"Brain Drain": dynamics and state management mechanisms of countermeasures in the conditions of European integration of Ukraine

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Abstract Study of the peculiarities of the "brain drain" in the conditions of a full-scale war between Russia and Ukraine, as well as consideration and formation of management decisions regarding potential re-emigration policy, especially in the context of the academic community (teachers and scientists). The key methodological basis was the interdisciplinary approach, which made it possible to apply the work of both political scientists and state managers, as well as economists, sociologists, and psychologists, to the given problem. Dialectical and comparative methods were also important, which made it possible to reveal the contradictions and specifics of the implementation of the state policy of preventing "brain drain" and "brain gain". The authors considered data from sociological surveys, as well as statistical data published by the National Academy of Sciences of Ukraine and the Ministry of Education and Science of Ukraine, which made it possible to identify a kind of regularity – in both cases, approximately 10% of scientists/teachers were outside the borders of our country. Considering the project of the state policy of "brain growth" (more precisely, re-emigration), it was established that recommendations in this context should be formulated not only for the donor country itself but also for migrants, the recipient country, and international organizations. Using the work of not only specialists in public management and administration but also related humanities – sociology, psychology, and philosophy, makes it possible to reveal the problem of "brain drain" in our country in a multilevel and comprehensive way, thereby seeing in this problem not only a purely sociopolitical aspect but also personal and existential. Management challenges related to this issue are not only in the formation of re-emigration policy but also in preventing (or at least minimizing) academic migration in the future, which should be based on such key points as social partnership and tolerance.

Keywords: Brain drain, academic migration, state policy in Ukraine, managerial challenges

1. Introduction

The term "brain drain" was introduced by the British Royal Society to describe migration processes among scientists and engineers during and after World War II. "Brain drain" is one of the constituent parts of the intellectual migration of the population as a two-way process that includes "brain gain" and "brain drain". Analysis of the works of these scientists shows a difference of opinion regarding which specialists should be included in the category of "brains", as well as which types of migration should be classified as "brain drain". Generally, brain drain is a complex process of mass emigration in which specialists, scientists, and skilled workers leave the country or region for political, economic, religious, or other reasons.

At the beginning of the full-scale Russian invasion (February 24, 2022), it was believed that the problem of "brain drain" could have negative consequences in the short term. However, a year later, in April 2023, representatives of Ukrainian higher education institutions, who participated in the webcast of the European Association for International Education, expressed their fear that as a result of aggression, significant destruction, and forced migration, Ukrainian higher education in the long term will face the problem of brain drain (Ukraine support).

2. Literature Review

However, it should be noted that this problem actually arose from the beginning of independence, especially at the beginning of the XXI century. This is evidenced by the scientific work of a number of Ukrainian scientists: Kondratieva (2022), Moysey (2015), Moskalchuk (2021), Nagorna (2021), Onyshchuk (2020), Roschina (2017), Utiuzh (2023), Veselska (2017), Shatska (2022), and others. In particular, they studied international labor migration in the context of socioeconomic development, labor migration in Ukraine, regional socioeconomic aspects of migration, features of the modern stage of...
international migration processes, the theoretical foundations of effective decision-making in the management of migration processes, new social risks of international migrant workers in the conditions of the transition to a postindustrial society, and modern migration processes as a factor of political transformations (Polischuk and Nagorna, 2021).

However, there are currently no studies on the peculiarities of the migration movement of representatives of the academic circle (teachers and scientists) as a result of the full-scale war and the ways of their re-emigration to Ukraine.

3. Results

3.1. Specifics of the course of "brain drain" in war conditions: from numbers to tasks

Escaping the war, thousands of people were forced to emigrate from Ukraine to European and other countries. According to UN data, as of September 7, 2022, the number of refugees from Ukraine exceeded 11.16 million people, of which almost 36% received temporary protection in Europe (Ukraine Refugee, 2023). At the same time, according to the Office of the United Nations High Commissioner for Refugees from February 28, 2022, and as of August 30, 2022, almost 5.3 million people returned to Ukraine (Overview, 2022).

Human potential, considered mainly at the macroeconomic level, is the key driving force of the economic growth of the state. Among a number of indicators of human potential, the Human Development Index has significant informational value, which is based on three important and interrelated components: human health, in particular, average life expectancy; an integral indicator of education level; and the economic standard of living of the population (GDP volume per person at purchasing power parity in US dollars). Losses of human potential due to migration, death, mutilation, and internal displacement, together with the destruction of infrastructure, lead to a reduction in GDP per person, which is 2021, according to the World Bank, at the level of 4,835.6 $USA (GDP). According to the State Statistics Service of Ukraine, real GDP in quarter II. 2022 decreased by 37.2% compared to the corresponding period of 2021 (State Statistics, 2021).

If we talk specifically about the brain drain in numbers, then first, it should be noted that:
– "more than 60,000 foreign students left Ukraine since the beginning of the war" (Shatska, 2022);
– "according to data as of the beginning of May 2022, a significant number of scientists of the National Academy of Sciences of Ukraine (at least 10% – approximately 1,900 people) left for other countries" (Zvit, 2023).

In turn, if we are talking about teachers who work in higher education institutions of the Ministry of Education and Science, then as of October 2022, after more than six months of war, the situation was as follows (See Table 1) (Informational and analytical, 2022):

<table>
<thead>
<tr>
<th>Indexes</th>
<th>Researchers</th>
<th>Teachers (assistants, associate professors, professors)</th>
<th>Young scientists</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of people according to the staff list</td>
<td>6665</td>
<td>43474</td>
<td>6686</td>
</tr>
<tr>
<td>The number of persons whose place of residence did not change during the period of martial law</td>
<td>3581</td>
<td>33120</td>
<td>5137</td>
</tr>
<tr>
<td>The number of people who changed their place of residence and left the territory of Ukraine to other countries</td>
<td>326</td>
<td>3514</td>
<td>456</td>
</tr>
<tr>
<td>The number of people who changed their place of residence and left the territory of Ukraine to other countries and continue to carry out scientific, scientific-technical, scientific-organizational, scientific-pedagogical activities</td>
<td>296</td>
<td>3202</td>
<td>435</td>
</tr>
<tr>
<td>The number of persons who changed their place of residence and were relocated to other regions of Ukraine in connection with the conduct of military operations in the region, the threat of temporary occupation, etc.</td>
<td>484</td>
<td>4566</td>
<td>794</td>
</tr>
<tr>
<td>The number of people who have changed their place of residence and moved to other regions of Ukraine in connection with the conduct of military operations in the region, the threat of temporary occupation and continue to carry out scientific, scientific-technical, scientific-organizational, scientific-pedagogical activities</td>
<td>482</td>
<td>4500</td>
<td>788</td>
</tr>
<tr>
<td>The number of persons with whom employment contracts have been suspended/labor relations have been terminated</td>
<td>28</td>
<td>187</td>
<td>25</td>
</tr>
</tbody>
</table>

As we can see, in fact, 10% of employees of higher education institutions went abroad, and the same percentage of highly qualified specialists moved to another place of life but remained in Ukraine. In general, it should be emphasized that this type of migration has consequences not so much for the host society as for Ukrainian society, that is, the state that "supplies" migrants. The most tangible of them are social (in the broadest sense) consequences.
On the economic plane, emigration, on the one hand, reduces the supply in the labor market, giving a chance to obtain desired jobs and wages to those who remain, which is, of course, a positive thing in the face of high unemployment and the emigration of low-skilled workers. On the other hand, intellectual emigration weakens the scientific and technical potential of the country and slows down its scientific and, as a result, socioeconomic growth. In addition, in the latter case, the state loses the opportunity to compensate its expenses for the education and qualification of emigrants (Roschina, 2017).

However, we can note that the majority of respondents before their forced departure from Ukraine worked in various sectors of the economy; in particular, 11% indicated the educational sphere. Despite the general desire of the vast majority of respondents (87%) to return to Ukraine, 13% plan to do so in the near future, and for only 3%, education is the main reason for returning to Ukraine. Instead, 63% will remain in the countries where they are currently located, and 70% have not decided exactly when they will be able to return (Displacement, 2022).

Despite everything, it is possible to note a kind of "positive" in the (temporary) "brain drain", since the gained experience of being in other cultural environments and involvement in the education system of other countries will provide much more advantages in the future both to each specific person and to the country in general. The fact that Ukrainian students and teachers abroad are a kind of "communication bridge" (ambassadors) of their Ukrainian higher education institution in the host university is also important, which has positive consequences for both sides. In this context, we can mention the "KNU-ambassador" project, in which more than 40 participants took part, and talked about "existing or future prospects of cooperation of the University with other foreign universities" (Bugrov, 2022).

Therefore, in the long run, there may be a local "brain drain" when people go abroad for education and/or professional experience and then return to their home country, hoping to improve their professional status. Among supporters of the "brain drain" concept, there is an opinion that this form of labor migration will be a priority in the future because:

- First, the possibilities of remote "brain drain" are greatly expanded when a person does not physically cross the territorial borders of his country but transfers the results of his mental work to foreign customers;
- Second, the procedure for finding potential employees and employers is facilitated;
- Third, the employee receives a salary (albeit often bypassing the state income tax system) and spends at least most of it within the country of permanent residence, thereby, albeit minimally, stimulating the development of the domestic economy;
- Fourth, the process of establishing the necessary contacts is accelerated.

Table 2 The attractiveness of higher education institutions for study and academic careers.

<table>
<thead>
<tr>
<th>Measures to achieve the goal for 2022</th>
<th>The state of implementation of measures</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision of conditions for the practical implementation of obtaining a junior bachelor’s degree in the field of knowledge for the individualization of the educational trajectory of the acquirer</td>
<td>Not done</td>
<td>Corresponding changes to the legislation have not been developed</td>
</tr>
<tr>
<td>Development and implementation of the professional program development of academic managers</td>
<td>Not done</td>
<td>The program has not been developed</td>
</tr>
<tr>
<td>Adoption of the Law of Ukraine &quot;On Adult Education&quot; and the creation of a modern regulatory framework for its implementation</td>
<td>Partially completed</td>
<td>The draft Law &quot;On Adult Education&quot; was approved by the Government and submitted to the Verkhovna Rada of Ukraine in February 2022. In January 2023, the document was adopted in the first reading.</td>
</tr>
<tr>
<td>Normative settlement of the issue of recognition of learning results of nonformal and informal education in the system of formal education</td>
<td>Done</td>
<td>In February 2022, the Procedure for recognizing the results of nonformal education was approved, and informal education.</td>
</tr>
<tr>
<td>Motivating students to develop intellectual and creative discourses, social initiatives, and projects.</td>
<td>No progress indicators are set</td>
<td>In October 2021, the MES released for public discussion the draft law &quot;On Amendments to the Law of Ukraine “On Scientific and Scientific-Technical Activities” regarding the development of research infrastructure and the provision of state support to young scientists. This project proposed to introduce the definition of postdoctoral studies and regulate the status of postdoctoral students. However, the draft law was not considered by the Government and was not submitted to the Verkhovna Rada of Ukraine.</td>
</tr>
<tr>
<td>Regulation at the legislative level of the issue of the implementation of postdoctoral research programs in institutions of higher education and scientific institutions.</td>
<td>Not done</td>
<td></td>
</tr>
</tbody>
</table>

Therefore, we can potentially see the advantage of "virtual brain drain" over "real movement of brains" abroad together with their owner. However, the advantages probably end there because the employer receives all possible bonuses and...
dividends from the use of the created information product or provided information service. Thus, today, it can be confidently stated that the "brain drain" has become a particular form of colonialism - so to speak, informational colonialism. If traditional colonies supplied the metropolis with raw materials and bought finished products, now countries with a weaker economy supply the skills and abilities of their best specialists to "stronger" countries in exchange for buying the right to use the products created by these specialists.

Such factors, processes, and numbers caused the fact that after a year, more than half of the goals achieved in the field of education were not achieved (Higher education, 2023).

3.2. Re-emigration of educators and scientists: management challenges

As a result of terrible destruction (in all aspects of social life) in the conditions of martial law and threats to our country, the Government presented the Plan for the Recovery of Ukraine [Plan vidnovlennya Ukrayini, 2022], the implementation of which will make it possible to create the basis for the future reconstruction and development of the national economy over the next 10 years. Within this document, which consists of 15 national programs, the main areas of recovery of the destroyed economy in both the war and postwar periods are defined. One of the priority areas of the Recovery Plan of Ukraine is "Education and Science" [Plan vidnovlennya Ukrayini, 2022], for the development of which it is planned to allocate $5 billion to the USA. The integration of science, education and business is extremely important to ensure the economic growth of the state in the face of military threats.

The process of re-emigration of citizens of any country is multifaceted and multistep; therefore, for the successful completion of the task, all parties are involved in the process, for example:

- country of origin or citizenship;
- actually migrants;
- host country;
- (in some cases) international organizations.

All three (four) parties must work harmoniously and be interested in the process.

If at least one of the links obstructs the procedure or deviates from the outlined action plan, the negotiated conditions and the re-emigration process will be postponed.

In the field of migration policy, the following measures should be taken in the near future:

- "intensify the negotiation process regarding the conclusion of agreements on mutual employment of citizens and their social protection with countries where the number of labor migrants - citizens of Ukraine is the largest;"
- promote the acceleration of amendments to agreements on cooperation in the field of labor migration and social protection of labor migrants;
- implement measures to adopt draft agreements regulating labor movement with EU countries;
- to intensify the negotiation process with the aim of implementing the provisions of the PACE Resolution "Consequences of the enlargement of the European Union for the freedom of movement of citizens of the member states of the Council of Europe" into the national legislation of these states;
- to promote the dissemination of information for citizens of Ukraine about the possibility of legal employment abroad through mass media;
- to create mechanisms to prevent the lowering of the qualifications of highly educated specialists as a result of their stay in low-skilled jobs abroad;
- to prepare a comprehensive state program for the regulation of migration processes with a clear division of powers and responsibilities of the central bodies of executive power and local self-government;
- reduce the scale of illegal labor migration of the population outside the country;
- carry out work on the introduction of analytical reporting to control the return to Ukraine of citizens who were provided with tourist services;
- to create effective mechanisms for the legalization of incomes of citizens working abroad: to develop a mechanism for creating favorable conditions for the transfer of remittances to Ukraine from labor migrants – citizens of Ukraine;
- to study the system of taxation of labor migrants of other countries and to standardize the regime of taxation of incomes of labor migrants - citizens of Ukraine» (Veselska, 2017).

Therefore, in the economy of Ukraine as a donor state, the following most important positive external economic effects of international labor migration should be singled out:

- relaxation of tension in the local labor market;
- investments of potential migrants in education;
- reduction of the unemployment rate;
- reducing the budget burden;
- growth of population income due to migrant transfers;
- increase in demand on the domestic market for goods and services due to transfers;
- investments in migrant families;
– the possibility of the return of qualified workers and reduction of the poverty level (Moysey, 2015, p. 10).

However, it should be noted that not only the donor country should pay attention not only to the donor country but also to other participants in potential re-emigration processes (see Table 3).

<table>
<thead>
<tr>
<th>Subject</th>
<th>Recommendations on possible actions and measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migrant</td>
<td>– the legality of migration;</td>
</tr>
<tr>
<td></td>
<td>– compliance with ethics;</td>
</tr>
<tr>
<td></td>
<td>– compliance with procedures;</td>
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<tr>
<td></td>
<td>– support of patriotism and national spirit;</td>
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<td></td>
<td>– do not abuse help;</td>
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<td></td>
<td>– replenishment of the state budget.</td>
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<tr>
<td>Country refuge</td>
<td>– not to hinder re-emigration processes;</td>
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<tr>
<td></td>
<td>– conclusion of agreements on termination of temporary protection;</td>
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<td></td>
<td>– road assistance;</td>
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<tr>
<td></td>
<td>– organization of consultation points;</td>
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<tr>
<td></td>
<td>– agreements on readmission.</td>
</tr>
<tr>
<td>International organizations</td>
<td>– to be a neutral and disinterested player where necessary;</td>
</tr>
<tr>
<td></td>
<td>– readmission of Ukrainians;</td>
</tr>
<tr>
<td></td>
<td>– financing provision;</td>
</tr>
<tr>
<td></td>
<td>– provision of initial capital for the establishment of a business.</td>
</tr>
</tbody>
</table>

4. Conclusions

Therefore, we can conclude the following:

– The regulation of academic migration (from "brain drain" to "brain gain") is a specific sphere of public and social policy that is implemented by a complex of administrative, legal, and economic methods. Therefore, for the implementation of its effective management, an interdisciplinary approach is necessary, using various approaches and principles based on the results of research, including sociological and psychological approaches.

– By attracting specialists and experts in social and international politics, education, and science, a number of draft laws should be developed in Ukraine that would reasonably and effectively implement remigration policy, especially in the context of "brain gain". The international community plays a significant role in regulating this process. Many international agreements adopted under the auspices of the UN relate specifically to the problems of international labor migration and the potential process of re-emigration;

– economic methods of regulation both "brain drain" and "brain gain" include forecasting, planning, material incentives and sanctions, financing, and lending, and the use of such economic categories as wages, prices, etc. Economic methods of regulation are a system of techniques and methods of direct influence on socioeconomic processes in compliance with the requirements of economic laws under certain commodity-monetary relations with the use of economic tools.

Ethical considerations

Not applicable.

Conflict of Interest

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References


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