,32
Finland	36 070	27 131,81	*	75,7	0,94	85	76,92	2,94	2,0105	34,7	64,65	66,38	*	88,35	0,55	49,93
Sweden	42 570	29 190,29	*	74,9	1,02	86	92,31	3,51	1,8091	41,1	65,16	75,94	6,5	91,56	0,59	63,55
Spearman coefficient	0,801	0,798	0,774	0,602	0,524	0,583	0,741	0,374	0,535	0,544	0,734	0,813	0,191	0,259	0,635	

* - No data available. Source: compiled from (**Miller et al., 2021; WBG, 2021; Oliinyk et al., 2021a; INSEAD, 2021; Schober et al., 2018; OECD, 2019a; Trading Economics, 2021; EC, 2021a; EC, 2021b; EC, 2021c; EC, 2021d; EC, 2021e**).

$$\rho = 1 - \frac{6\Sigma d_i^2}{n(n^2 - 1)} \quad (1)$$

In the above equation, d_i denotes the difference between the rankings and n is the number of observations.

The values of the indicators used to assess the attractiveness of the EU countries and the strength of their relationship with the indicator 'brain gain' (Y) are listed in **Table 3**.

The values obtained using the Spearman coefficient allow the identification of the indicators that have the greatest impact on the attraction of intellectual migrants. These include the overall level of economic development of the country, the main measure of which is the GDP per capita. It should be noted that this indicator, together with the 'influence of talents' , has the closest connection with the attraction of intellectuals (0.801 and 0.813, respectively). The level of income of the population as well as the size of the statutory minimum wage also have a significant impact. Thus, it can be argued that the economic drivers of intellectual migration in the current stage of development have the greatest impact on the level of attractiveness of countries for such immigrants.

Regarding the importance of social factors, tolerance towards immigrants (0.741) plays the greatest role in this aspect. Those countries that create conditions for the development of harmonious relations between immigrants and the indigenous population gain a competitive advantage in attracting intellectual migrants.

For intellectual migrants, the opportunities for career advancement (0.734) are as important as the conditions for the realisation of their professional potential.

In this context, a necessary component is the transparency and openness of career advancement processes in terms of indiscrimination on the grounds of nationality/country of origin. Although migrants do not belong to particularly vulnerable groups, living conditions in the recipient country (they may not know the language, laws, customs, etc.) weaken their ability to compete and assert their professional rights. Therefore, they are more likely to be discriminated against or confronted with racism and xenophobia in the workplace than other workers.

Regarding the least significant factors of intellectual migration, attention should be paid to the development of the small and mediumsized business sector. The Spearman ratio shows that this factor is currently the least influential in terms of attracting intellectual migrants; therefore, these professionals are more likely to work as hired labour than to start their own businesses.

Thus, given the close relationship between the factors of intellectual migration, which are expressed in quantitative terms, and the rate of attraction of the 'brains', the following variables were selected with medium and high correlation (with a Spearman correlation coefficient of 0.5 and more): X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_9, X_{10}, X_{11}, X_{12} and X_{15}. However, considering the available information support in the context of all 27 EU countries, the assessment of the level of attractiveness of EU countries is based on the following indicators: X_1, X_2, X_4, X_5, X_6, X_7, X_9, X_{11} and X_{12}.

Table 4 Correlation matrix.

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}
X_1	1,000	0,851	0,912	0,543	0,528	0,509	0,718	0,373	0,650	0,488	0,603	0,703	−0,134	0,155	0,509
X_2		1,000	0,925	0,438	0,371	0,600	0,743	0,716	0,817	0,596	0,608	0,615	−0,009	0,274	0,631
X_3			1,000	0,334	0,253	0,592	0,696	0,415	0,661	0,558	0,667	0,643	0,309	−0,035	0,436
X_4				1,000	0,637	0,228	0,388	0,262	0,331	0,540	0,596	0,631	−0,004	0,585	0,721
X_5					1,000	0,425	0,397	0,238	0,431	0,571	0,341	0,476	−0,047	0,238	0,620
X_6						1,000	0,701	0,531	0,585	0,638	0,468	0,378	−0,111	0,206	0,489
X_7							1,000	0,334	0,468	0,542	0,487	0,554	0,095	0,194	0,493
X_8								1,000	0,863	0,587	0,474	0,279	−0,138	0,513	0,612
X_9									1,000	0,599	0,523	0,366	−0,076	0,366	0,531
X_{10}										1,000	0,561	0,473	0,067	0,443	0,714
X_{11}											1,000	0,584	−0,085	0,424	0,582
X_{12}												1,000	−0,019	0,187	0,599
X_{13}													1,000	0,125	−0,077
X_{14}														1,000	0,696
X_{15}															1,000

Source: author's own research.

The study of the relationship between all pairs of variables was performed using the Pearson correlations (**Table 4**).

The results of the correlation analysis show the closest relationship between the level of economic growth of the country and the level of income/wages of its population (the value of the Pearson correlation coefficient is >0.9). At the same time, the policy of a tolerant attitude towards migrants has a positive effect on the economic development of the EU countries (0.718), and favourable conditions for professional and scientific activities are reflected in the growth of income (0.817). The lack or insignificant inverse impact on the analysed parameters of access to the international scientific community is also noteworthy. Therefore, formal membership in international scientific agreements is not an important factor in intellectual migration today.

To comprehensively assess the attractiveness of EU countries for intellectual migrants, the authors proposed using a taxonomic indicator of the level of system development based on study of **Pluta** (**1977**). Unlike the other methods of research, taxonomic analysis allows the assessment of multi-dimensional objects or processes with respect to a given normative reference vector in a relatively simple but comprehensive manner. Thus, it creates the possibility of a holistic assessment of the phenomena (in the present study, intellectual migration) with the help of one complex indicator, which in turn is designed using a system of various partial indicators. Comparisons with the normative values in the selected dataset and construction of the multi-dimensional final index are significant benefits of taxonomic analysis. In this regard, we obtain an understanding of the generalised relations within the system of factors influencing the final estimate and ultimately the distance from the 'ideal' value (1.0 on a scale of estimated values). This not only allows the grouping of the countries of migrants' interest but also helps deriving conclusions about the policymaking. It should be performed, particularly, using the best practices (which are presented in a group of leading countries by the final indicator value) or modeling the actions aimed to achieve 1.0 in each partial direction. These advantages of taxonomic analysis are valuable and in close alignment with the aim of our study.

The calculation of the taxonomic indicator allows the use of indicators with different units of measurement to be collected in a single quantitative assessment and to make reasonable conclusions about the level of attractiveness of countries. The evaluation process includes the following main stages:

1) The standardisation of source data for their consolidation into a single scale of measurement is carried out using the following formula:

$$Z_{ij} = \frac{x_{ij} - \bar{x}_{ij}}{\sigma_i} \quad (2)$$

where Z_{ij} is standardized value of the i-th indicator for the j- $(\mathrm{i} = \overline{1,n};\ \mathrm{j} = \overline{1,m});\ \bar{x}_{ij}$ th EU country is the arithmetic mean of the i-th indicator for the j-th EU country and o is the standard deviation of the i-th indicator (**Table 5**).

Table 5 Standardized baseline values for a comprehensive assessment of the attractiveness of EU countries for intellectual migrants in 2020

Country	X_1	X_2	X_4	X_5	X_6	X_8	X_9	X_{11}	X_{12}
Belgium	0,4223	1,1372	−0,3824	−0,4290	1,1094	0,1278	1,4832	1,1012	0,3141
Bulgaria	−1,1509	−1,3264	−0,1361	−0,8773	−0,9393	−0,8888	−1,0017	−0,9819	−1,0232
Czechia	−0,5255	−0,7772	0,7354	0,8040	−0,2329	−0,7761	0,4740	−1,1051	0,3010
Denmark	1,2326	1,2420	1,3984	0,8787	−0,3742	1,0316	1,6321	0,4103	1,8869
Germany	0,4429	1,4188	0,4891	−0,1301	0,3323	0,6924	0,8562	0,2438	0,0210
Estonia	−0,6584	−0,6773	1,2848	0,0194	−0,2329	−0,7797	−0,6882	1,1868	0,6252
Ireland	2,0788	0,8652	1,8910	1,0281	0,7562	1,3704	0,1561	1,3920	1,2052
Greece	−0,5922	−0,4654	−2,0875	−2,1476	−0,5154	−0,8888	−0,1086	−0,3218	−1,2044
Spain	−0,2396	−0,0137	−0,7613	−1,1388	0,4736	1,1443	−0,5713	−0,1587	−0,9446
France	0,2317	0,6735	−0,9318	−1,4751	0,1910	0,1843	0,5988	0,6862	0,4178
Croatia	−0,8461	−1,0038	−1,6518	−0,3542	−1,0100	−1,2276	−0,8769	−1,4289	−0,7835
Italy	−0,0947	0,2362	−1,3486	−0,9894	0,3323	0,6362	0,2260	−1,3753	−0,7120
Cyprus	−0,1586	−0,4853	−0,1551	−1,5498	−0,8687	−0,2111	−1,6375	0,0807	1,2435
Latvia	−0,8216	−1,0020	0,1859	−0,9147	−1,1513	−0,9453	−1,2333	0,0921	−0,1451
Lithuania	−0,7143	−0,9662	1,0953	0,6171	−1,1513	−0,8322	−0,6106	0,9245	−0,7533
Luxembourg	3,1783	1,6047	0,9248	1,9621	0,7562	1,4266	1,0346	0,9701	1,5677
Hungary	−0,7914	−0,9601	−0,8561	0,5798	−0,7274	−2,0749	−0,0209	−1,1609	−0,9094
Malta	−0,3503	−0,3118	−0,2687	0,9160	−0,3742	0,6924	−1,2456	0,1298	13,300
Netherlands	0,7767	1,3739	1,1522	0,5424	0,2616	0,7489	0,9568	0,7751	0,8971
Austria	0,5045	1,4110	0,4512	0,5424	−0,5154	0,3535	1,0419	−0,0686	−0,4210
Poland	−0,7902	−1,0056	−0,3445	−0,5037	−0,9393	−0,2111	−0,5444	−0,2647	−1,8881
Portugal	−0,5409	−0,5812	−0,7424	1,2149	1,9571	1,3139	0,0365	−0,2123	−0,5781
Romania	−1,0122	−1,1201	−0,2309	−0,4290	−0,3035	−0,7761	−1,8830	−2,3992	−0,6848
Slovenia	−0,3897	−0,5221	−0,5908	0,0194	−0,3742	−1,5103	0,4853	0,3430	−0,7704
Slovakia	−0,6487	−0,9418	−0,7803	−0,2422	−1,0100	−0,6630	−0,9597	−1,3103	−0,7553
Finland	0,5433	0,9914	0,9059	0,8787	2,2397	0,7489	1,4029	1,1970	0,4006
Sweden	0,9142	1,2061	0,7543	1,1776	2,3104	1,3139	0,9969	1,2552	1,3633
Reference point for calculating Euclidean distances	3,1783	1,6047	1,8910	1,9621	2,3104	1,4266	1,6321	1,3920	1,8869

Source: the authors' own research.

2) The formation of the reference point Z_{0i} (z_{01}, z_{02}, z_{03}..., z_m). Since the proposed indicators are stimulants, i.e. have a direct positive impact on the attractiveness of the country to intellectual migrants, the maximum values of the indicator are chosen for them:

$$\mathrm{Z_{0i}} = max\ \mathrm{z_{ij}},\ \text{and}\ \epsilon\ \mathrm{I}, \quad (3)$$

where I is the sum of indicators of stimulants.

3) The construction of the Euclidean distance, which characterises the distance of the value of each indicator to the reference point:

$$d_{0i} = \sqrt{\sum_{i,j-1}^{n,m} (Z_{ij} - Z_{0i})^2} \quad (4)$$

where d_{0i} is Euclidean distance of the value of the indicator to the reference point;

4) The calculation of a taxonomic indicator that reflects a comprehensive assessment of the attractiveness of EU countries (K_i):

$$K_i = 1 - \frac{d_{0i}}{d_0} \quad (5)$$

$$d_0 = \overline{d_0} + 2 \cdot \sigma_0, \sigma_0 = \sqrt{\frac{\sum (d_{0i} - \overline{d_0})^2}{n}} \quad (6)$$

where K_i is a comprehensive assessment of the attractiveness of an individual EU country for intellectual migrants, $\overline{d}_0$ is the arithmetic mean of the corresponding Euclidean distance and σ0 is the standard deviation of the corresponding Euclidean distance.

Table 6 Calculation of an integrated assessment of the attractiveness of EU countries for intellectual migrants.

Country	$(d_{0i} - \overline{d_0})^2$									$\sum (d_{0i} - \overline{d_0})^2$	Euclidean distance	K_i
Belgium	7,5957	0,2186	5,1686	5,7174	1,4423	1,6869	0,0222	0,0845	2,4738	24,4100	4,9406	0,787
Bulgaria	18,7419	8,5916	4,1094	8,0624	10,5604	5,3608	6,9369	5,6355	8,4683	76,4673	8,7446	0,623
Czechia	13,7182	5,6734	1,3356	1,3414	6,4680	4,8516	1,3413	6,2354	2,5152	43,4801	6,5939	0,716
Denmark	3,7860	0,1316	0,2426	1,1739	7,2067	0,1560	0,0000	0,9638	0,0000	13,6606	3,6960	0,841
Germany	7,4829	0,0346	1,9655	4,3774	3,9128	0,5391	0,6021	1,3184	3,4814	23,7140	4,8697	0,790
Estonia	14,7207	5,2077	0,3675	3,7744	6,4680	4,8678	5,3839	0,0421	1,5919	42,4241	6,5134	0,719
Ireland	1,2090	0,5469	0,0000	0,8724	2,4155	0,0032	2,1787	0,0000	0,4647	7,6904	2,7732	0,881
Greece	14,2172	4,2853	15,8287	16,8897	7,9852	5,3608	3,0302	2,9369	9,5561	80,0901	8,9493	0,614
Spain	11,6823	2,6192	7,0350	9,6160	3,3738	0,0797	4,8550	2,4046	8,0174	49,6829	7,0486	0,696
France	8,6825	0,8673	7,9685	11,8144	4,4917	1,5433	1,0678	0,4981	2,1583	39,0920	6,2524	0,731
Croatia	16,1965	6,8047	12,5513	5,3656	11,0246	7,0447	6,2951	7,9574	7,1310	80,3710	8,9650	0,614
Italy	10,7125	1,8728	10,4954	8,7115	3,9128	0,6247	1,9771	7,6580	6,7543	52,7190	7,2608	0,687
Cyprus	11,1350	4,3682	4,1865	12,3337	10,1063	2,6819	10,6904	1,7194	0,4140	57,6354	7,5918	0,673
Latvia	15,9997	6,7953	2,9073	8,2760	11,9828	5,6258	8,2107	1,6896	4,1290	65,6161	8,1004	0,651
Lithuania	15,1530	6,6097	0,6331	1,8090	11,9828	5,1022	5,0297	0,2185	6,9706	53,5087	7,3150	0,685
Luxembourg	0,0000	0,0000	0,9336	0,0000	2,4155	0,0000	0,3570	0,1780	0,1019	3,9860	1,9965	0,914
Hungary	15,7586	6,5785	7,5464	1,9109	9,2279	12,2603	2,7326	6,5175	7,8191	70,3518	8,3876	0,639
Malta	12,4513	3,6732	4,6646	1,0943	7,2067	0,5391	8,2813	1,5932	0,3101	39,8137	6,3098	0,728
Netherlands	5,7681	0,0533	0,5459	2,0156	4,1972	0,4592	0,4561	0,3805	0,9797	14,8557	3,8543	0,834
Austria	7,1496	0,0375	2,0732	2,0156	7,9852	1,1514	0,3484	2,1334	5,3264	28,2207	5,3123	0,771
Poland	15,7496	6,8141	4,9977	6,0,803	10,5604	2,6819	4,7375	2,7448	14,2506	68,6170	8,2835	0,643
Portugal	13,8326	4,7782	6,9348	0,5583	0,1248	0,0127	2,5459	2,5737	6,0761	37,4372	6,1186	0,736
Romania	17,5606	7,4247	4,5024	5,7174	6,8323	4,8516	12,3563	14,3733	6,6137	80,2323	8,9573	0,614
Slovenia	12,7307	4,5234	6,1596	3,7744	7,2067	8,6251	1,3153	1,1004	7,0613	52,4967	7,2455	0,688
Slovakia	14,6464	6,4850	7,1358	4,8589	11,0246	4,3663	6,7178	7,3025	6,9812	69,5185	8,3378	0,641
Finland	6,9436	0,3762	0,9705	1,1739	0,0050	0,4592	0,0525	0,0380	2,2089	12,2279	3,4968	0,849
Sweden	5,1265	0,1589	1,2921	0,6156	0,0000	0,0127	0,4035	0,0187	0,2742	7,9022	2,8111	0,879

Source: the authors' own research

The integrated indicator calculated using this method can exhibit values in the range from 0 to 1: the closer the resultant value approaches the unit, the higher is the level of attractiveness of the country for intellectual migrants (**Table 6**).

An integrated assessment of the attractiveness of EU countries for intellectual migrants and their ranking by this indicator in 2020 is shown in **Fig. 1**.

The results show a significant differentiation of EU countries based on the level of attractiveness for intellectual migrants. The distribution is in the range of 0.6-1, suggesting significant interest of potential intellectual migrants in these countries. Luxembourg currently ranks highest and is the only country with a score above 0.9. EU countries with an integrated score of 0.61-0.70 are at the end of the ranking, making up the largest group. This group includes the countries with the largest number of migrants from neighbouring countries with a lower level of economic development, particularly, Ukraine —Poland, Lithuania, Latvia and Italy.

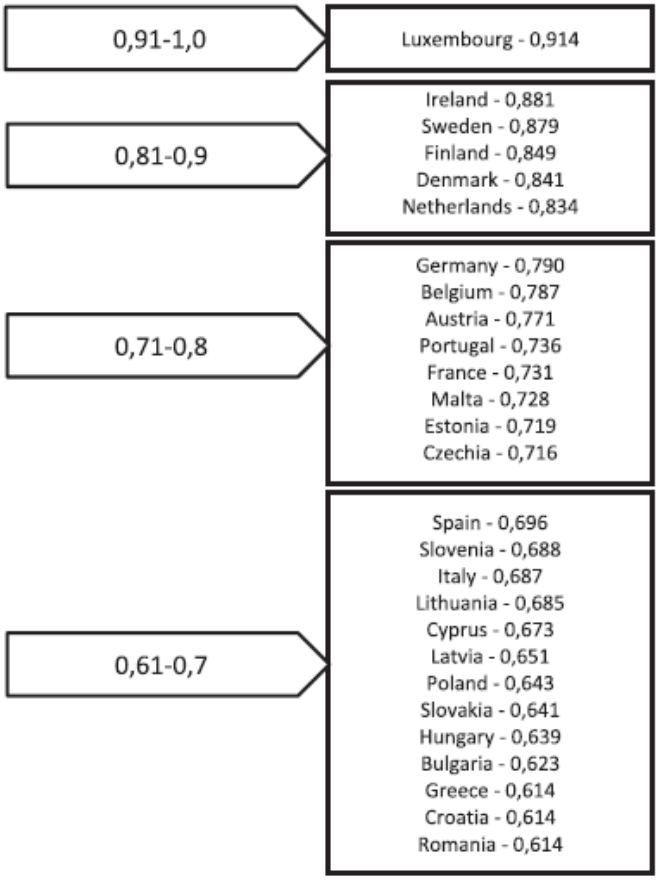

Fig. 1. Integrated assessment and ranking of EU countries by the level of attractiveness for intellectual migrants in 2020.

Source: the authors' own research.

5. Discussion

With the growth of global economy, intellectual migration and the factors that influence it are attracting increasing attention. This is not unexpected because developed countries that base their economic success on knowledge and innovation compete to attract talent and understand its value in terms of future growth. 'Intellectual migrants work in jobs critical to innovation and technological progress and contribute to stronger economic growth by creating additional jobs and improving living conditions for all' (**OECD, 2019a; Castelli, 2018**).

Economic issues affecting the quality of life of migrants and their families, as well as their perception of their new environment by eliminating cultural, ideological and other barriers, are crucial for intellectual migrants. For such migrants, it is vital to develop their creative potential, particularly

through the demand for and support of research, which creates opportunities for professional development and selfrealisation, as evidenced by numerous works in the economic field (**Batyk** and **Rzeczkowski, 2020; Khan, 2021; Sekliuckiene et al., 2019**).

In addition, the research on the factors that attract migrants to certain countries is actively being conducted in international analytical projects. Intellectual migration is also included in relevant international indices illustrating current trends in skilled migration and their contribution to the development of components of a country's competitiveness by fostering talent (**INSEAD, 2021; IMD Business, 2021; MIPEX, 2021**).

It is worth noting that this indicator, together with 'talent influence', has the strongest correlation with the attractiveness of 'brains' (0.801 and 0.813, respectively). The results are in line with those of previous studies (**Schuler et al., 2011; Hatum, 2010; Khilji et al., 2015; Latukha** and **Veselova, 2019; Van Hear et al., 2018; Kerr, 2020**).

The population's income level and the amount of the statutory minimum wage also have a considerable effect. These findings corroborate the results of several previous studies (**Gibson** and **McKenzie, 2011; Rauhut, 2021; Dao et al., 2018; Sterck, 2019; Shumway** and **Otterstrom, 2015; Lapshyna, 2014; Prívara, 2021**). Thus, one may claim that at the current stage of development, the economic drivers of intellectual migration have the biggest impact on the attractiveness of countries for such immigrants. This argument is consistent with previous findings (**Carling and Collins, 2018; Straehle, 2018; Vandevoordt, 2018; Tan et al., 2021**).

When it comes to the relevance of social issues, tolerance towards migrants (0.741) is the most important. This fact is supported by the findings of several studies (**Kerr, 2020; Vandevoordt, 2017; Rabe** and **Haddeland, 2021; Hajighasemi** and **Oghazi, 2021**). Countries that foster peaceful relations between immigrants and indigenous peoples enjoy a competitive edge when it comes to luring intellectual migrants.

A peaceful environment is necessary for intellectual migrants to realise not only their professional potential critical but also the prospects for career progression (0.734) as observed in some studies (**Tvaronaviciene et al., 2021; Guo et al., 2021**). These findings concur with those found in the literature exploring environmental migration (**Hugo, 2011; Black et al., 2011; Omobowale et al., 2019; Lapshyna, 2014**).

However, further discussion is needed on the impact of EU tax systems on attracting intellectual migrants, as the choice of future employment also depends on taxes. For instance, for royalties, the rate of withholding tax is 20 % in Austria and 25 % in Belgium (**EY, 2021**). As a result, intellectual migrants may receive different pre-tax wages in each possible destination country. Significant changes can be made in political, economic and social drivers of migration, which change in a given country simultaneously with the tax rates. An example is changing policies regarding starting a business or promoting innovation (Curtis and Decker, 2018). A simulated 40 % increase in the income tax rate was shown to produce an approximately 48 % drop in the number of people filing patents (**Bell et al., 2019**).

Further discussions are also required regarding the current trends in the international labour market, including the effects of the COVID-19 pandemic and their impact on intellectual migration. The increase in remote working encourages the employment of educated workers without crossing the borders of their own country. As a result, more and more EU countries are offering remote work visas (**Work in Iceland, 2022; Ministry of foreign affairs, 2022**). The requirements for obtaining them vary depending on national policies which, in turn, make the country more attractive to intellectual migrants.

Although remote work contracts can help distribute talent more evenly around the world, they can also create a new kind of brain drain, from the local economy to a globalised remote economy. The problem is exacerbated in industries in which freelancers constitute a significant proportion of the workforce. In general, freelancers make up 16 % of the nation's workforce (**Freelancers Make Theatre Work, 2021**). Over 80 % of freelancers work in tech/data, communication/marketing and web/ photo/sound creation professions (**Malt and BCG, 2021**).

6. Conclusions

Intellectual migration, which has a significant impact on the economic and social prosperity of countries, does not lose its relevance among other areas of research in terms of economic and social progress. The factors influencing the attraction of migrants evaluated in our study and the integrated index of the attractiveness of countries developed based on these factors are useful for understanding the most important ways to increase the attractiveness of countries by improving the living and working conditions of migrants in the host country. Among the factors that are important for each country are the general level of economic development, increasing the residents' tolerance towards migrants, their integration into the new environment, creating conditions for the realisation of their professional potential and opportunities for career advancement.

By analysing the distribution of EU countries on the complex indicators of attractiveness of countries for intellectual migrants, we can say that the EU countries are generally very attractive for migrants—the lowest value of the taxonomic indicator of migratory attractiveness is 0.61. Such values are attributed to the generally high level of economic and social development in the EU countries, which reduces the distance from the benchmarks in the groups of leaders on certain partial indicators. At the same time, the application of our proposed method of assessing the migration attractiveness of countries allows for determining the reserves for each partial factor, analysing the best European experience in socio-economic processes and the change of leaders in each area considered within the taxonomic indicator. The results obtained in this study may have implications for understanding the main factors driving intellectual migration in Europe. This study presents a novel method for indexing intellectual migration attractiveness. Policymakers need an accurate and up-to-date indicator to monitor intellectual migration because of the implications and impacts on both global and national economies. Our work provides a theoretical and empirical background to develop an international, comparable indicator able to monitor global and national intellectual migration.

This study is limited by the fact that it explores only ‘macro’ factors of intellectual migration, although it is well known that ‘micro’ factors are equally important. Furthermore, ranking various heterogeneous indicators across countries may suffer from possible statistical bias and other issues related to ranking and taxonomic approach. Despite these limitations, the findings of this study are important because we propose a novel method to assess intellectual migration attractiveness. We suggest that future studies should also examine ‘micro’ factors affecting intellectual migration by extending the sample of our study to countries outside the EU using a panel vector autoregression model or panel dynamic modeling.

European governments should implement measures to increase the attractiveness of the EU for intellectual migrants. Such programmes should focus on formulating and implementing public policies to create favourable conditions for the immigration of such professionals by simplifying visa procedures, developing both public and state immigrant support services, providing adequate living conditions with families and educating and taking care of immigrant children. Positive overall political attitudes towards migrants should also be developed, in particular, by disseminating information on

the ethnic, socio-economic and cultural-historical characteristics of donor countries, as European immigrants' attitudes towards non-European immigration are positively associated with the attitudes expressed by natives in their home country.

These findings have been obtained by the authors based on statistical analysis. It would be useful to supplement the proposed actions aimed at increasing the attractiveness of the EU countries for intellectual migrants by using a comprehensive sociological review of migrants' attitudes towards these measures. Their perception may create a holistic view of the problem. However, we consider the availability of appropriate information as a limitation in our study. To fill the gap in knowledge, we would like to continue similar research involving researchers from other countries in the EU. We find this direction useful for our future investigations of the problem.

References

Akimov, O., Karpa, M., Parkhomenko-Kutsevil, O., Kupriichuk, V., Omarov, A., 2021. Entrepreneurship education of the formation of the e-commerce managers professional qualities. Int. J. Entrep. 25 (7), 1-8.

Alshoubaki, W., Harris, M., 2021. Multiple streams theory: insight into the global compact on migration. J. Int. Stud. 14 (1), 74-88.

Andersson, K., 2019. Digital diaspora: an overview of the research areas of migration and new media through a narrative literature review. Hum. Technol. 15 (2), 142-180. Apostu, S.-A., Vasile, V., Chivu, R., 2020. The analysis of push factors in case of physicians migration from Romania. LUMEN Proc. 14, 467-482.

Batyk, M., Rzeczkowski, D., 2020. Cross-border cooperation at the external border of the European Union in the context of political, economic and social conditions: the case of the Polish-Russian neighbourhood, equilibrium. Q. J. Econ. Econ. Policy 15 (4), 833-871.

Bell, A., Chetty, R., Jaravel, X., Petkova, N., Reenen, J., 2019. Do tax cuts produce more Einsteins? The impacts of financial incentives vs. exposure to innovation on the supply of inventors. In: CEP Discussion Papers dp1597. **https://www.nber.org/ system/files/working_papers/w25493/w25493.pdf**.

Bilan, Y., Sergi, B.S., Simionescu, M., 2019. Migration expectations and geography of post-soviet Ukraine. Oecon. Copernic. 10 (4), 603-625.

Black, R., Adger, W.N., Arnell, N.W., Dercon, S., Geddes, A., Thomas, D., 2011. The effect of environmental change on human migration. Glob. Environ. Chang. 21, S3-S11. **https://doi.org/10.1016/j.gloenvcha.2011.10.001**.

Carling, J., Collins, F., 2018. Aspiration, desire and drivers of migration. J. Ethn. Migr. Stud. 44 (6), 909-926. **https://doi.org/10.1080/1369183X.2017.1384134**.

Castelli, F., 2018. Drivers of migration: why do people move? Journal of Travel Medicine 25 (1), tay040. **https://doi.org/10.1093/jtm/tay040**.

Curtis, E., Decker, R., 2018. Entrepreneurship and state taxation. In: FEDS Working Paper No. 2018-003. **https://www.federalreserve.gov/econres/feds/files/2018003pap.pdf**

Dao, T.H., Docquier, F., Parsons, C., Peri, G., 2018. Migration and development: dissecting the anatomy of the mobility transition. J. Dev. Econ. 132, 88-101. **https:// doi.org/10.1016/jjdeveco.2017.12.003**.

EC, 2021. Annual Net Earnings Euro. **https://ec.europa.eu/eurostat/databrowser/view/EARN_NT_NET_custom_1744137/default/table?lang=en**.

EC, 2021. Gross Domestic Expenditure on R&D. **https://ec.europa.eu/eurostat/databrowser/view/sdg_09_10/default/table?lang=en**.

EC, 2021. Gross domestic expenditure per capita. **https://ec.europa.eu/eurostat/databrowser/product/page/SDG_08_10**.

EC, 2021. Participation rate in education and training (last 4 weeks) by sex, age and citizenship. In: Foreign Country. **http://appsso.eurostat.ec.europa.eu/nui/show.do? dataset=trng_lfs_12&lang=en**.

EC, 2021. Share of R&D Personnel and Researchers in Total Active Population and Employment. **https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd_p_pers lf&lang=en**.

EU, 2018. Addressing Brain Drain: The Local and Regional Dimension, 150 s. **https://cor.europa.eu/en/engage/studies/Documents/addressing-brain-drain/addressing-brain-drain.pdf**.

EY, 2021. Worldwide Personal Tax and Immigration Guide 2020-21. **https://www.ey.co m/en_gl/tax-guides/worldwide-personal-tax-and-immigration-guide**.

Franc, S., Ceh Casni, A., Barisic, A., 2019. Determinants of migration following the EU enlargement: a panel data analysis. S. East Eur. J. Econ. Bus. 14 (2), 13-22.

Freelancers Make Theatre Work, 2021. The Big Freelancer Report. **https://freelancersmaketheatrework.com/wp-content/uploads/2021/03/The-Big-Freelancer-Report. pdf**.

Fries-Tersch, E., Jones, M., Sioland, L., 2021. Annual Report on Intra-EU Labour Mobility 2020, 207. European Union.

Gibson, J., McKenzie, D., 2011. The microeconomic determinants of emigration and return migration of the best and brightest: evidence from the Pacific. Journal of Development Economics 95 (1), 18-29. **https://doi.org/10.1016/j. jdeveco.2009.11.002**.

Guo, L., Duan, X., Li, X., Yang, W., Ren, Y., Guo, Y., 2021. Does a higher minimum wage accelerate labour division in agricultural production? Evidence from the main riceplanting area in China. Econ. Res. **https://doi.org/10.1080/1331677X.2021.1985573**.

Hajighasemi, A., Oghazi, P., 2021. Outcomes of Swedish migration and economics of the welfare system. Econ. Res. **https://doi.org/10.1080/1331677X.2021.1952089**.

Hatum, A., 2010. Next Generation Talent Management: Talent Management to Survive Turmoil. Palgrave Macmillan.

Ho, N.T.T., Seet, P.S., Jones, J., 2018. From brain drain and brain gain to brain circulation: conceptualzing re-expatriation intentions of Vietnamese returnees, internationalisation in Vietnamese higher education. High. Educ. Dyn. 51 **https:// doi.org/10.1007/978-3-319-78492-2_12**.

Hugo, G., 2011. Future demographic change and its interactions with migration and climate change. Glob. Environ. Chang. 21, S21-S33. **https://doi.org/10.1016/). gloenvcha.2011.09.008**.

IMD Business, 2021. School, World Talent Ranking. **https://www.imd.org/centers/world-competitiveness-center/rankings/world-talent-competitiveness/**.

INSEAD, 2021. The Global Talent Competitiveness Index. **https://www.insead.edu/sites/default/files/assets/dept/fr/gtci/GTCI-2021-Report.pdf**.

IOM, 2022. World Migration Report 2022. **https://reliefweb.int/sites/reliefweb.int/files/resources/WMR-2022-EN.pdf**.

Kerr, W.R., 2020. The gift of global talent: innovation policy and the economy. Innov. Policy Econ. 20, 1-37. **https://doi.org/10.1086/705637**.

Khan, J., 2021. European academic brain drain: a meta-synthesis. Eur. J. Educ. 56, 265-278. **https://doi.org/10.1111/ejed.12449**.

Khilji, S.E., Tarique, I., Schuler, R.S., 2015. Incorporating the macro view in global talent management. Hum. Resour. Manag. Rev. 25 (3), 236-248. **https://doi.org/10.1016/ j.hrmr.2015.04.001**.

Kosch, O., Szarucki, M., 2020. Transatlantic affiliations of scientific collaboration in strategic management: a quarter-century of bibliometric evidence. J. Bus. Econ. Manag. 21 (3), 627-646.

Kryshtanovych, M., Akimova, L., Akimov, O., Kubiniy, N., Marhitich, V., 2021. Modeling the process of forming the safety potential of engineering enterprises. Int. J. Saf. Secur. Eng. 11 (3), 223-230.

Labanauskas, L., 2019. Highly skilled migration from Lithuania: a critical overview of the period 1990-2018. istanbul Univ. Sosyoloji Dergisi 39 (2), 229-248.

Lapshyna, I., 2014. Corruption as a driver of migration aspirations: the case of Ukraine. Econ. Sociol. 7 (4), 113. **https://doi.org/10.14254/2071-789X.2014/7-4Z8**.

Latukha, M., Veselova, A., 2019. Talent management, absorptive capacity, and firm performance: does it work in China and Russia? Hum. Resour. Manag. 58 (5), 503-519. **https://doi.org/10.1002/hrm.21930**.

Malt, BCG, 2021. Freelancing in Europe 2021. Welcome to the New Work Order. **https:// web-assets.bcg.com/77/62/07a1c84f4be6b671ca10ec16f6f1/malt-bcg-freelancing-in-europe-2021.pdf**.

Mihăilă, A., 2018. Non-economic factors influencing highly-skilled migration. In: Review of Economic Studies and Research Virgil Madgearu, 1, pp. 27-53.

Miller, A.T., Kim, J.B., Roberts, M., Tyrrell, P., 2021. Index of Economic Freedom 2020. The Heritage Foundations. **https://www.heritage.org/index/pdf/2020/book/2020_IndexofEconomicFreedom_Highlights.pdf**.

Ministry of foreign affairs, 2022. Type of Visa. **https://vistos.mne.gov. pt/en/national-visas/general-information/type-of-visa#work**.

MIPEX, 2021. What is MIPEX? **https://www.mipex.eu/what-is-mipex**.

Mishchuk, H., Grishnova, O., 2015. Empirical study of the comfort of living and working environment-Ukraine and Europe: comparative assessment. J. Int. Stud. 8 (1).

Mishchuk, H., Roshchyk, I., Sufkowska, J., Vojtovi c, S., 2019. Prospects of assessing the impact of external student migration on restoring the Country's intellectual potential (Case study of Ukraine). Econ. Sociol. 12 (3), 209-219.

OECD, 2019. Migration Policy Debates, N019. **https://www.oecd.org/els/mig/migratio n-policy-debates-19.pdf**.

OECD, 2019. Recent Trends in International Migration of Doctors, Nurses and Medical Students. **https://www.oecd-ilibrary.org/social-issues-migration-health/recent-trends-in-international-migration-of-doctors-nurses-and-medical-students _5ee49d97-en**.

Oliinyk, O., 2020. Social responsibility assessment in the field of employment (case study of manufacturing). Nauk. Visnyk Natsionalnoho Hirnychoho Universytetu 3, 131-136.

Oliinyk, O., Bilan, Y., Mishchuk, H., Akimov, O., Vasa, L., 2021. The Impact of Migration of Highly Skilled Workers on The Country's Competitiveness and Economic Growth. Montenegrin Journal of Economics 3, 7-19.

Oliinyk, O., Bilan, Y., Mishchuk, H., 2021. Knowledge management and economic growth: the assessment of links and determinants of regulation. Central European Management Journal 3, 20-39.

Omobowale, A.O., Akanle, O., Falase, O.S., Omobowale, M.O., 2019. In: Migration and Environmental Crises in Africa. Oxford University Press, London, pp. 1-10. **https:// doi.org/10.1093/oxfordhb/9780190856908.013.32**.

Pantenburg, B., Kitze, K., Luppa, M., 2018. Physician emigration from Germany: insights from a survey in Saxony. BMC Health Serv. Res. 18, 341-341.

Pluta, W., 1977. Wielowymiarowa analiza porcownawcza w badaniach ekonomicznych: metody taksonomiczne i analizy czynnikowej. In: Pancstwowe Wydawnictwo Ekonomiczne, 1977, 150 s.

Popogbe, O., Adeosun, O., 2020. Empirical analysis of the push factors of human capital flight in Nigeria. journal of humanities and appliedSoc. Sci. **https://www.emerald. com/insight/content/doi/10.1108/JHASS-07-2020-0093/full/pdf**.

Prívara, A., 2021. Labour market efficiency and emigration in Slovakia and EU neighbouring countries. Econ. Res. 34 (1), 1850-1869. **https://doi.0rg/10.1080/133 1677X.2020.1858131**.

Rabe, T., Haddeland, H.B., 2021. Diverging interpretations of humanitarian exceptions: assisting rejected asylum seekers in Norway. J. Ethn. Migr. Stud. **https://doi.org/10.1080/1369183X.2021.1965469**.

Rauhut, D., 2021. Heading for a 'Better Life'? Why swedes move to Portugal. Nord. J. Migr. Res. 11 (3), 341-360. **https://doi.org/10.33134/njmr.441**.

Schober, P., Boer, Ch., Schwarte, L.A., 2018. Correlation coefficients: appropriate use and interpretation. Anesth. Analg. 126, 1763-1768.

Schuler, R.S., Jackson, S.E., Tarique, I., 2011. Global talent management and global talent challenges: strategic opportunities for IHRM. J. World Bus. 46 (4), 506-516. **https://doi.org/10.1016/jjwb.2010.10.011**.

Sekliuckiene, J., Jarosinski, M., Kozma, M., 2019. Entrepreneurial level factors of early internationalization: a cross country comparison. Engineering Economics 30 (2), 223-235. **https://doi.org/10.5755/j01.ee.30.2.21185**.

Shumway, J.M., Otterstrom, S.M., 2015. Income migration and income convergence across U.S. States, 1995-2010. Europe Growth Change 46, 593-610. **https://doi. org/10.1111/grow.12104**.

Sterck, O., 2019. Beyond the stars. J. Econ. Surv. 33 (5), 1409-1436. **https://doi.org/ 10.1111/joes.12330**.

Straehle, C., 2018. Justice in migration. Can. J. Philos. 48 (2), 245-265. **https://doi.org/ 10.1080/00455091.2017.1353880**.

Tan, J., Xu, J., Yu, J., Radu, V., 2021. Consumption and savings of migrants in China -social cohesion perspective. Econ. Res. **https://doi.org/10.1080/ 1331677X.2021.2010110**.

Tangcharoensathien, V., Travis, P., Tancarino, A., Sawaengdee, K., Chhoedon, Y., Hassan, S., Pudpong, N., 2018. Managing in- and out-migration of health workforce in selected countries in South East Asia region. Int. J. Health Policy Manag. 7 (2), 137-143. **https://doi.org/10.15171/ijhpm.2017.49**.

Trading Economics, 2021. Minimum Wages. Europe. **https://tradingeconomics.com/co untry-list/minimum-wages?continent=europe**.

Tvaronaviciene, M., Mazur, N., Mishchuk, H., Bilan, Y., 2021. Quality of life of the youth: assessment methodology development and empirical study in human capital management. Econ. Res. **https://doi.org/10.1080/1331677X.2021.1956361**.

Urbancski, M., 2021. Immigrant employees' management in the enterprises - evidence from Poland. Polish Journal of Management Studies (2), 24-24.

Van Hear, N., Bakewell, O., Long, K., 2018. Push-pull plus: reconsidering the drivers of migration. J. Ethn. Migr. Stud. 44 (6), 927-944. **https://doi.org/10.1080/ 1369183X.2017.1384135**.

Vandevoordt, R., 2017. Between humanitarian assistance and migration management: on civil actors' role in voluntary return from Belgium. J. Ethn. Migr. Stud. 43 (11), 1907-1922. **https://doi.org/10.1080/1369183X.2016.1245609**.

Vandevoordt, R., 2018. Judgement and ambivalence in migration work: on the (dis) appearance of dilemmas in assisting voluntary return. Sociology 52 (2), 282-297. **https://doi.org/10.1177/0038038516656318**.

Volintiru, M., Volintiru, C., Stefan, G., 2018. Young Romanians: entrepreneurs in their home country? EJIST 10 (2), 1-15.

Walton-Roberts, M., Runnels, V., Rajan, S.I., 2017. Causes, consequences, and policy responses to the migration of health workers: key findings from India. Hum. Resour. Health 15.

WBG, 2019. Migration and Brain Drain. **https://documents1.worldbank.org/curated/en/ 657051570692065211/pdf/Migration-and-Brain-Drain.pdf**.

WBG, 2021. Political Stability Index 2020. **https://databank.worldbank.org/databases.as px?orderby=alphabetical&direction=desc**.

Work in Iceland, 2022. Remote Work Visa FAQ. **https://work.iceland.is/working/re mote-work-visa-faq/**.

Aytac, S., Aydin, G.£., 2019. Analysis of the effects of pull and push factors on brain drain: an example of Turkey. J. Soc. Econ. Res. 6 (2), 74-84.