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**INTELLECTUAL MIGRATION AS A CHALLENGE OF INNOVATIVE
DEVELOPMENT OF NATIONAL ECONOMY**

Abstract. *The research is devoted to the problem of intellectual migration and its impact on the prospects of further development of national economy on innovative means. In the given research the author considers the tendencies of inclusion of Ukraine in the processes of migration of intellectual capital. Emphasis is placed on the transformation of forms of intellectual migration under the conditions of further intensification of globalization processes. The main challenges of "brain drain" are identified in the context of promotion of competitiveness of the country's economy. The problem of educational emigration is being investigated. The latter is consciously regarded by the author as an independent form of migration separated from the "brain drain". Trends, dynamics and retrospective analysis of the main causes of educational emigration of Ukrainian citizens are analyzed. Stable high demand of Ukrainian citizens for higher education was noted. At the same time, it is noted that more and more Ukrainians are realizing their pursuit to get higher education by entering Universities abroad as modern leaders in education. The main positive and negative consequences of educational emigration for Ukraine have been analyzed in terms of their influence on the ability to preserve national intellectual potential.*

Introduction.

Migration is a complicated socio-economic phenomenon, which, on the one hand, is a form of reaction to changes in society and, on the other hand, is a catalyst for these changes. Nowadays, migration processes are manifestation of the global population movement. Since labor is one of the main factors of production, the process of workforce relocation forms the socio-economic development of both the contributing country as well as the recipient country. Most notable is its role when it comes to intellectual migration, which is hotly debated and is of great concern to professionals in various industries, especially national ones.

Liberalization of migration policy of the leading countries of the world towards attracting additional intellectual capital, as a factor of promotion of sustainable innovative development of the economy, creates significant challenges for Ukraine in the context of preserving the intellectual potential of national science.

Highly developed countries of the world have approached the formation of the economic system by training the intellectual employee, with developed mental, analytical abilities, the ability to respond timely to the current world development trends, with a high level of self-organization, self-control and morality. It is the intellectual personality that determines the competitiveness of economic systems, is the basis of nations wealth and a key resource for their development. Nowadays, intelligence has become a factor that determines the pace of development of countries in the long run. The ability of a country not only to use its own intellectual resource effectively, but also to attract it from other countries, depends on whether it will be among the leaders of the world economy, or take a place on the periphery. That is why most of the developed countries of the world in their migration policy are focused on creating conditions for attracting additional intellectual capital.

The integration of Ukraine into the world and European economic space, among other things, involves it in the international process of intelligence movement, unfortunately, mainly as a contributing country of highly educated and qualified specialists.

1. "Brain drain" under the conditions of globalization of the labor market.

Paying tribute to Ukraine's considerable scientific and technical human resources, it should be noted that due to a number of political, economic and social problems, it is constantly losing its scientific elite. In the updated report of the World Intellectual Property Organization (WIPO) – The Global Innovation Index – in 2019, Ukraine was ranked 47th among 126 countries, losing 4 positions compared to the previous period. During the years of independence, Ukraine has lost about a third of its scientific potential and continues to lose it. In 1991-1995, 313 doctors of science have migrated from Ukraine, 105 of them have moved to the USA, 34 to Israel, 115 to Russia, 10 to Germany, 9 to Poland. From 1996 to 2014, 1781 Ukrainian scientists have obtained permanent residence abroad, including 1436 candidates of science and 345 doctors of science [1]. This process was the most widespread in 1996–2002. Since 2003, the intensity of the processes of emigration of scientists from Ukraine has significantly decreased, with slight variations in indicators. However, since 2013, due to the adverse effects of economic and military-political factors, intellectual migration has reached menacing proportions. In total, during the years of independence, the number of Ukrainian scientists has five times dropped from 295010 to 57630 people. Currently, the number of researchers per capita in Ukraine is three times lower than in EU countries. In particular, the number of scientific researchers in the employed population was 0.54% (for comparison in Denmark - 3.04%, in the UK 2.29%, in Cyprus - 0.87%, in Bulgaria - 1.09% and in Poland - 1,08%). At the same time, according to UNESCO, the number of people employed in science has increased by 20% over the last five years in the world economy.

The vast majority of highly educated Ukrainian specialists travels to developed countries in search of a better life and decent living. But there are a lot of people, who move because of a desire for self-realization, improvement of abilities and opportunities to gain new experience.

The long-term crisis of Ukrainian science, which is manifested in the significant deterioration of its material base, catastrophically insufficient funding, low salaries of scientific personnel, increases the desire of scientists to emigrate abroad.

According to open source information, funding for research per scientist is \$ 90 in Ukraine, while for Israel this indicator is \$ 1990, for the US - \$ 1471, for Estonia - \$ 1303.

It is worth mentioning that since innovation is a major driving force for scientific and technological progress and the engine of high value-added economy, they must be supported by budget financing. It is determined at the legislative level that at least 1.17% of Ukraine's GDP should be directed to the scientific sphere by the state. However, this standard was observed only during the first decade of Ukraine's independence. In 2007, the figure was 0.9% of GDP, and in 2018-2019 it was only 0.17% of GDP, which is 6 times lower than the legal minimum.

In general, national science funding from all sources is now 0.47% (less than a third of which is public funding) of national GDP (Pic. 1). For comparison, in the EU countries, in particular Sweden, Austria, Denmark, Germany, this figure reaches 3% of GDP, in Romania, Malta, Cyprus, Bulgaria - more than 0.5%.

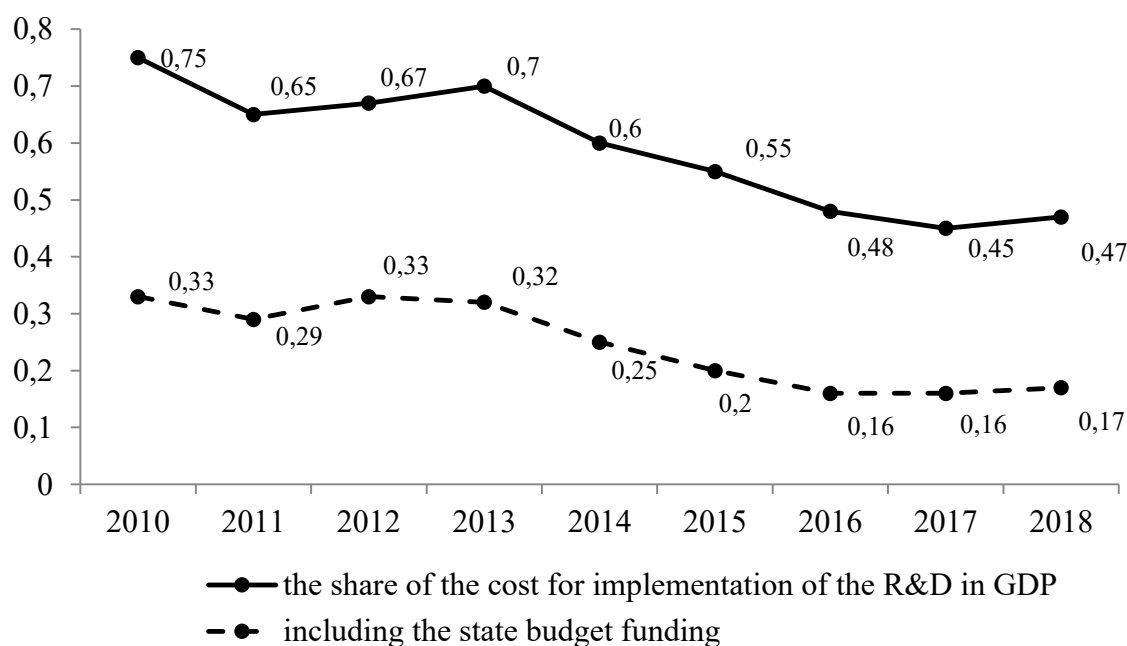


Fig. 1. Dynamics of financing of national scientific activity

Source: [2]

The main reason for the absence of motivation for Ukrainian citizens to realize their scientific potential in their country and the activation of emigration sentiment is primarily due to financial insecurity, which is due to other reasons, including poor working conditions and difficulties in professional realization. According to official statistics in 2018, 74.3% of employees in the field of professional, scientific and technical activities earned a monthly salary up to UAH 10,000 (just over EUR 300) [1]. Paradoxically, the average salary in science is lower than the average salary in the national economy.

In such circumstances, the scientific staff cannot, in fact, carry out their scientific activity, which they have studied at doctorate for and defended their dissertations. The “budget blockade” is forcing many scientists to either leave the country or change their profile and field of activity.

It should be noted that under the conditions of further intensification of globalization processes, there were certain changes of forms of intellectual migration. Along with “brain drain”, there are also new forms of relocation of intellectual potential, in particular, the “ideas drain”. The peculiarity of this form is that under the conditions of development of modern information and communication technologies, many scientists have the opportunity to participate in the implementation of scientific programs customized by foreign companies, without leaving the borders of their country. By this means, it is not the physical relocation of intellectuals, who generate ideas, but only the results of their work that becomes the property of foreign employers [3].

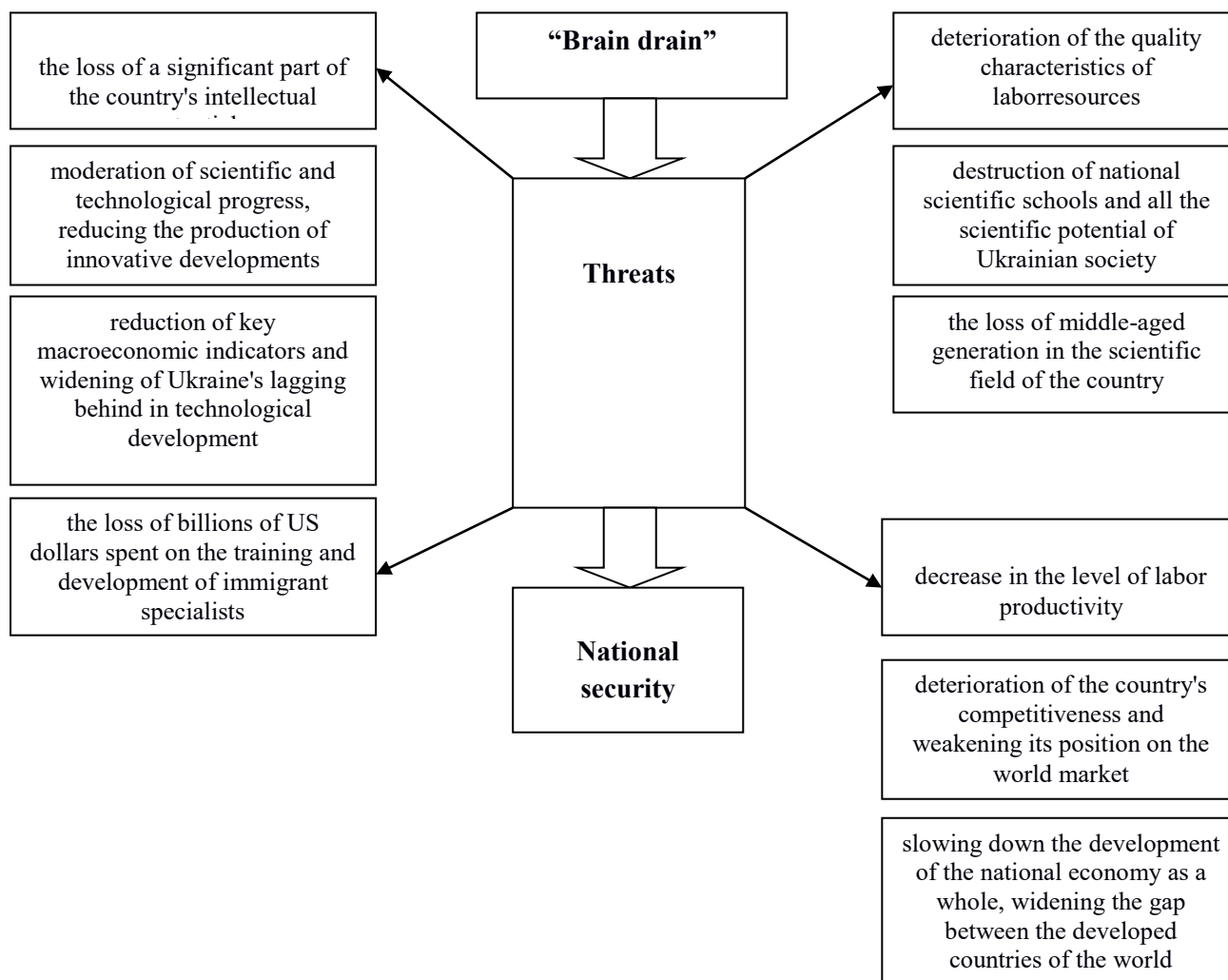


Fig. 2. The main threats of the “brain drain” for the Ukrainian national security
Source: [2]

With the implementation of visa-free regime and expanding opportunities to visit EU countries, more and more scientific and scientific-teaching staff are trying to find work abroad. In boundary regions, especially in the western region, there is a possibility of frequent migration of scientists, who might have been working for two weeks at the University or scientific center abroad and for two weeks in Ukraine.

All of the above mentioned affects Ukraine's world ranking positions, in particular, the World Intellectual Property Organization (WIPO) lowers Ukraine's rating of "human capital and research" from year to year. However, it should also be noted that, unlike labor migration, the most significant positive effects are the improvement of the country's balance of payments in consequence of increasing private transfers of labor migrants and reducing the stress in the national labor market by means of reducing unemployment rate. "Brain drain", based on its specific nature, does not create such advantages, but on the contrary, generates a trend of "leaching" of national intellectual potential, which will negatively affect the further socio-economic, innovative, intellectual development of the state. The biggest challenges caused by the "brain drain" are presented in Figure 2.

Negative trends in the field of intellectual migration give reasons to confirm that national labor market is characterized by signs of destruction of the intellectual potential of the nation.

2. Causes and trends of educational emigration

While researching the processes of educational emigration, we consciously view it as an individual, separated from the "brain drain" form. Educational emigration is transformed into the "brain drain" form, only in case the student decides not to return to the country of origin after completion of the study program.

The awareness by the majority of the countries of the fact that educational programs are gradually becoming the best resource for further recruiting of qualified personnel has led to the accelerated development of transnational higher education, which leads to increased academic mobility and the attraction of foreign students, which, in turn, became the basis for another form of intellectual migration, the so-called "intelligence circulation", which means the cyclical (periodic) movement of citizens abroad for study and further work with subsequent return to their homeland and improvement of their professional position thanks to the acquired skills and experience during their stay in the recipient country [5; 7; 8].

Ukraine's joining to the Bologna Process, increasing academic mobility of students, the threat of slowing down human capital, the loss of leadership positions of Ukrainian universities in providing competitive educational services during their studies and internships are increasing [6]. The international process of the movement of intelligence in the country, unfortunately, gives the right to characterize it as a contributing country, the main threat of which is the risk of loss of intellectual potential, the aging of the population because of young people leaving abroad to get European education and turning educational migration into emigration through education. Economic reforms in the country focus mainly on regulating the scale of official unemployment by facilitating inefficient employment.

The mechanism of regulation of educational emigration has not been created yet, which would contribute to the formation of highly qualified personnel, accumulation of intellectual capital, increase of scientific and technical potential in our country.

The beginning of the 1990s is marked for Ukraine not only by gaining independence, but also by a significant deterioration of the demographic situation, in particular the rapid decline in the birth rate. Beginning from 1990 and over the next ten years, the annual rate of decline in birth rates ranged from 4 to 5.5 percent. The lowest birth rates were demonstrated from 1999 to 2003, with a minimum absolute value in 2001. That year, 376 thousand children were born [1]. At the same time, in the same period Ukrainian citizens showed a significant increase in demand for higher education. The desire of young people to become students was realized by both old state and newly created private higher education institutions. Since 1993, the number of institutions of higher education and the number of their students has steadily increased. The highest number of higher education institutions of all levels of accreditation (technical schools, colleges, institutes, academies, universities) was in the 2003-2004 academic year - there were 1009. There were also changes in the structure of higher education institutions. From the 1990-2000 academic year, the number of technical schools and colleges and the number of their students is gradually decreasing, instead the number of students of higher education institutions - institutes, academies and universities - providing training for the “bachelor” and “master” degrees is increasing. In Ukraine, beginning from 2006-2007 and over the next five academic years, the number of such educational institutions is almost 2.5 times higher than in the 1990-1991 academic year. However, 2011-2012 and the next seven academic years show a negative dynamic in the number of higher education institutions, which provide training for the “bachelor” and “master” degrees. This process is the most active in the 2014-2015 academic year, in which the number of such higher education institutions is reduced by almost 15% to the corresponding indicator of the previous academic year, after which the situation is relatively stabilized [1].

Comparing the ten-year dynamics of the number of students who received the certificate of complete general secondary education and the number of students of educational institutions studying under the bachelor's and master's educational programs (Pic. 3) allows to state that with a relatively steady annual decrease in the number of secondary school graduates there is much bigger disproportionated decrease of students which happens with fast speed. After graduating from school, fewer and fewer students continue to attend higher education institutions in Ukraine.

On this basis, we can diagnose the presence of at least two problems of the national education system that face the students after graduation from secondary school: one part of graduates is unable to continue their education in higher education institutions due to the presence of certain social and financial problems, the other part is oriented towards obtaining education abroad.

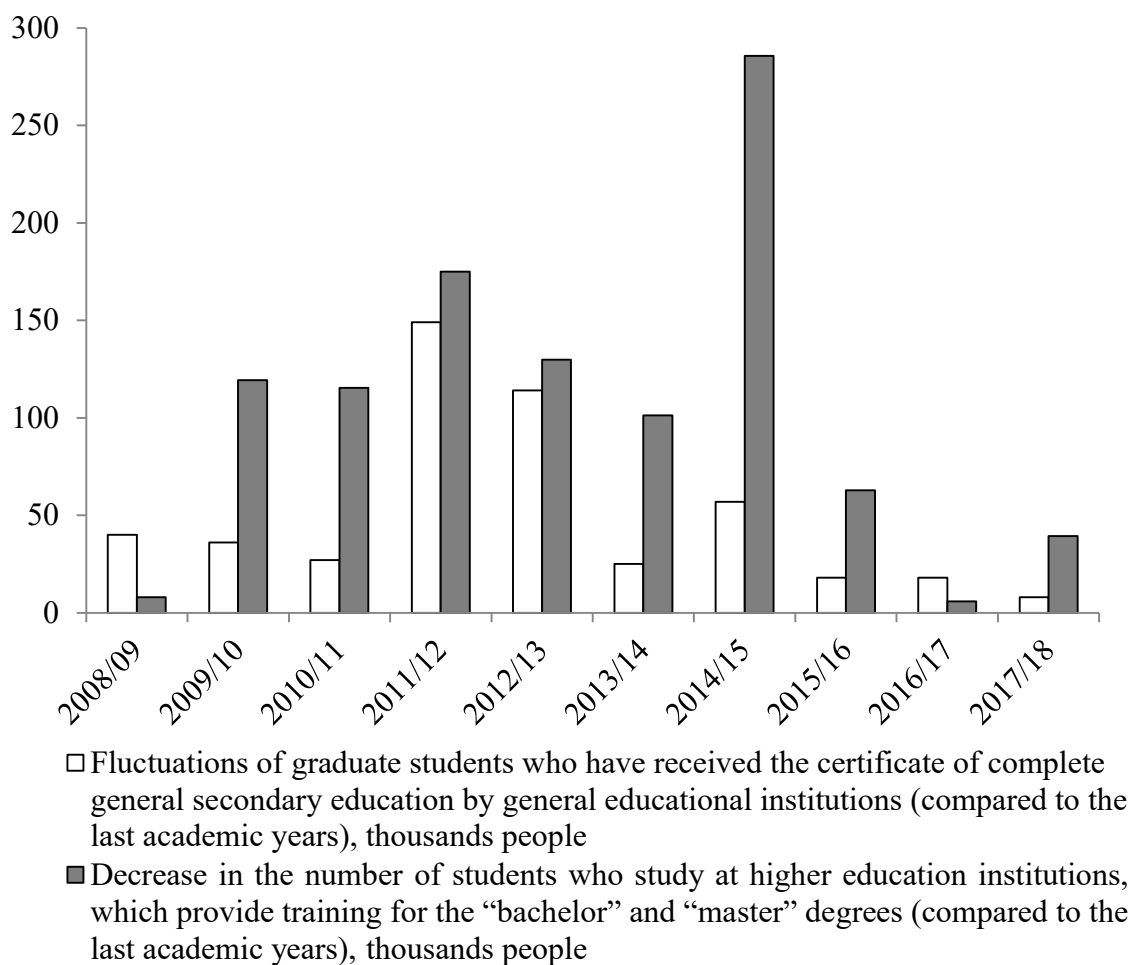


Fig. 3. Comparison of fluctuations of school graduates and decrease in the number of students in higher education institutions that provide training for the “bachelor” and “master” degrees

Source: [1]

In the 2017-2018 academic year, approximately 83,000 people with Ukrainian citizenship studied at foreign universities. Considering the fact that at that time in the Ukrainian higher education institutions (universities, academies and institutes of all forms of ownership) studied about 900 thousand at full-time departments, it means that about 8% of the total number of students studying at full-time departments of higher education institutions studied abroad. In total, in the last nine years the number has increased more than three times from 24,104 to 83,000 people. Most often students move to obtain education to Poland, Russia, Germany, Canada, Czech Republic, Italy, USA, Spain, Austria, France, Slovakia. These countries receive more than 90% of all Ukrainians, who study abroad [9].

It could be assumed that one of the reasons for intensifying the process of educational emigration is the desire of Ukrainians to obtain a more prestigious education than the educational institutions of the country of origin can provide.

In particular, no Ukrainian higher education institution was included in the TOP 200 of the World University Rankings published by Times Higher Education according to the results of 2017-2018.

However, according to the research carried out by the analytical center CEDOS, the largest increase of Ukrainian students abroad is provided in Poland, Russia, the Czech Republic, Slovakia, Austria, Italy, Spain, Canada and Bulgaria, whose higher educational institutions are also not presented at THE World University Rankings (with the exception of Canada, Italy and Spain). Thus, we believe that the argument for the prestige of education is not crucial in making a positive decision on educational emigration by Ukrainian citizens.

The main reasons for the choice of foreign educational institutions for further education by Ukrainian schools' graduates are:

- The desire to become the resident of the host country upon completion of studies. Within five to six years of study, students of Ukrainian descent “accustom” to the society of this country, know its language, legislation, and are fully adapted to the new environment by the beginning of the working period;

- The shortcomings and weaknesses of Ukraine's national education system, which give rise to a crisis of confidence in all educational institutions. These include, but are not limited to: the predominance of providing theoretical training (in fairness, it should be noted that it is sufficiently thorough) over the formation of practical skills; less flexible curricula from the point of view of the formation of desired competencies of future professionals compared to foreign higher education institutions.

- This leads to the fact that a large number of graduates do not work on their specialty; outdated material and technical facilities (especially higher education institutions that train specialists in technical specialties) and imperfect library and information support of the educational process, which complicates the process of obtaining “relevant” knowledge; the presence of a corruption component in some Ukrainian education institutions, which slows down the students choice to enter Ukrainian universities for the benefit of European ones without corruption; the mechanism of quality assurance of education in Ukraine is practically absent, which affects the employment problems of most graduates of Ukrainian higher education institutions. At the same time, the worst situation is in the institutions of vocational education and, as a result, there is a noticeable shortage of workers; lack of a coherent lifelong education system, which complicates the process of advanced training, retraining, non-formal education, etc.;

- Active promotion of foreign educational establishments at educational exhibitions in Ukraine, the policy of their responsible attitude towards their graduates in the direction of forming a network of professional contacts and employment upon completion of education, a system of incentives for the most successful and talented students;

– The price - quality of knowledge relationship. Quite often, when studying abroad, Ukrainian citizens pay a tuition fee no higher than in national higher education institutions, but instead receive more up-to-date knowledge.

A special attention should be paid to the category of Ukrainian citizens who study for PhD programs. Despite the lack of complete statistical information, according to the research carried out by the analytical center CEDOS in 14 countries, in 2015-2016 academic year, 1600 Ukrainians were enrolled in PhD programs in these countries. It should be noted that, due to the data paywall, there is no USA, Canada and Great Britain among these countries, which are hypothetically attractive to young Ukrainian scientists no less than France or even Germany. However, even these data make it possible to draw conclusions about the countries that are preferred by Ukrainians who want a degree. In Switzerland and Czech Republic, the number of Ukrainians doing their PhD has doubled in the last eight years. Germany, which has likely the largest number of Ukrainian graduate students, has increased their number by 20% over these years. In Poland, growth has been 40% only in the last three years. At the same time, in Ukraine itself, the number of PhD applicants is decreasing significantly. The dynamic has been acquiring the most negative character since 2014. If in 2013 the number of PhD degree applicants was 31482 people, unfortunately, it has decreased by 20% (to 24786 people) in 2017 [9].

The growth of level of educational migration is a direct consequence of globalization processes and the result of the liberalization of the migration policy of most countries of the world towards foreign students, which they see as a valuable resource of replenishment of their own human capital, moreover adapted to the host country conditions. We believe that when analyzing the potential consequences of educational emigration for Ukraine's national economy, it must be considered how important Ukrainian students are to the main recipient countries. Because this factor greatly determines the degree of liberalization of the migration policy of the countries regarding the further employment of foreign graduates, which will consequently influence their moods and intentions to return to their country of origin.

In the global population of students who are not studying in their countries of nationality, Ukrainians make up just over one hundredth. However, for each country of destination, the value of Ukrainian students is different. In particular, the number of Ukrainian citizens receiving education at German universities does not exceed 3%. At the same time, the number of Ukrainian students in Poland during the 2016-2017 academic year was 55% of the total number of foreign students. Taking into account the fact that most of them pay for their education and accommodation themselves, it could be seen as important investments for Poland, which offset the demographic decline and the departure of Polish youth to higher education institutions in other EU countries. Similar is the situation in Slovakia, in which the number of students of Ukrainian origin, according to preliminary data of the 2018-2019 academic year, have reached a third of the number of foreign students. The differences lie only in the fact that the vast majority of them study at the

expense of the Slovakian budget (that is, bring additional budgetary funding to Slovak universities), but instead pay for accommodation on their own. A rapid increase in the number of students from Ukraine is also observed in Bulgarian universities, especially in bachelor programs where graduates with certificates of Ukrainian schools make up almost 20% of those, who have completed secondary education outside Bulgaria. Russia does not receive any perceptible effect from the costs (consumption in the country) of the Ukrainian students, but the latter has a significant political role for the Russian Federation. In the 2014-2015 academic year (the period of active phase of political conflict between the two countries) quotas for enrollment of Ukrainian students in higher education institutions of the Russian Federation were increased ten times and reached up to 3 thousand places. However, over the past three years, 500 people have hardly been enrolled [9]. Based on the above mentioned, it could be predicted that higher education institutions of Central and Eastern Europe will continue to pursue an active recruitment policy towards the Ukrainian students in order to maintain or even increase the volume of the number of students.

Like any process, educational migration has its positive and negative effects on the economy of the contributing country. The main positive results of educational emigration are gaining “up-to-date” knowledge, gaining professional experience and expanding skills, establishing information and communication channels for further cooperation, additional motivation for learning foreign languages. For national higher education institutions, this is a significant incentive to increase the level of competitiveness in the provision of educational services. At the same time, the positive effects of educational emigration are realized if educational migrants return to their country of origin after completing the study program. Otherwise, educational emigration is transformed into the “brain drain” with all the negative effects inherent in this type of migration.

Conclusions.

Unfortunately, Ukraine now occupies one of the leading positions in the international labor market among contributing countries of labor (including intellectual) resources, and because of this actually participates in the economic development of other countries of the world. Continuing the trend of “leaching” of national intellectual potential will negatively affect the socio-economic, innovative, intellectual development of the state and will inevitably lead to intellectual defaults.

It should be noted that the main motivational factor of intellectual emigration is, first of all, dissatisfaction with the living conditions in Ukraine as a whole, the lack of interest of the authorities in attracting people with a high level of education, which will contribute to the development of the state. Therefore, first of all, it is necessary to take a number of measures aimed at macroeconomic stability and economic recovery. These include protecting labor rights, creating high-performing job places, good salary, social guarantees, government support for lifelong learning, etc.

Obtaining higher education abroad should be considered as a potential opportunity upon completion of studies to obtain better living conditions, to realize their own professional potential in Ukraine.

Generating and creation of competitive human capital, capable to create innovative national economy, should become the main goal of current transformation processes in the scientific and educational sphere of Ukraine. To slow down the negative tendencies requires, first of all, functioning of effective state policy in the field of science and education, availability of competent and highly skilled labor potential, development of innovations in the socio-economic sphere.

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