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The mechanism of the intensification of Ukrainian integration into the European Union on the basis of intellectual element

Annotation

The article analysed the current state of the Ukrainian intellectual potential with the purpose of further intensification of the relations between our country and the European Union. The dynamics of Ukrainian migrant workers of different spheres of activities was presented. The Ukrainian labour migrants by their country of residence were discussed. However, the advantages of Ukraine as the source of scientific labour force were provided in order to develop the interaction between Ukraine and the EU.

Keywords

labour force, labour migrants, scientific labour force of Ukraine, Ph.D. and doctor habilitatus scientists

1 The statement of the problem

The process of Ukraine's accession to the world community has objective preconditions and requires a comprehensive solution to the tasks of building a democratic, rule-of-law state and achieving a high standard of living for its citizens. In its turn, the expansion of the prospects for Ukraine's integration into the world economic process provides an opportunity to address important socioeconomic problems of further development and is an important factor in determining the prospects and goals of integration.

Ukraine belongs to the European community and shares its fundamental values not only geographically but also thanks to its historical features of cultural and historical as well as economic development. The geopolitical significance of Ukraine's accession to the European Union is virtually identical to the final overcoming of the consequences of the political and economic division of the European continent. As Ukraine has chosen the European vector of its integration, the positive effects of this process should be assessed in terms of the contribution that our state can make to the development of the EU. The human resources of the scientific and industrial (especially in high technologies) fields are the resource

potential that the European Union must take into account in the context of the Ukraine integration.

2 The latest scientific progress and publications review

Leading foreign and domestic scholars devoted their researches to the role of scientific potential in the growth of countries' economies, namely E. Denison, P. Drucker, P. Krugman, E. de Soto, J. Schumpeter, O. Amosha, M. Dolishny, I. Yegorov, L. Lisogor, V. Liashenko, Yu. Makogon, V. Novikov, I. Petrova, L. Semiv, and many others. An increasing global competition requires assessing the state of researches and innovations performed by Ukrainian scientists and their prospects as the human capital of the highest quality for the European Union.

The issues of labour migration have been discussed in the works of G. Borjas, G. Clark, J. Mincer, V. Moiseenko, A. Vishnevsky, A. Volkov, etc. The Ukrainian scholars, namely A. Gaidutsky, V. Yevtukha, E. Libanova, O. Malinovskaya, A. Poznyak, V. Sadova, V. Troshchinsky, O. Khomra, etc., devoted their works to the financial issues of migration processes, interethnic relations, and the improvement of migration policy. However, the studies are still missing the justification of the necessity of labour migration of Ukrainians as a

priority direction for the intensification of the relations with the European Union, especially the country's scientific potential.

3 The purpose and problem of research

The intensification of integration involves the application of diverse directions. However, from the whole range of intensification measures, it is necessary to choose the most acceptable and relevant for practical implementation at the present time. This requires conducting research and preparing economically sound methodological and applied recommendations on the intensification of integration under highly effective use of human potential. It is also necessary to develop an economic mechanism to stimulate the intensification of integration. This determined the choice of the topic, the setting of the purpose, the development of tasks, and the content of the study. Thus, the purpose of the article is to provide a justification of the Ukraine's role as a highly-qualified labour remitter to increase the efficiency of the European Union's development on the basis of rational intensification in a market economy.

4 The results of the research

In the conditions, when the status of the state in the international arena is largely determined by its scientific and technical potential, the migration of highly qualified specialists from Ukraine or to Ukraine acquires a strategically important value. The relations between Ukraine and the EU were ratified in the form of free trade area agreement. It means the easing and promoting a free movement of goods produced within the certain territory.

In the system of developed market economy, as defined by K. Marx, the economic form of the labour force is a commodity. The workforce becomes a commodity only under certain conditions. According to Marx (1887), less than two conditions are necessary for the transformation of labour force into a commodity. The first is the legal freedom of the carriers of the workforce, which gives the opportunity to dispose of their abilities and property at their own discretion. However, such a condition is not enough. A free commodity producer will not sell his/her labour, but with the help of own means of production, he/she organizes the production of goods. Therefore, only by depriving him/her of such an opportunity by alienating the means of production, the transformation of the labour force into a commodity accomplishes.

According to the State Statistics Service of Ukraine (2017a and 2017b), as of 2017, the population of Ukraine made up 42.4 million people, showing a decrease by 0.4% and 0.8% compared to 2016 and 2015 respectively. Within 9 months of 2017, the number of employed persons amounted

for 16.2 million (just 38.2%), while in 2016, this figure was higher by 0.3%, and in 2015 - by 1.3%. Among the employed people, labour migrants consisted 1.3 million within 2015-2017. The majority of labour migrants were employed in the construction (37.9% or 493 thousand workers), followed by the workers in the activities of households (16.1% or 209.2 thousand people) and employed in agriculture, forestry, and fisheries (13.6% or 176.2 thousand people).

If to compare the survey to the previous reporting period of 2010-2012, there is an increase in the labour migrants by 8% in the current period. According to the International Labour Migration (2013), in 2010-2012, the most common types of economic activity of Ukrainian migrant workers were also construction (45.7% of the total amount of employees) and the activity of households (18.3%). Other spheres, where migrant employees mainly worked, were agriculture (11.3%) and trade (9.1%). It is obvious that the distribution of migrants by the types of economic activity has slightly changed in favour of other types of economic activities, for example, transport, warehousing, postal and courier activities (a growth of 23.3%), as well as trade (an increase by 8.3%) and industrial sector (where the number of migrants almost tripled). Figure 1 below shows the dynamics of Ukrainian migrant workers by the type of economic activity.

If according to the survey of 2010-2012, Russian Federation was the leader among employers for Ukrainians with 511 thousand of labour migrants (International Labour Migration, 2013), then, the research of 2015-2017 shows that Poland occupied the leading position, employing 506.5 thousand people (The State Statistics Service of Ukraine, 2017b). Russian Federation took the second place, giving jobs to 342.4 thousand Ukrainians. In 2010-2012, among the representatives of the European Union countries, Italy, Czech Republic, Spain, Germany, Hungary, and Portugal accepted totally 434.1 thousand Ukrainians for work (International Labour Migration, 2013). In 2015-2017, Italy, Czech Republic, Portugal, Hungary, Finland, and Germany gave jobs to only 330.1 thousand Ukrainians, while the United States and Israel became strategic working destinations for 37.4 thousand people from Ukraine (The State Statistics Service of Ukraine, 2017b).

The biggest share of labour migrants performed simple works in both periods under analysis. The simplest occupations require knowledge to perform intellectually simple tasks, using hand tools, in some cases, with considerable physical effort. Professional tasks are related to the sale of goods on the street, preservation and protection of property, cleaning, washing, ironing, and performing of low-skilled jobs in the mining, agricultural, fishing, construction, and industrial sectors, etc. (Profstandart, 2012). If in 2010-2012, Belarus was the leader by offering

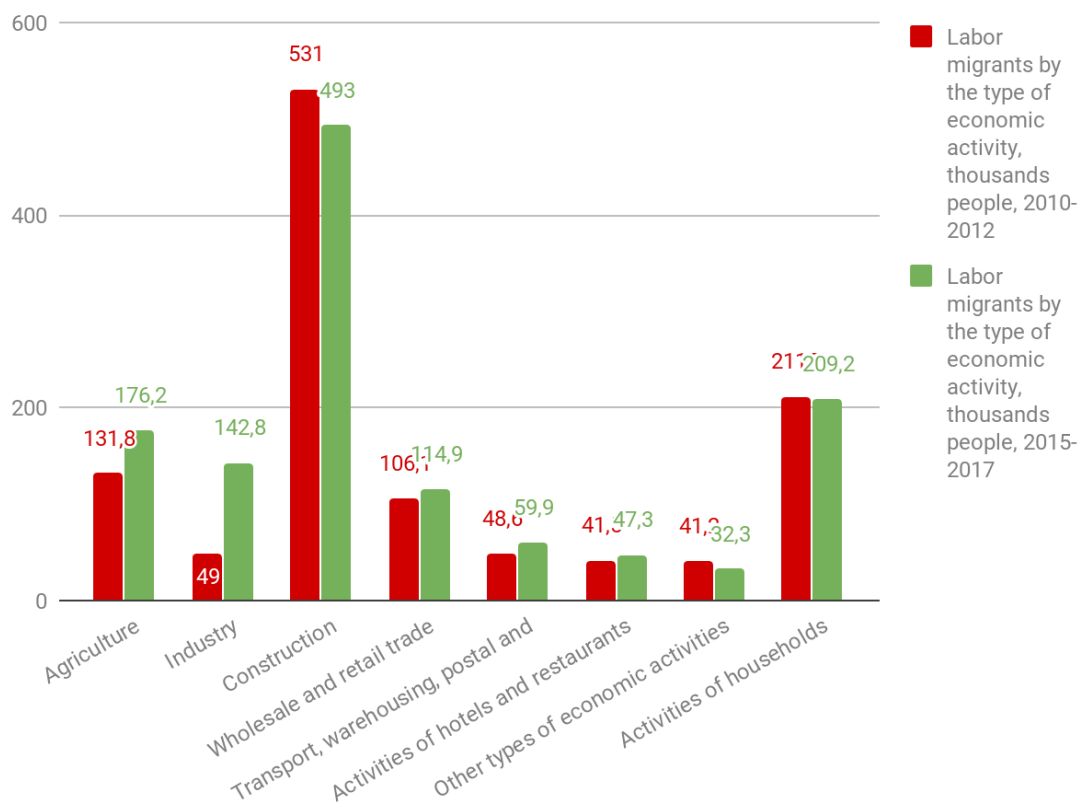


Figure 1 The dynamics of ukrainian migrant workers by the type of economic activity (international labour migration, 2013; The State Statistics Service of Ukraine, 2017b)

TABLE 1 Ukrainian labour migrants by the country of residence and professional groups (International Labour Migration, 2013; The State Statistics Service of Ukraine, 2017b)

	Total, thous. people		including by professional groups, %											
	2010-2012	2015-2017	Professionals, specialists, and technical staff		Employees of trade and services sector		Skilled workers in agriculture, forestry, fish farming, and fishing sectors		Skilled workers with a tool		Workers on maintenance, operation and control over the work of technological equipment, assembly of equipment and machinery		Simplest professions	
			2010-2012	2015-2017	2010-2012	2015-2017	2010-2012	2015-2017	2010-2012	2015-2017	2010-2012	2015-2017	2010-2012	2015-2017
The number of labour migrants, who worked abroad, total	1,160.9	1,275.6	10.8	9.1	16.5	14.3	2.7	1.7	24.7	25.9	6.2	7.4	39.1	41.6
including by the countries of residence														
Poland	167.8	493.5	1.7	2.4	28.1	17.0	1.1	0.7	10.8	23.8	2.4	4.4	55.9	51.7
Russian Federation	496.1	341.0	8.2	13.2	13.8	7.6	5.0	4.5	36.9	37.1	7.8	10.6	28.3	27.0
Italy	153.3	146.0	7.0	2.4	18.9	29.4	1.6	1.0	2.4	3.8	1.3	9.6	68.8	53.8
Czech Republic	150.5	116.2	22.1	10.2	9.4	11.0	-	-	29.8	36.1	7.4	2.8	31.3	39.9
United States	-	23.5	-	65.5	-	-	-	-	-	-	-	34.5	-	-
Belarus	21.5	22.5	-	-	8.8	-	-	7.1	13.0	33.8	4.7	8.9	73.5	50.2
Portugal	21.7	16.7	6.5	13.8	13.8	9.6	-	-	13.8	11.4	-	-	65.9	65.2
Hungary	23.0	17.1	48.7	3.5	-	34.5	-	-	33.5	56.2	14.3	-	3.5	5.8

	including by professional groups, %													
	Total, thous. people		Professionals, specialists, and technical staff		Employees of trade and services sector		Skilled workers in agriculture, forestry, fish farming, and fishing sectors		Skilled workers with a tool		Workers on maintenance, operation and control over the work of technological equipment, assembly of equipment and machinery		Simplest professions	
	2010-2012	2015-2017	2010-2012	2015-2017	2010-2012	2015-2017	2010-2012	2015-2017	2010-2012	2015-2017	2010-2012	2015-2017	2010-2012	2015-2017
Israel	-	11.8	-	-	-	11.9	-	-	-	23.7	-	-	-	64.4
Finland	-	13.3	-	-	-	-	-	-	-	-	-	-	-	100
Germany	27.8	10.2	45.3	31.4	37.1	9.8	-	-	10.4	37.3	-	13.7	7.2	7.8
Spain	52.6	-	13.3	-	26.4	-	-	-	25.5	-	8.0	-	26.8	-
Other countries	46.6	63.8	11.6	34.6	7.1	11.0	3.9	-	14.2	20.2	17.2	11.8	46.0	22.4

this type of work (International Labour Migration, 2013), in 2015-2017, Finland took that position (The State Statistics Service of Ukraine, 2017b). In 2010-2012, the less number of simple workers were employed in Hungary (International Labour Migration, 2013), and in 2015-2017, the situation remained the same.

In 2010-2012, skilled workers with tools were employed mostly in Russian Federation, Hungary, and Czech Republic, while in 2015-2017 - mainly in Hungary, Germany, and Russian Federation. As for the workers in the sphere of trade and services, in 2015-2017, their number in the European Union members decreased by 16.8% in comparison with 2010-2012. In 2010-2012, nearly half of the labour migrants working in Germany and Hungary were professionals, specialists, and technical staff (45.3% and 48.7% respectively), and these countries had the smallest proportion of the simplest occupations (International Labour Migration, 2013). In 2015-2017, 65.5% of Ukrainian professionals, specialists, and technical staff worked in the United States, while Germany also remained an attractive employer for those categories of workers (with 31.4%) (The State Statistics Service of Ukraine, 2017b).

It can be said that the personnel today represents the main element of the scientific potential of the country. The nature of scientific activity as intellectual production determines the importance of the personality of the scientist in the creative process of forming new knowledge and preconditions. There are also the transformation of the problem of integrated development and improvement of the use of human factor into one of the most actual and acute problems of knowledge-based economics (International Organization for Migration (IOM) Mission in Ukraine, 2016). The number of researchers reflects the innovative potential of the population employed in the economy.

Speaking about the scientific labour force of

Ukraine, within 2010-2016, the number of employed persons in scientific organizations decreased by 46.3% from 182.5 thousand people to 97.9 thousand people (The State Statistics Service of Ukraine, 2017c). The main reason of such change is the exclusion of the employees from temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol, and parts of the zone of anti-terrorist operation. The data for 2016 were provided excluding scientific and pedagogical workers. In 2010, 46,685 persons had the diploma of Ph.D., while in 2016, this figure made up 20,208 persons due to the mentioned reasons (The State Statistics Service of Ukraine, 2017c). In 2010, 11,974 persons received the diploma of doctor habilitatus, while in 2016, there were 7,091 scientists of this qualification (The State Statistics Service of Ukraine, 2017c). In the relative ratios, the amount of doctor habilitatus scientists in the structure of the number of employees of scientific organizations increased from 6.6% to 7.2% in 2010 compared to 2016, while the amount of Ph.D. scientists decreased from 25.6% to 20.6% in 2010 compared to 2016 (The State Statistics Service of Ukraine, 2017c).

Nevertheless, the economic development of Ukraine took place within the framework of the de-industrialization of the national economy, which resulted in the domestic scientists being isolated from the industrial problems of world technological development, which, together with economic factors, stimulated the strengthening of their motivation for the emigration. According to the State Statistics Service of Ukraine (2015), in 2010, 31 Ph.D. scientists left Ukraine, and in 2014 - 42 persons. In 2010, the number of doctor habilitatus scientists, who moved abroad, made up 8 people, while in 2014 - 7 people (The State Statistics Service of Ukraine, 2015). In 2015, the number of scientists, who traveled beyond Ukraine for the purpose of internship, training, and advanced education, was 3.4 thousand

people, 3.3 thousand people were engaged in scientific research, and 343 persons - in the teaching (The State Statistics Service of Ukraine, 2016). The vast majority of trips (87.8%) were conducted for up to 3 months, 11% - up to one year, 31 persons left for more than 2 years (The State Statistics Service of Ukraine, 2016).

The OECD countries and the industrialized countries of the South Asian region, using the situation in the educational sphere of deindustrialized countries, implement an aggressive policy of attracting the most talented and promising scientists to work in their scientific and high-tech sectors (Humeniuk, 2013). In order to attract foreign scientific talents in these countries, special state programs have been adopted and implemented, which involve the creation of a large number of high-paying jobs directly for foreign specialists. Thus, highly qualified foreigners receive preferential conditions for adapting and obtaining citizenship, broad social support, etc. In many countries, the OECD has approved special quotas for the employment of foreign scholars, who have become part of the strategic doctrines of their socioeconomic development. In particular, in the countries of the European Union, this figure equals to 500 thousand vacancies (OECD & EU, 2016).

Scientists emigrate not only because the payment of their labour in Ukraine in comparison with other countries remains extremely low (although the material factor is still among the top priorities in the decision to leave) but also because it is impossible to fully implement their scientific and creative plans and projects in their home country (Bilan, 2017). After all, the insufficient level of funding for science and education predetermines the use of an outdated technical base, work in dilapidated buildings, the lack or low quality of technical support staff - laboratory assistants and other assistants. A corruption, bureaucracy, as well as clannishness in the system of science and education are also open secret and are the reasons prompting scientists to seek professional self-fulfilment abroad (Bilan, 2017). An important role is played by the social prestige of the profession of a scientist in Ukraine and in other countries.

A comprehensive assessment of scientific potential is of great importance for both current and foreseeable innovative development. The scientific potential of any area is vital when reaching a given level of innovative development of the regional subsystem and determines the degree of achievement of results that are predefined by the available opportunities. Solving the problem of ensuring the region effectiveness depends on the rational use of all its potential opportunities. The research and analysis of

scientific potential of Ukraine, especially the calculation of evaluation indicators, are necessary for the intensification of an innovative environment of the European Union. Therefore, it can be said that with the development of scientific potential, it is possible to achieve a certain level of development and innovation environment.

The most important indicators of the scientific and technical potential state of the country and the effectiveness of R&D are the number of publications and their citation. It should be noted that information on the use of R&D results is the most important economic indicator of the effectiveness of the innovation process in the country. The citation index is a powerful tool for assessing the effectiveness of the research organizations. The United States has the leading position by an absolute number of scientific publications and citations with a significant advantage.

American scientists publish more articles and get more quotes than their counterparts from other countries. According to the data from Scimago Journal & Country Rank (2017), in 2016, the number of citations to publications in the scientific journals cited in the SCOPUS for the United States was 740.6 thousand (maximum), China - 440.7 thousand, the UK - 248.2 thousand, while for Ukraine - 6.2 thousand. With this amount of citations, Ukraine occupied the 48th position among 233 countries. Since 2010, this number is the lowest, however, the position in the rating is among the highest. As a potential member of the EU, Ukraine would take the 20th place. Given that it will be the 29th country, this position means the country has effective results in the scientific area.

In 2012, the number of employees involved in the implementation of research and development as well as in the scientific organizations of the national academies of sciences of Ukraine amounted for 30.55 thousand (The State Statistics Service of Ukraine, 2014). The number of Ph.D. and doctor habilitatus scientists, who carried out research and development and worked at the organizations of the state sector of the economy, represented 77.5%. The number of scientists with degrees in the entrepreneurship sector was 8.4%, while in the higher education segment - 14% (The State Statistics Service of Ukraine, 2014).

Since 2012, the result is positive as there is an increase of researchers involved in the performance of scientific and technical work in the organizations of national academies of sciences of Ukraine by 17.3% to 35.83 thousand in 2016 (The State Statistics Service of Ukraine, 2017c). The total number of Ph.D. and doctor habilitatus scientists, who carried out research and development and worked at the organizations of the state sector of the economy and at an entrepreneurship sector, decreased by over 20% and 3.6% respectively (The

State Statistics Service of Ukraine, 2017c). However, such declines led to the increase in the staff engaged in the higher education sector - up to 39.1%.

An accounting of patent activity is a fairly standard tool for assessing the quality and productivity of research activities in the country. The quality of the work of researchers and the state of the country's scientific and technical potential is assessed by taking into account the number of registered patents in the domestic patent office and the number of international patent applications filed. During 2013, as a result of the activities of scientific organizations, 8,348 applications for the issuance of security documents for the objects of intellectual property rights were filed with the domestic patent office (in 2012, there number was 8,514), including 2,965 applications for inventions and 206 - plant varieties (in 2012 - 2,887 and 263 respectively) (The State Statistics Service of Ukraine, 2014). 90 patent applications were submitted to the patent offices of other countries, which is by 8.2% less than in 2012 (The State Statistics Service of Ukraine, 2014).

In 2016, 4,095 applications for inventions were received, including 2,233 from national applicants, whose activity decreased by 1.7% comparatively with the previous period (The State Statistics Service of Ukraine, 2017c). The share of applications from foreign applicants slightly decreased and amounted to 45.5% in the total number of applications (against 49.4% in 2015). In 2016, the US (479 applications, or 25.7%), Swiss (251, or 13.5%), German (230, or 12.4%), French (99, or 5.3%), Britain (82, or 4.4%), Japanese (68, or 3.7%), Luxembourgian (58, or 3.1%), Dutch (56, or 3.0%), Belgic (48, or 2, 6%), and Italian applicants (46, or 2.5%) were among the most active foreign applicants (The State Statistics Service of Ukraine, 2017c).

In general, the focus of the European Union should be based on the desire to preserve the part of scientists, who migrate to the United States. The US continues to be a recognized center of attraction for professionals from Europe and developing countries, despite the active development of scientific clusters in India and China. The USA is the main center of attraction for foreign scientists and highly qualified specialists, and this leadership has been very active in the last two or three decades. For the EU, the Ukrainian scientific labour force will bring additional contribution to the innovative activity in the form of inventions.

An important positive effect of attracting Ukrainian workers by the European Union is to reduce the cost of labour and the overall costs associated with its use. This effect is observed both with the use of legal as well as illegal migration. Reducing costs leads, firstly, to the growth of profitability of the organizations. Secondly, a growth of direct investments (including foreign

ones) is stimulated due to the availability of cheap labour. Thirdly, in the conditions of domestic and foreign market competition, a cheaper labour increases the competitiveness of the organizations and facilitates the output of goods and services to new markets (Grebeniuk, 2018).

It is necessary to consider promoting additional employment, creating additional jobs, and developing infrastructure, caused by the demand of foreign workers for goods and services. In this context, the growth of the share of wages of migrants, which they are used for domestic consumption, has a very positive effect. Also, a beneficial effect will be the accumulation of migrants' money on accounts in banks, since the bank deposit instrument allows investing these funds in the economy of the host state (Grebeniuk, 2018).

5 Conclusions

Human possibilities are limitless. This means that one or another economic subject can always raise its level of competitiveness through the development of human resources. The conditions of the post-industrial economy force to think about the development of the scientific potential of human resources, which, in turn, requires large investments. However, in the case of investment in human resources, it is impossible to make mistakes because they represent investments in science, education, development of the intelligence and creative abilities of the nation, maintenance of physical and psychological health of the population of the country, region, or participants of the organization. The effectiveness of such investments is enormous since they are investments in the future.

Therefore, solving the problem of becoming one of the most competitive countries in the world is the basis, on which further sustainable development of the country's scientific resources can be ensured. That is, the solution of this task should be considered not as an ultimate goal, but as a means to achieve a higher goal, namely to ensure the Ukraine's entry into the number of countries with the high level of human development, which will take much longer to achieve, because other countries will not stand still.

The significant investments in education, coupled with the development of complex technologies will further bring enormous economic and geopolitical effects. Thus, an enhanced cooperation between government agencies, the private sector, and universities is extremely important for the rapid development of the scientific potential of the country. In order to support this process, universities should facilitate the long-term cooperation of students with critical technological clusters by reforming their curricula in the field of technology, engineering, and mathematics.

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