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# Migration and Urbanization:

## Local Solutions for Global Economic Challenges

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# Table of Contents

**Section 2**
**Urbanization as a Reason for Global Economic Transformation**

# Chapter 5
# International Movement of Highly Skilled Professionals

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## ABSTRACT

*Science has become a direct productive force. Structural changes in the knowledge production world system as well as in knowledge economy geography are widely shown. Capital is slowly being shifted towards periphery, while its surplus (investment part) is transferred to other countries (where capital conditions are more attractive), thus leading to science funding increase in the countries that are already innovative leaders. Capital is always followed by intellectuals, highly skilled professionals, academic degree holders. A new type of economy development is possible due to human capital quality increase, in particular, thanks to knowledge concentration and science financing increase. In order to ensure knowledge concentration it is necessary to stimulate innovation activity, to regulate knowledge flows and brain migration, to develop the institutions that stimulate innovations and reduce agents' discrimination, to develop research schools, pursue a sustainable state innovative policy, modernize education processes. In the context of innovative economy and growing market competition both state's role and state responsibilities have strengthened.*

## INTRODUCTION

The "knowledge economy" concept was first introduced by F. Machlup in the last century. For quite a while, knowledge economy was perceived as an economic independent factor. For example, technological change effects on economic growth were estimated by R. Solow, C. Jones, T. Swan, P. Howitta, J. Grossman, E. Helpman. Innovative economy overall has been extensively studied in its various aspects by such foreign scientists as P. Drucker, J. Schumpeter, T. Hägerstrand, D. Audratsh, D. Weyl, R. Lucas, J. Ventura, I. Nonakoy, H. Takesh and others. This topic was also studied by such Russian scientists as

V. Makarov, N. Moiseev, S. Glazyev, G. Kleiner, etc. Nevertheless, despite a wide range of opinions already expressed, many issues of knowledge economy are still disputable.

Nowadays we can observe rapid knowledge economy actualization, for example, in terms of brain migration. Intellectual potential concentration (taking into account academic degree holders' skills as well as innovations' spatial distribution) determines the emergence of "knowledge externalities." The notion of the so-called "external effects" was introduced by P. Samuelson, however, A. Marshall, P. Romer and C. Arrow started applying this new concept specifically to knowledge. Studies on spatial knowledge externalities include the works by T. Hagerstand, the theory of international trade and geographical economics by P. Krugman, M. Fujit, E. Venables, the works on clusters by M. Porter, M. Enraig, J. Humphrey, D. Mailat, on territorial production systems -- by D. Maya etc. Thanks to all these research studies, sufficient attention has been paid to spatial development as a source of economic growth and synergy effects.

Contemporary global world has become more permeable, flows' mobility has increased, subjects' interdependence has also increased together with the range of economic activities. A significant contributing factor in this regard has been the growing popularity of telecommunications and networks' development (Defarges, 1996). The services sector expansion (through the development of intellectual, financial, information and communication technologies) has also contributed to the emergence of a new economic reality which is known now as "knowledge economy".

According to the Analytical Report of the Federation Council of the Federal Assembly of the Russian Federation, 25% of the workforce is currently engaged in the field of science and high technologies in developed countries (Almaev et al., 2005). In the US 8% of the population creates over 20% of the GDP as the country covers about 40% of the total global expenditures on research and development, while 66% of those present at the labour market have higher or incomplete higher education.

Therefore, the purpose of this research is to identify knowledge economy geography as well as to assess mobility factors of academic degree holders.

## METHODOLOGY

"Geospatial paradigm" definition has been proposed by Alaev back in 1983. At the same time, our approach is not abandoning Shumpeter's evolutionary paradigm representing a qualitatively new technological order as a fundamental factor for global changes all over the world. We propose a geoeconomic invariant here - a system of empirically measured factors reflecting the relationship structure, relatively unchanged in both temporal and spatial dimensions of geographic objects. Our attention here focuses on spatial effects and space synergy factors' identification.

Our study stems from economic theory, new institutional and spatial economics, strategic management together with a wide range of analytical tools application. The main research method is the systematic approach which allows geographical objects' representation as an integrated complex system characterized by a set of economic processes (formed on knowledge and information platforms) as well as behavior patterns' variability (as responses to geoeconomic competition). At the same time, economy is seen here as an institutionalized process.

Within the framework of a proposed approach, brain concentration characterizing science and determining economic space synergy is considered. We estimate knowledge economy mainly "at the entrance

point," similar to the approach proposed by Makarov in 2003. However, we also evaluate the intellectual potential indicators determining knowledge production nature and its direction.

Our main data sources have been the "UNESCO Report on Science: on the way to 2030" (UNESCO, 2015), Rosstat data and various research publications on the topic. Since we are interested in geoeconomic strategies, the analysis was made based upon a long-term strategic choice of geoeconomic development vector. The time interval selected for characterizing the intellectual potential is 2007-2014.

## GLOBALIZATION IN SCIENCE AND EDUCATION

In the post-industrial period the science (knowledge production) has become a direct productive force. At the same time, it is not only about large-scale economy's technological modernization but also about the fact that in the context of digital economy and information society development new threats and challenges arise manifested in global financial flows' changes and economic rent redistribution. A. Greenspan noted that technological development unpredictability requires special skills from employees - "conceptual thinking" skills and higher creative potential, overall higher intelligence level, the ability to formulate hypotheses, work critically with information, interpret information independently (as quoted by Sorokin, 2003, p. 211). These requirements are met by highly qualified academic degree holders.

Globalization in science and education is closely associated with education systems' and academic degrees' unification, information and specialists' spillovers. Undoubtedly, science internationalization does affect brain migration. Universities are becoming international institutions and student mobility and international cooperation are scaling up tremendously.

According to the UNESCO, foreign students' numbers in 2013 have reached 4.2 mln people (the level of 8 mln is expected to be reached in 2025) (UNESCO, 2015). Figure 1 shows the growth in foreign students' numbers, which is the basis for the future brain migration growth. Selection of the most successful foreign students by the resident companies accompanies the education process.

R. Norden noted that during the period from 1981 to 2003 in the list of the most cited scientists of the world every eighth researcher was born in a developing country, and 80% of them moved to developed countries afterwards (mainly the USA). In 2011 almost every second full-time graduate student in the US was a foreigner (Norden, 2012).

In 2010 A. Breinbauer from the Institute of Danube and Central European Studies defined several brain migration models (Breinbauer, 2010). According to A. Breinbauer, during 1960-2000 brain migration was mainly characterized as "brain drain" from the EU into the USA. The next stage of brain migration known as brain overproduction in donor states is called "brain overflow". This "brain circulation" between donor states and recipient states started in the 1990s, as soon as the Cold War was over and the "iron curtain" was opened up. After that period a new stage of re-immigration or homeland return happened - the so-called "brain regain". "Brain circulation" is mainly characterized by mobility which is determined as a global trend of increased migration worldwide. "Transnational mobility" is the latest stage in brain migration policy, when living and working in donor states and recipient states becomes equally comfortable.

Australian researcher R. Appleyard points out brain migration paradigm change. According to his theory, these changes are connected not only with geographical, professional and time issues but mainly depend on a state policy related to brain migration (Appleyard, 2002).

*Figure 1. Foreign students numbers in the world (higher education only), 1975-2013, mln people*
*(UNESCO Science Report, 2015)*
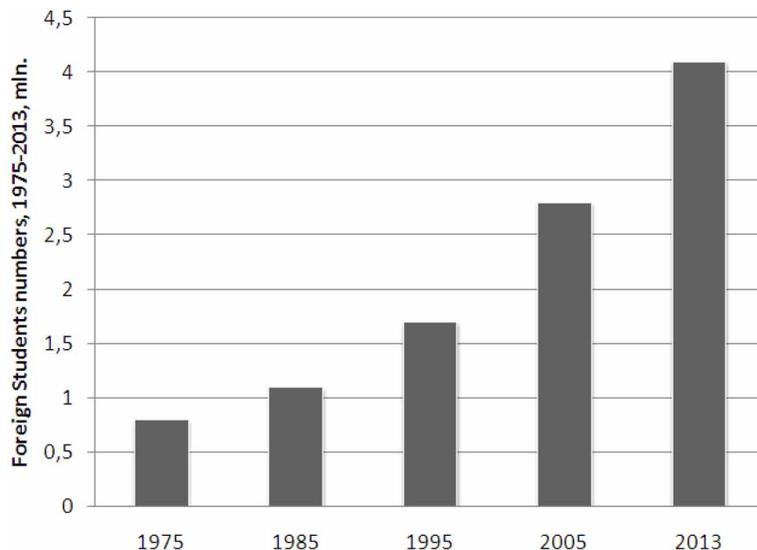


Effectiveness of the related state policies can be seen in brain migration trends changes as well as their concentration in a country. Since the beginning of this century, more than 50% of all PhD foreign graduates in the United States come from China, India and South Korea, which is precisely preconditioned by the state policy promoting such brain migration (Calto, 2012).

I. Ushkalova and I. Malakhov from the Moscow State University offer the following three models for brain migration regulation to be performed by a state (Ushkalova, 2000):

- Active regulation concept (state controls brain migration by means of different tools, namely legal, administrative and economic ones). This includes the programmes promoting migrants' return that are popular in the EU member states such as the Bluecard system, Marie Curie Foundation scholarships, Erasmus Mundus programmes, the EU roadmap based on qualifications and mobility, different PhD scholarships;
- Non-interference concept (state is not influencing brain migration as such);
- The future commitment concept (brain migration problems might be resolved only at the international level and within a period of time).

The issue of brain migration in Russia, for example, doesn't receive proper attention, unlike educational migration. Recently Russia has begun to support educational migration within the state programme "Global Education" (launched by the Strategic Initiatives Agency). This programme provides funding to Russian citizens enrolled at leading international universities. The "Global Education" programme pursues the following goals:

- To educate at least 1,500 Russian citizens in the world's leading international educational organisations in accordance with Russia's own economic priorities
- To employ at least 1,500 Programme participants who graduated from leading foreign institutions

The "Global Education" targets educational migration, but there are no similar tools in Russia to support brain migration. The "Global Education" plans to return 15,000 of Russian and ex-Soviet scientists back to the Russian Federation. Thus, the government is currently supporting the Russian Science Academy programme aimed at attracting 100 top Russian scientists working abroad.

Thus, it is quite evident that state can and should develop own brain migration policy directly related to innovation development. In order to determine this policy outlines, below there are some factors affecting brain migration and innovation development in a country that are closely interconnected.

Since 2000, the global trend of migration increase has been observed. For the last 15 years, migration flows have grown by 32%, and nowadays there are about 232 mln of migrants all over the world.

During this period which started back in the 1990s the fastest growth in the absolute number of international migrants was in North America with the average annual growth rate of migrants being 2.8% ("According to the latest data," 2017). According to our calculations, there is a correlation between the country's level of development and the number of living migrants for such countries as Australia, Spain, Canada, the United Kingdom, France and Germany ($R^2 = 0.86$). In case we consider the United States, the reliability is even higher ($R^2 = 0.99$). Russia and the Arab countries contradict this dependence, our assumption is that in these countries the cultural factor also plays a highly important role.

Professor A. Krasteva from New Bulgaria University also points out to a rapid increase in brain migration. She claims that brain migration covers about one third of the total global migration and produces more influence on society rather than non-scientific labour migration (Krasteva, 2008).

## FACTORS INFLUENCING BRAIN MIGRATION

The following factors could be pointed out as defining ones in relation to scientists' high mobility reasons in the world:

- Standards of living, institutional and social standards affecting living conditions in donor states and recipient states (the traditional migration factor)
- State policy aimed at new technological development leading to investment growth in science and technologies (Arkhipov et al., 2018)
- Establishing transboundary knowledge flows (researchers' mobility, international co-authorship, the right for co-ownership on inventions and so on)
- Decline in qualification standards (e.g., growing number of scientific fraud cases, lesser value of academic and scientific degrees, other factors negatively affecting academic degree holders' quality

According to the "UNESCO Science Report: towards 2030 – Executive Summary 2015", the following global trends can be called observable: investment growth in science and technology; increased number of significant international scientific projects as well as scientific publications and patents; and scientists' higher mobility. This demonstrates a stable tendency for a sharp increase in researchers' quantity. There are 7.8 mln researchers worldwide, and this number has risen by 21% since 2007. Most of them are located in the EU, China and the USA. In 2013 there were 440,600 scientists in Russia, their global share in scientists' articles publishing has fallen from 7.3% to 5.7% since 2007. At the world level, scientific publications' share has grown by 28% as compared to 2008 data. In 2014 1.27 mln articles

were published, the USA and the EU are leading in this field too. Figure 2 shows changes in researchers' quantity in different countries during the period of 2007-2013. Figure 2 also shows significant increases in researchers' numbers as well as their concentration in the clusters of high-income countries and countries with the incomes above average.

Figure 3 shows changes in the number of researchers in the selected countries during the period from 2007 to 2013.

Intellectual potential concentration taking into account academic degree holders' skills predetermines the development of both innovative economy and knowledge economy. It is also characterized by the growth of financing in both production and commercialization of knowledge (the R&D share in total expenditures of state and private enterprises), increase in intellectual capital costs (patents to be registered, effective system of enterprises and markets).

*Figure 2. Trends in researchers' concentration by clusters of countries during the period of 2007-2013 (UNESCO Science Report, 2015)*
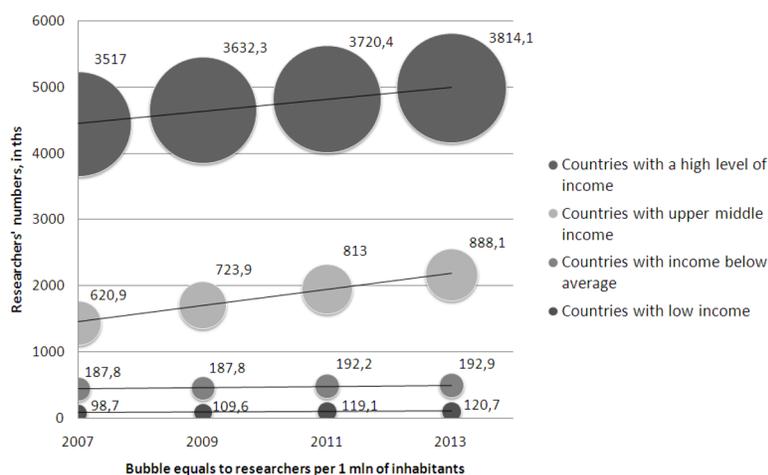


*Figure 3. Changes in the number of researchers in the selected countries of the world, 2007-2013 (UNESCO, 2013)*
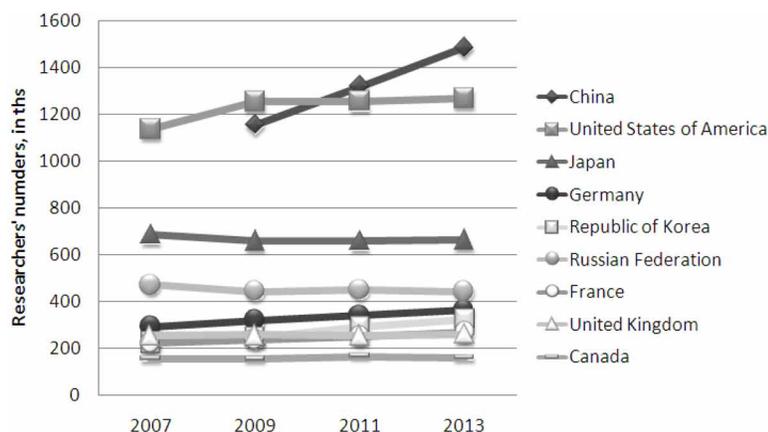
*Figure 4. Dynamics in researchers' numbers and R&D financing per one researcher (PPP in thousand USD).*
*(UNESCO Science Report, 2015)*
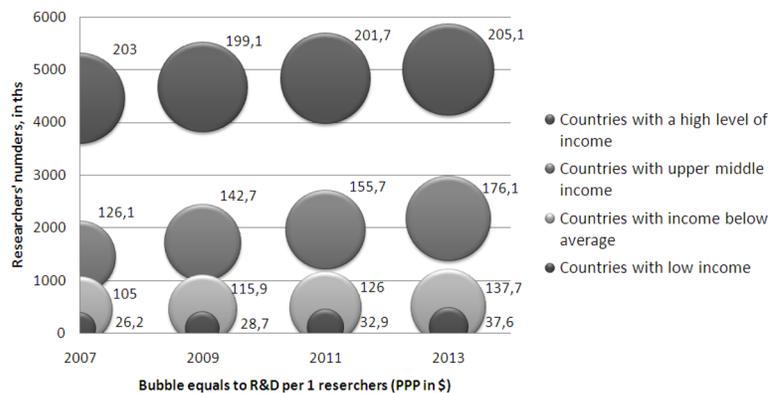


Figure 4 shows some of the changes in this regard over the period of 2011-2013. Countries' intellectual potential concentration (grouped by the levels of countries' incomes) is measured through researchers' numbers and R&D funding per one researcher.

It would be also prudent to compare the research and development (R&D) expenditures of the most innovative countries with the level of their economic development (see Table 1).

R&D expenditures per capita allow us track various actors' positions in the international dimension. Table 1 shows that the biggest R&D expenditures (in percentage of GDP) are in Japan, France and Sweden.

The connection between GDP and investments in R&D stimulates export growth through high technologies' implementation and scientific industries' development. Figure 5 shows how countries grouped

*Table 1. GDP per capita and R&D expenditures, as of 2013*

| Country | GDP per Capita (2013) | R&D Expenditures Share in GDP, % (2013) |
|---|---|---|
| Norway | 64,406 | 2.85% |
| USA | 53,042 | 2.81% |
| Sweden | 44,658 | 3.30% |
| Germany | 43,884 | 2.25% |
| Denmark | 43,782 | 3.06% |
| Finland | 39,740 | 3.32% |
| Japan | 36,223 | 3.47% |
| Italy | 35,281 | 1.25% |
| The EU (av.) | 33,052 | 2.3% |
| Russia | 25,248 | 1.12% |
| Iran | 15,590 | 0.31% |
| Georgia | 7,160 | 0.13% |

(UNESCO Science Report: Towards 2030)

*Figure 5. Correlation between shares in the world GDP and shares in global R&D.*
*(Source: UNESCO report, 2015)*
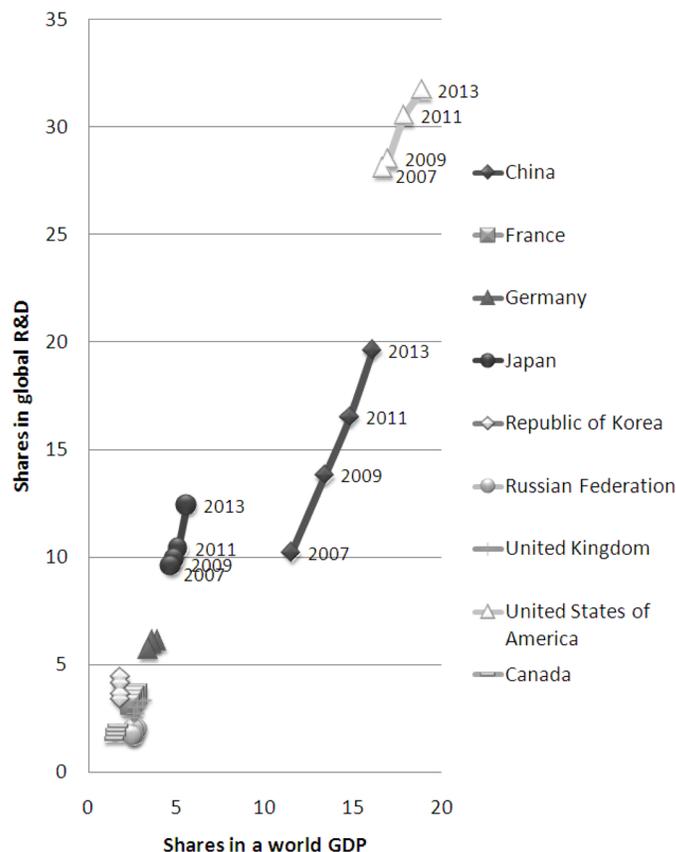


according to their shares in the world GDP correlate with the group division according to their shares in the global R&D.

During the period of 2007-2013, the leading countries were the United States, China and Japan, all three increased their R&D funding rather seriously. The rest of the selected countries failed to keep up the pace set by the leaders.

According to the UNESCO Science Report, the growth in R&D investments has been 31% between 2007 and 2013 (higher than the 20% growth of the global GDP). The leading countries were the USA (28% growth), China (20% growth) and Japan (10% growth). Russia had only 1.7% growth *(Tran Van et al., 2017).*

The EU, the USA and China, which are the leading actors in both global economics and global politics, have all recently announced creation of a new type of economy as their top priority.

Figure 6 shows the changes in R&D expenditures per one researcher, which obviously assumes the appropriate quality of their workplaces and other work-related conditions.

Low-income countries and countries with the income lower than average are categorised as peripheral countries or periphery, whereas high-income countries and countries with income higher than average are categorized as central or centre.

*Figure 6. R&D expenditures change per one researcher*
*(Source: UNESCO Science Report: Towards 2030)*
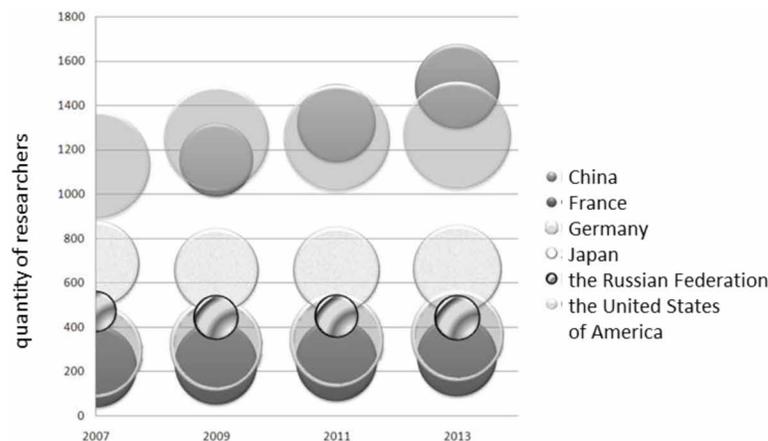


A negligible contribution (into innovative economic development, see Figures 5 and 6) of low-income countries in comparison with high-income countries and countries with income higher than average, is explained by the fact that capital renewal in weak countries is very slow. Thus, capital surplus (investments) is transferred to other countries that have more favourable conditions for capital development.

Knowledge economy externalities institutionally connected in space give an advantage to enterprises located in close proximity to knowledge sources in comparison with competing enterprises distant from these sources (Breshi & Lissoni, 2012). Despite the fact that international knowledge market is an extensive system of relations between knowledge producers and consumers and a complex mechanism for coordinating interests, in the end, the leading countries tend to impose their own game rules alongside with national markets' demands for transparency.

Globally, there is a tendency to strengthen the role of the state in intellectual potential development through the mechanisms stimulating innovation economy and budget spending for social purposes.

Knowledge flows and brain migration together with widespread use of IT and infrastructure as well as institutional support for the innovation process "from knowledge into practice" are the most important components for both innovative and economic development of any country with an ambition to join the list of the leading economies.

Research skills greatly depend on innovative economy development. The most important feature of this type of economy is that human intellect is replacing manual labour. The focus is on shifting to such activities as data processing, analysing and interpreting.

According to N. Fowler from Mississippi University, massive brain migration to the USA depends on American migration policy criteria in different periods of time (Fowler, 2010). His statement is supported by the data provided below in Table 2 which is showing scientists' quantity as well as their citation indices in different countries, including the OECD member states such as Russia, Georgia and Iran. The USA is the leader in terms of brain migration and citation index (alongside with Sweden and Denmark in the top three). Noteworthy, the citation index of Georgia is higher than that of Finland, Germany, or Italy.

It would be prudent to compare the related strategies between the countries. In our example below, we are using data on different countries from the UNESCO Scientific Report. All these countries are

*Table 2. Researchers' citation index in the selected countries, as of 2013*

| Country | Citation Index (2013) | Amount of TSQ Staff |
|---|---|---|
| Norway | 1.27 | 28,343 |
| USA | 1.32 | 1,265,064 |
| Sweden | 1.34 | 62,294 |
| Germany | 1.24 | 360,310 |
| Denmark | 1.50 | 40,858 |
| Finland | 1.27 | 39,196 |
| Japan | 0.88 | 660,489 |
| Italy | 1.17 | 117,973 |
| Russia | 0.52 | 440,581 |
| Iran | 0.81 | 54,813 |
| Georgia | 1.29 | - |

(UNESCO Science Report: Towards 2030)

implementing new economic strategies: China, France, Germany, Korean Republic, USA, Japan (see Figure 7). On top of that, Japan and the USA have both increased their patents' share as compared to publications (Figure 8). Special economic zones aiming to boost scientific innovations do exist in Russia, the United Kingdom and Canada. In such a way, countries that manage to attract both scientists and finances into the field demonstrate the fastest progress.

Today's communication technologies tend to increase information flows, positively affect people's movement and make researchers get much more easily connected online. At the same time, the latter trend is not yet significant for now. The UNESCO data shows that despite all the vast opportunities the Internet provides and availability of various online platforms in particular, brain physical migration is still the dominating global trend. After obtaining a doctorate degree, scientists often feel a need to change their location (UNESCO, 2013).

Recently, there has been some changes not only in terms of involvement degree, but also in quality of brain migration policies. This has been an attempt to provide response to a very serious problem -- researchers' downshifting and dequalification.

According to the research done by N. Shmatko from the National Research University Higher School of Economics, the researchers' supply in the USA is significantly higher than its demand. Thus, annually about 36000 applicants apply for 3000 vacant working places at the academic market. In other words, this would be 12 people per 1 working place, and this leads to a really tough competition in the sector of the US university education (Shmatko, 2009). 73,6% of the scientists who got their PhDs in the USA would like to stay in the country, a few exceptions being the nationals from Germany, France, and Scandinavian countries. Among those who would like to stay are Chinese (90%), Indians (86%) and Central Eastern Europeans (83%).

C. Franzoni conducted a comprehensive study on scientists' international mobility back in 2011. He noted that the most important motives for brain migration are: possibility for improving career prospects, a chance to join the research team with better scientific reputation, more options for international collaboration (Franzoni et al., 2012). The most important professional incentives are better working conditions and more of career opportunities, financial benefits actually took the second place, while

*Figure 7. R&D dynamics in % of GDP, 2007-2013*
*(UNESCO Science Report: Towards 2030).*
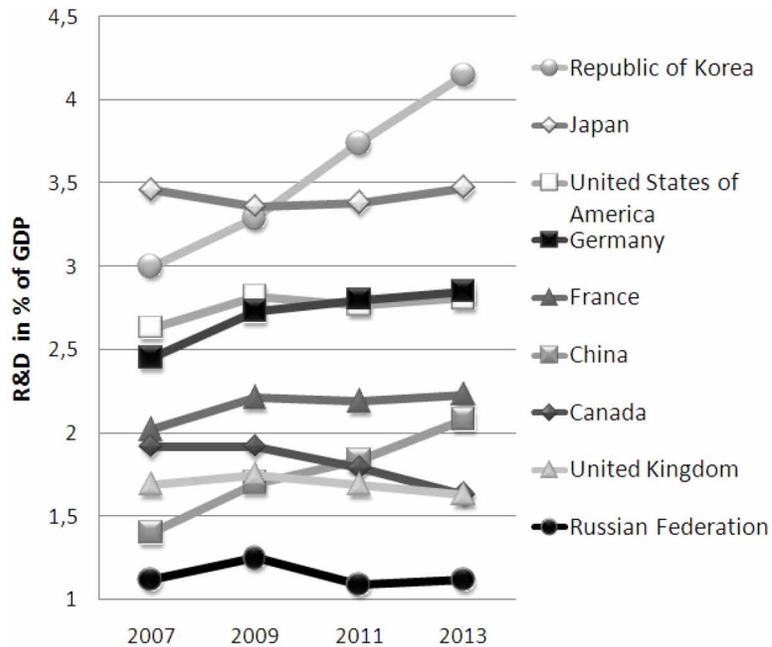


*Figure 8. Number of patents and publications*
*(data by Thomson Reuters Web of Science Citation Index Expanded, 2013)*
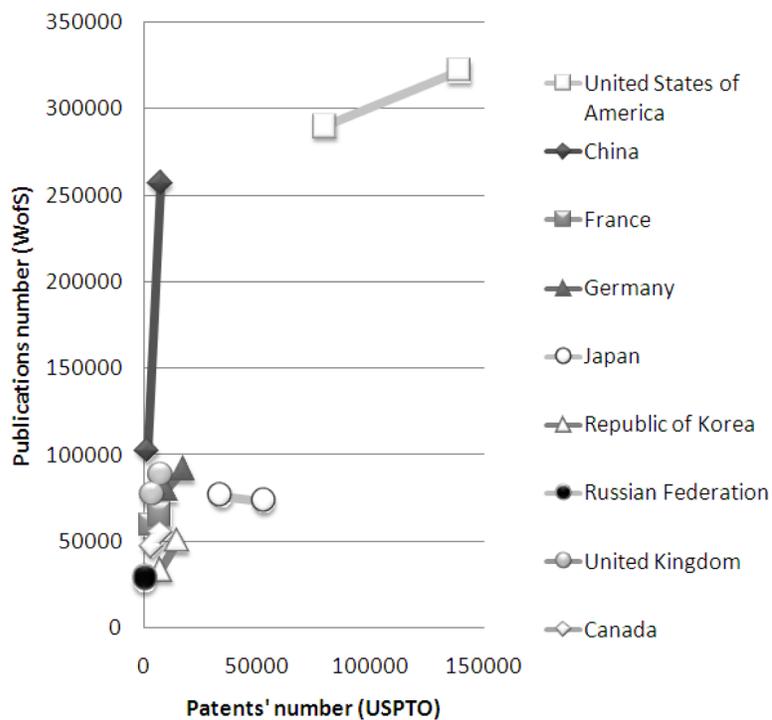
the third one belongs to moral incentives. At the same time, according to the interviewed researchers, the most effective measures for attracting young people to science are improved research funding and scientific infrastructure improvement (Ivancheva & Gourova, 2011). N. Shmatko also found that mobility distribution of scientists is subject to the Pareto law, though the trend also depends on a particular field of science in a country but not on individual features of scientists themselves (Shmatko, 2011). At the same time, there is also another trends observed: successful researchers born in Canada, France, Germany, Sweden, shortly after receiving their PhD and becoming "scientific elite" in the United States, still return to the country of their origin (Ascheulova & Duschina, 2014).

Researchers' overproduction has also caused academic titles' devaluation. According to (Ascheulova & Duschina, 2014), 17% of all job posts in German universities and research centers are permanent positions, the rest are temporary positions only, while in American universities their share is about 50%. Both total unemployment rate and unemployment among Doctors of Science in Germany is higher than in the USA. Temporary status of many "postdoc" as well as availability of "extra people" at the academic market affect scientists' mobility, including intersectoral mobility. For example, in Belgium almost one third of those who have graduated have a job not related to their scientific major while in Poland their share is only 6%, and in Russia even less -- 4.4% (Schmatko, 2017, p. 41).

A. Krasteva points out that researchers who migrated to the EU are often employed in libraries, information centres and even when they get a "post-doc" placement, this would be a temporary position with a lower salary, and it might take some time before they get a permanent position of a professor or other permanent tenure at university (Krasteva, 2008).

The same situation is actually observed in many donor states as well. Bhagwati and Dellalfar (1973) illustrated this situation on an example of a Philippino doctor who instead of starting medical practice in his own country, preferred working as a taxi driver until he got the opportunity to emigrate to the United States. These authors conclude that brain migration coming from developing countries entails significant losses for the economy as well as higher level of government spending and a decrease in population well-being overall (Bhagwati, 1979). Wong and Yip (1999) have built an empirical model in this regard. In it, economic growth was predetermined by human capital availability, thus, brain migration is obviously causing decreased economic growth.

We believe that decline in qualification standards happens all over the world because of the post-modern crisis, knowledge imitation and also growing popularity of pseudo-modern and pseudo-industrial surrogates. "Empty brands" are pushed to the frontline of scientific thought and innovative scientific and technologic progress for no reason (other than personal gain, of course).

We would like to offer a gravity model of brain migration developed on the data presented in the UNESCO Science Report 2030. This model is a so-called logical-semantic model which stems from the description of an object corresponding to all known and logically coherent statements and facts.

The gravity model of brain migration is a particular case of S. Stouffer's model in which a number of migrants moving on a certain distance is directly related to a number of emerging opportunities and inversely related to a number of intervening opportunities.

According to Stouffer's gravity model of migration (1940), brain migration shall be proportional to human resources' production in a donor state and human resources' consumption in a recipient state taking into account all emerging opportunities. It shall be also inversely proportional to movement costs and other costs related to a number of intervening opportunities (including those with institutional and social roots).

Not only the intensity of brain migration depends on a traditional migration factor, but also a systemic impact of other factors is taken into account in the given model. Unlike low-qualified employees, researchers are better at grasping opening opportunities connected with strategic consequences of systemic global changes.

Therefore, a common trend (presented in Figure 9 as the variables of "R&D expenditure" and "GDP per capita") for brain migration includes new phenomena, namely, geographical scientific reorientation.

For the last several years "transnational mobility" (when both staying at a donor state and a recipient state becomes equally comfortable) is becoming very popular in the context of brain migration. This trend is well supported by digital economy and information society development overall.

It has become quite evident for such countries as the USA, Russia, China and some of European countries as well that transferring to a new technological level will not be possible only by means of attracting intellectual workers from donor states.

Transboundary knowledge flows (including brain migration, scientific co-authorship and the right for joint inventions' ownership) depend strongly on the factors which have nothing to do with science, but can be easily explained from the standpoint of new geopolitics and neo-institutional theory.

The suggested model reveals an increased concentration of economic indices and brain migration in the centre and lack of stimuli for developing innovations on the periphery. Figure 10 clearly shows this. Developed countries, losing in GDP share, nevertheless, increase their superiority in innovations, on the one hand, changing economic structure, and on the other - increasing dominance in legal field and concentrating on control over financial flows.

Information and digital discrimination set by market institutions are directly coming from large conglomerates to the periphery (Tolstoguzov, 2016).

The agglomeration trend is being observed not only in the selected states.

In case we build 2 development axes "North-South" and "West- East" in Russian space, a clear picture would emerge: a developed innovation center and a lagging behind periphery. The similarity principle would be manifested for every macro-region: a developed center is fully engaged in innovations and then there is a periphery. The geography thus demonstrates the center's absolute leadership in the field of applied scientific products' creation. Let us consider this situation further on the example of the North-West Federal District. More than half of this district's production capacity is concentrated in St.

*Figure 9. Gravity model for brain migration, as of 2013*
*(authors' own modeling)*
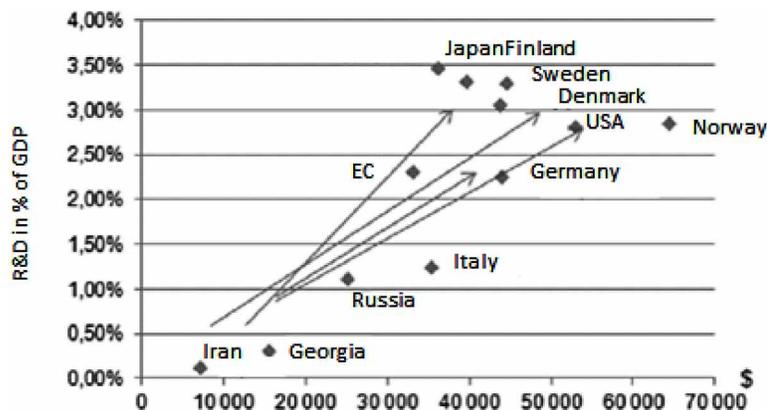
*Figure 10. Country groups' shares and their changes in the world GDP (in %) as per the number of patents, as of 2008 and 2013.*
*(UNESCO Science Report: Towards 2030)*
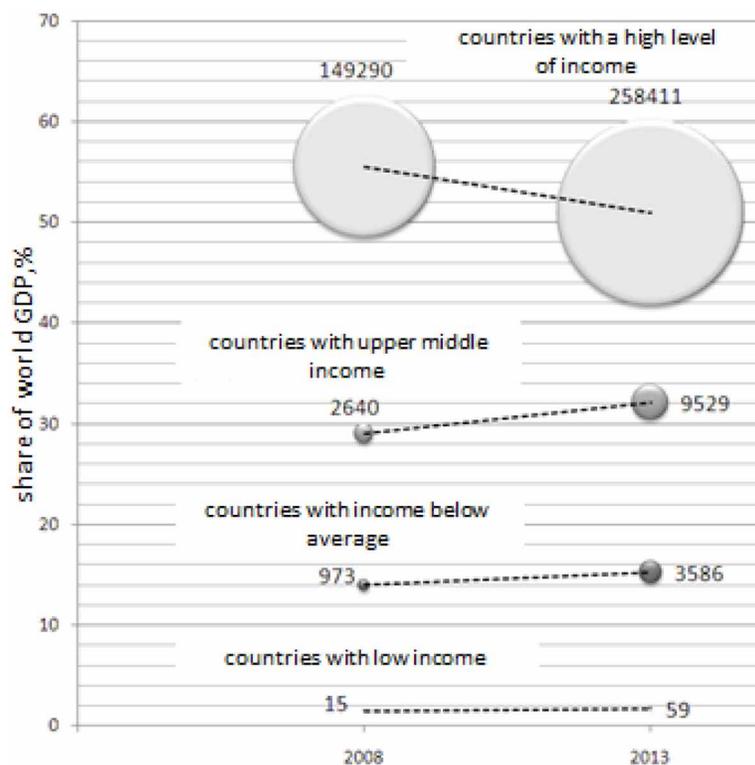


Petersburg and the Leningrad Region. The presence of a large production and investment potential allows developing not only traditional, but also new types of activity, creating artificial competitive advantages taking into account the existing industrial basis.

Thus, the comparative analysis of enterprises innovative activities index from 2010 till 2013 shows the trend of increasing "innovativeness" in St. Petersburg agglomeration, which is both industrial and innovative centre of the Russian North-Western part, at the same time it also shows the periphery's disadvantage in terms of innovativeness (Tolstoguzov, 2016). The ratio between patents' quantity for inventions/useful models and researchers' quantity supports the concentration of innovative activities mainly in the centre (Table 3).

## GEOGRAPHICAL INVARIANT TRAITS FOR INNOVATION

Once again, the geography for innovative activity usually has the following, rather typical structure: a developed innovation centre and a backward periphery (in economic and innovative aspects).

Economic processes in this context are predetermined by coordination of subjects' activities as well as by the selected technological, social and historical factors. According to the neo-institutional theory (see, for example, the articles by J. Hodgson, O. Williamson, E. Furubotn and R. Richter), agents' in-

*Table 3. Population quantity, researchers' quantity and patents issued in the Russian North-West, as of 2013*

|  | Population, ths people | Researchers, persons | Patents for Inventions and Useful Models (2010-2013), units |
|---|---|---|---|
| St. Petersburg (centre) | 5,132 | 78,773 | 11,330 |
| Other regions of the Russian North-West (periphery) | 8,625 | 16,901 | 2,894 |

(Federal State Statistics Service (Rosstat)

teractions in their various forms take place under the influence of quite definitive institutional factors which set the rules. In order to change economic reality, it is necessary to change institutional structures in the first place. The latter, in their turn, influence communication means and information exchange. As a result, agents' actions lead to economic exchanges and economic results are synchronised through the correct stimulus system.

The main issue here is to understand the actual reasons behind economy's development which occurs primarily due to industrial markets' increased profits and their spatial distribution.

The first part of the problem is explained by organisation models as well as by industry markets' structure (international and interregional ones) which, in their turn, depend on labour social division and productive forces' distribution.

The second part of the problem can be explained by the factors influencing innovations development and increased profits' distribution caused by these innovations as well as by their spatial implementation. By means of applying innovations, a country or a region can receive a significant economic rent, and economic efficiency of the latter will be determined not only by its size, but also by its distribution. Innovations are the key source of artificial competitive advantage and thus, of the rent as well. They appear due to knowledge commercialization and the process of "theory into practice" implementation.

We also need to describe here the main properties of the innovative activities' geographical invariant within the neo-institutional approach. Firstly, there is a structural change in the world knowledge production system: the smallest relative growth in R&D financing was performed by the cluster of the countries with high income levels, and the largest - by the countries with income levels above average - from 16.1% to 25.8%. This indicates there is a growing attention to knowledge economy in this group of countries since for them the link between the contribution to world GDP and R&D as well as exports increase due to high-tech development and knowledge-intensive industries is obvious.

Nowadays there are 7.76 mln researchers all over the world (an increase in 2013 compared with 2007 was 21%). Most researchers are concentrated in the EU, China and the United States. In Russia there are 440 6000 of researchers (as of 2013), their global share has decreased from 7.3% to 5.7% (UNESCO, 2015). The performance of academic degree holders is usually estimated through their publication and patent activity. According to the UNESCO (2015), the global share of scientific publications has increased by 28% as compared to 2008. In 2014 1.27 mln articles were published, in 2013 there were 277 800 of patents (the leaders in both these categories are the US and the EU).

The UNESCO report claims that developed countries have shifted their focus from problem-oriented investigations to applied sciences' financing. Unfortunately, due to resources' insufficiency and overall low qualifications, the periphery cannot provide informational and legal support alongside the whole

chain "from theory to practice" and thus is forced to choose the "turnkey portfolio" of innovative products. Comparing Figures 11 and 12, how roles are changing in this regard.

The periphery creates more publications (according to Thomson Reuters Web of Science Citation Index Expanded) per researcher and per one dollar invested in R&D, but at the same time these countries register much fewer patents per researcher and per one dollar of R&D.

*Figure 11. Countries' innovation policy performance measured via publication activity (according to Thomson Reuters Web of Science Citation Index Expanded), per researcher and also per 1 USD spent on R&D*
*(UNESCO Science Report: Towards 2030)*
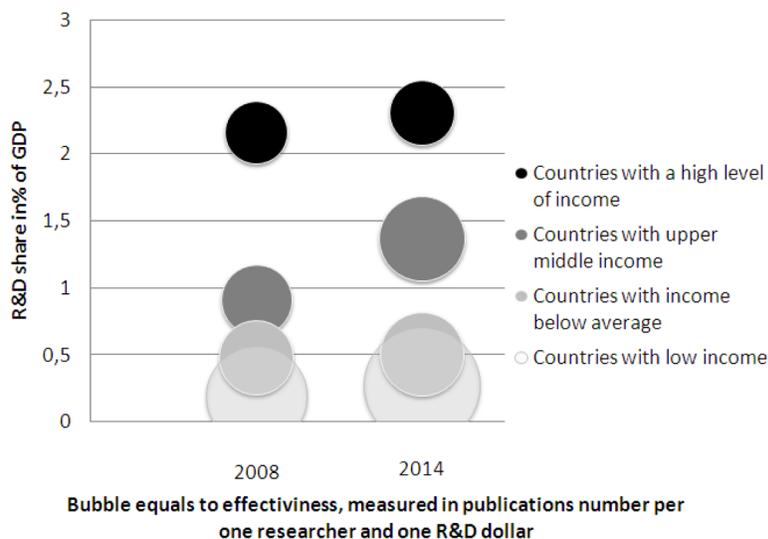


*Figure 12. Countries' innovation policy performance measured via patents' quantity per one researcher and per 1 USD spent on R&D*
*(UNESCO Science Report: Towards 2030)*
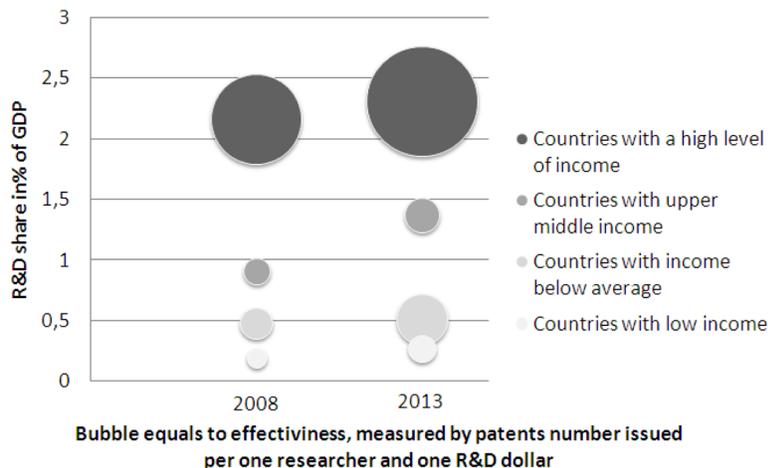
Despite the fact that international knowledge market is an extensive system of relations between producers and consumers and is a very complex mechanism for coordinating interests, in the end, leading states do impose their game rules requiring peripheral national markets to be more transparent and more open for international labor redistribution *(Vinogradov, Palmov, 2014)*.

Relatively non-optimal relations in the chain "from theory to practice" and among its different subjects (author, employer, owner-licensee, licensor, investor) is predetermined mainly by the already settled economic order while current economic and institutional conditions in the centre and the periphery differ greatly. Large enterprises with huge market power (transnational corporations in the first place) are located in big agglomerations in highly innovatively developed countries. This means that industry markets are imperfectly competitive. Therefore, behaviour of nearly all economic agents is predetermined to a greater degree by cooperative and non-cooperative strategies of the biggest enterprises as well as by cartel agreements. The issue of taking advantages of new knowledge lies in innovative centre's dominance over the periphery. Due to market power resources concentration in the centre, the latter controls nearly all innovative processes.

Secondly, both brain migration and intellectual workers' concentration depend on the conditions described above. Innovative activity is more intensive when this concentration is higher, since intellectual workers usually seek employment in fast developing companies and industries. If an industry is stagnating or declining, intellectual workers will do their best to relocate. Since fixed capital is substituted very slowly at the periphery, its surplus (the investment part) transfers to some other countries (where capital conditions are more attractive). And intellectual workers will always follow it. This relationship (with $R^2 = 0.75$) is shown in Figure 13.

*Figure 13. The relationship between R&D per 1 researcher (PPP in $ thousands) and researchers' number (in thousands)*
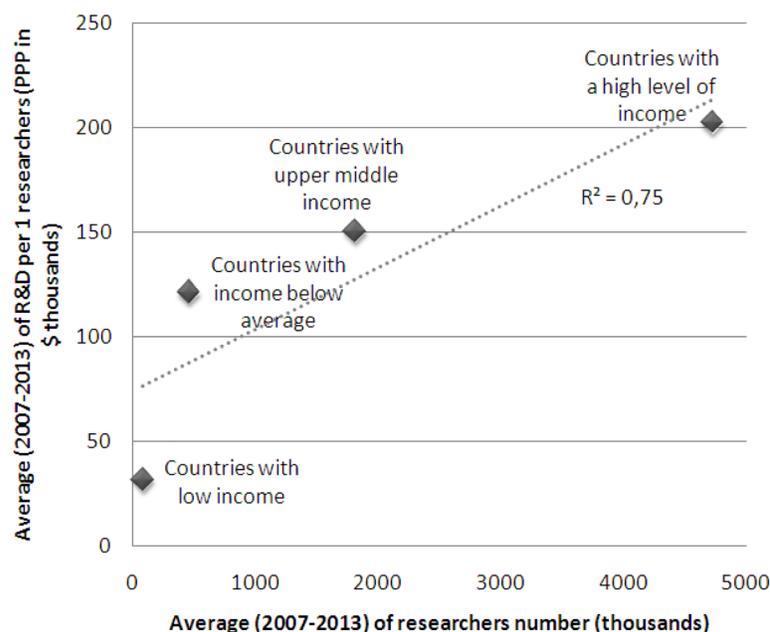
Therefore, it is quite obvious that in order to ensure continuous and non-stop innovation process it is necessary to concentrate R&D activities and also increase the share of those involved in R&D.

Thirdly, institutional maturity does matter, in particular, that of intellectual property and an appropriate contract system. A critical factor when it comes to innovations is the opportunistic behaviour of certain economic agents. This opportunism consists of deviating from the standard model; these deviations in the periphery are mainly caused by market power concentration (as compared to the centre) resulting in informal institutions' activity. This opportunism might be forced, it can be determined by external forces and it can contradict local community's joint interests. Still, the agreement cannot be broken and the agent must follow the discriminatory market relations.

Undoubtedly, brain migration influences innovative economy development. It is innovations that lead to artificial competitive advantage and economic rent development; natural resources' presence or absence is of much less importance. Brain migration together with information & communication technologies, innovative infrastructure (which eliminates digital discrimination and provides unified information space), institutional support for the formula "from theory into practice" are the most important constituents of innovative and economic development of all the countries in the world without any exceptions.

## CONCLUSION

According to some of the forecasts, till 2030 high-tech industries will be growing economically, the share of spending on science in the USA will reach 3.1% of its GDP, in Japan - 3.5%, in the EU - 2.1%, in China - 2.3%, in India – 2%, and in Russia - 1.9% (the global spendings would be on average around 2.32% of the global GDP) *(Strategic Global Forecast, 2013, p. 128).*

While developing state policy oriented on innovative society development it is necessary to perform systemic work aimed at providing efficient decisions and coordinating all agents involved into the related process.

World trade and other institutions of the global level do require highly developed skills. Such skills would, in the first place, allow national legacy prioritizing over international one and at the same time not discriminating non-residents when it comes to intellectual property rights. Unfortunately, the periphery, due to resources insufficiency and low qualifications overall, cannot provide informational and legal support along the whole chain "from theory into practice" and thus is forced to use only "turnkey" innovative products.

Alongside all positive influences from brain migration as described in the analysis above, there are also negative effects. Brain migration goes hand-in-hand with a destructive globalist influence characterized by true knowledge imitation in the form of pseudo-industrial surrogates and empty brands.

Strategically, brain migration is not the factor determining innovative policy success in this or that country. The much more important factor is the presence of scientific campuses in a country, availability of own research basis. Such knowledge reproduction is much more vital than importing scientific labour from other countries. It is the scientific campuses that prepare the country for transfer to a new technological level and could filter the surrogates hindering the development of real knowledge economy.

Innovative process is very unsatisfactory in the countries with poorly developed economics and low number of innovations. The inner demand for innovations can be the source for development in large agglomerations and innovative centres. However, the periphery needs an increased role of the state as the main customer and guarantor of innovations. Therefore, countries with insufficient level of innova-

tions have to use administrative resources to accelerate their innovative development, but they should be very careful not to break any World Trade Organisation (WTO) regulations. The latter contain certain recommendations on how the states should support the generation and implementation of innovations.

All countries are facing the challenge of global innovation landscape. As this landscape is changing all the time, it requires systematic work on knowledge externalities' management, intellectual potential strengthening, brain migration regulation in order to achieve a positive balance and form a truly knowledge economy as an integral part of country's industrial development.

Back in the 1960s-1970s already, the researchers T. Schulz (1961) and G. Becker (1975) noted the high role of education in human capital formation and that of the latter -- in economic development of the country. The negative effects in this regard arise due to changes in donor states' human capital quality. S. Di Maria and P. Stryszowski noted that migration prospects seriously limit motivations to increase agents' skills (Di Maria, Stryszowski, 2009). The negative effect from brain migration on European and Asian countries' development was analyzed by J. Bernstein, J. Shuval (1996), J. Bhavati (1979), S. Canibano, R. Wolley (2015), L. Ackers, B. Gilles (2008). A country aspiring to become a world economy leader needs to achieve, in the first place, a positive balance in brains' export-import. Lack of adequate support for brain migration and its consequent outflow undermines country's ability to develop socioeconomically and modernize its agenda.

Due to market concentration, knowledge flows are mainly controlled by innovative leaders. Knowledge flows can be defined as "knowledge externals related in space" (Breschi & Lissoni, 2012, p. 163). To this understanding we might add a new clarification arising from economic space architectonics. Knowledge externals are mainly focused around financial flows' status-quo due to innovations' concentration in the center and consequent periphery's discrimination. In this case a good strategic solution for peripheral agents is their integration into the collective innovation processes initiated by them or the so-called global factories. This will provide favorable conditions for intellectual potential concentration, eventually turning into synergy effects for all.

Thus, the periphery states might actually achieve the goals of innovative competitive development as well as fair exchange in global trade but only through: economic mobilization; creation of own scientific campuses; elimination of discriminative institutions; improvement of own contract systems (according to international arbitrage practice); making sure there is coherence of trading rights and terms for both the centre and the periphery. It is also necessary to regulate brain migration through various state programmes aiming at brain migration development, for example, such programmes as "Global Education" in Russia.

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## KEY TERMS AND DEFINITIONS

**Brain Migration:** A movement of highly-skilled professionals involved in intellectual or creative work as well as of potential specialists such as students and trainees going abroad for more than a year.

**Digital Economy:** A digital business predominantly based on e-business and e-commerce aimed at e-goods/e-services production.

**Economic Space:** Economic system that has a space-time dimension and is determined by institutions and economic relations between economic agents.

**Geoeconomics:** A geopolitical economy stressing state's economic power and foreign policy goals achievement by economic means.

**Geoeconomic Invariant:** A system of empirically measured factors reflecting relationship structure, relatively unchanged in both temporal and spatial dimensions of geographic objects.

**Information Society:** A type of society where the majority of workers are engaged in information delivery, storage, processing and sale especially in its highest form –the knowledge.

**Knowledge Economy:** The highest stage in post-industrial and innovative economy development characterized by a vast information spread and knowledge society development.

**Patent Activity:** An indicator illustrating country's patent activity such as registered patents and patent applications performed both by country's residents as well as foreign residents.

**Publication Activity:** An indicator illustrating research activity of an author or a research team embodied in a form of scientific publication.

# Chapter 7
# Strategies for Effective Adaptation:
## The Case of the OECD Member States

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## ABSTRACT

*This chapter deals with the OECD migration policy and its strong points that were revealed in the last 20 years. The author also explains how the OECD migration policy responds to technological, economic, and social challenges. In effective adaptation of foreign migrants, the principal role is mainly assigned to monitoring of the OECD member states. The outstanding practices of the latter turned out to be highly important for shaping the migration policies of other countries' migration. This chapter also shows the examples of the labor migrants' adaptation in the OECD labor market, particularly, a bottleneck vacancies analysis of the Nordic countries, Baltic States, and Central Eastern Europe. Institutions, traditions and employability are extremely important parameters for migrants' adaptation for labor markets.*

## INTRODUCTION

Migration is both a complex and multifaceted phenomenon that affects many spheres of society. As it is highlighted in the World Prospects Report 2015, "from 2000 to 2015, annual net migration to Europe, Northern America and Oceania averaged 2.8 million persons per year. When countries are grouped by income rather than geography, the attraction of high-income countries is even more evident: from 2000 to 2015, high-income countries received an average of 4.1 million net migrants annually from lower- and middle-income countries. Economic and demographic asymmetries across countries are likely to remain powerful generators of international migration within the medium-term future. Large-scale refugee movements have also had a profound influence on the level of net migration experienced by some countries, including those affected recently by the Syrian crisis" (World population prospects, 2015).

At the same time, the World Bank Report pointed out that "global productivity and poverty reduction would accelerate enormously with the free movement of labor. Both recipient states and donor states will benefit from migration" (World Development Report. Jobs, 2013).

Europe is still one of the most popular destinations with 72 million international migrants living there, data as of 2013 (UN Press Release, 2017). Globally, the largest regional migrant groups are Asians and Latin Americans who live outside their countries of origin. In 2013, the Asians became the largest migrant group, with 19 million living in Europe alone (UN Press Release, 2017). International migration is also characterized by high concentration although the number of countries involved has significantly increased in the last four decades: in 2013, 10 countries accounted for about half of international migrants. The US was ranked first with 45.8 mln migrants followed by Russia (11mln), Germany (9.8mln), the United Kingdom (7.8 mln), France (7.4mln), Spain (6.5mln) (UN Press Release, 2017).

Taking into account recent huge migration flows across the world, it is highly important to update mechanisms of migration policy regulation following the example of the OECD member states. Their migration regulations make it possible to avoid unbalanced immigration and pursue the most optimal policy. In order to determine the specific directions, their characteristics will be outlined on the examples of Finland, Sweden, Iceland, Canada, Australia, Denmark, the USA alongside with the Baltic States and some of the Central Eastern Europe countries. We will continue then with the analysis of migrants' employability, bottleneck vacancies' analysis in the Northern Europe, Central Eastern Europe and the Baltic States.

Obviously, the demand for skills or immigrant labor does not necessarily guarantee easy passage for all of them. Employability skills such as literacy and numeracy, technical skills, and good personal skills (integrity, reliability, punctuality, learning capacity) are often in demand. According to employers' surveys carried out by the ILO, the ETF, and Cedefop, "employability skills" rather than "the ability to do work well" are highly crucial for the OECD labor markets.

## METHODOLOGY

The research reflects on the data analysis presented mainly on the OECD materials as well as documents of the United Nations, the Eurostat, the World Bank and scientific literature. Statistical methods have been actively used for data processing as applied to vacancies and migrants' unemployment indicators.

In order to scrutinize migrants' specific adaptation features at a new for them labor market as well as prospects of the selected OECD economic sectors in terms of employment and labor market indicators, a functional-structural vacancy analysis was widely applied, taking into account geographical and regional components, the level of vocational education, technological performance of certain economic sectors and employers' qualification requirements to job applicants.

In order to study the employment relations between migrants and resident population in the OECD member-states as well as migrants' employment peculiarities in these countries a systematic approach was applied, with an emphasis on migration growth, institutions regulating labor migration, institutional and social rootedness, best foreign practices etc. Comparative analysis of employability characteristics in the OECD member states has been also conducted basing on the aggregated indicators developed on the basis of quantitative and qualitative parameters grouped according to expert analysis results.

## REGULATION OF INTERNATIONAL MIGRATION
## IN THE OECD MEMBER STATES

Nowadays global migration policy has been seriously aggravated by notable contradictions. A balance of interests can only be achieved through orienting partners to engage in a mutually beneficial dialogue, so the development of various strategies can be well regulated.

In order to get migration policies and regulations closer to equilibrium the following OECD experiences and tools should be remembered:

- Implementing "integration upon arrival" for all migrants (Finland)
- Achieving balance at the labor market (Sweden, Denmark)
- Granting a wide range of rights to migrants (Sweden, Finland)
- Reducing social tension (Iceland)
- Attracting highly skilled and qualified migrants (USA, Germany, Canada, Australia)
- Identifying labor shortages by specific job sectors (Australia, Canada, Finland)

The proposed migration regulations can make it possible to prevent unbalanced immigration policy and pursue the most optimal policy in this field. In Finland, active immigration policy is aimed at integrating immigrants through the principle of "integration upon arrival", the essence of which can be described as two following provisions:

- Migrants demonstrate willingness to be integrated
- The host society is also willing to accept migrants

Thus, Finland makes serious efforts to have migrants learn Finnish language and improve other skills necessary for the newcomers. Migrants' children have universal access to education and also the right to be taught in their native language, as in Finland, great attention is paid to multicultural education. Migrants' access to political participation in Finland is represented with the right to vote and be elected to public offices. The right to join a political party is also exercised at regional and municipal levels. As a result, Finland in 2015 already, two first-generation immigrants - N. Razmyar (from Afghanistan) and O. Yanar (from Turkey) - received the mandate to serve in Finnish parliament.

Finland is the second country in the world (after Norway) known for migration policy flexibility. The country has a wide range of laws against racial, religious, and national discrimination. Migrants have free access to legal assistance, and the newly introduced Ombudsman for Minority Rights is acting to protect them. Since January 1, 2015, the Non-discrimination Act came into force in Finland, according to which a new institution for migrants' rights protection was established - the Ombudsman for the Elimination of Discrimination. At present, there are three special Ombudsmen in the country - the Ombudsman for Equality, the Children's Ombudsman and the Ombudsman for the Elimination of Discrimination. The work of these three institutions is aimed, inter alia, at regulating immigration in this country.

Another regulatory tool used for a better balanced migration policy has been formulated above as "achieving balance at the labor market". Sweden, Finland and Denmark would be especially impressive examples in this regard. Sweden has a very strong orientation towards the inclusion of immigrants. Swedish government provides compensation for the employers hiring immigrants (this is called "social security contribution"). Special attention is also paid to giving migrants professional guidance at early

*Strategies for Effective Adaptation*

stages of new employment. All materials are provided free of charge for migrants. Specialized online portal provide help with selecting the best educational and professional career path, getting recommendations from career guidance specialists, signing up for various professional guidance activities, Internet testing for professional preferences and finally helping with CV structuring and contents.

All these activities for immigrants are completely free. Moreover, many employment service managers in Swedenspeak in mother native tongues of migrants.

Migration policy in Finland is considered to be one of the most effective ones in the world (according to such rankings as the Migrant Integration Policy Index and the Multiculturalism Index). It is highly adaptive and balanced and also thoroughly preserving national interests at the same time. Its success is believed to be preconditioned on by the following three factors:

1. Well-tuned system of labor market projection parameters.
2. Well-organized system of statistics representing unique and complete data on foreign labor migrants in Finland.
   3. Successful human capital development.

Let us analyze these three factors in detail.

1. Well-tuned system of labor market projection parameters in Europe. Finland has designed a truly perfect system for perspective skills monitoring. The key issues solved thanks to labor market parameters' projection are: setting future goals for technological development, education and innovations; determining pros and cons factors influencing the development of the labor market.

Projection system in Finland is a complex one, many factors are interrelated in it. Its success can be partially explained by a wide range of participants involved, such as Finnish Parliament Committee, the Ministry of Education and Culture, Finnish National Board on Education, Ministry of Employment and Economy, Statistics of Finland, regional councils, Centres for Economic Development, Transport and the Environment, association of municipal and regional authorities in Finland, universities, research institutes, other social partners.

One of the most useful instruments representing data for all the interested actors is the Occupational Barometer. Both shortage and surplus occupations are calculated for each administrative region of Finland.

Let's look closer on one example of such barometer for one of Finnish regions (Figure 1).

The abovementioned OB represents data on 256 occupations for the regional, south–western labor market in Finland. It is obvious that nowadays Finland lacks social workers, therapists, and nurses in the first place. First of all, this is preconditioned by the factor population ageing.

Such OBs in Finland are developed for 11 administrative regions and might be accessed on the websites of the Centre for Economic Development, Transport and the Environment and also as posters in the local employment offices. Thus, Finnish population is constantly informed on the current labor market situation. This helps a lot with decision-making while choosing future educational or employment trajectories.

2. Well-organized system of statistics representing unique and complete data on foreign labor migrants in Finland in terms of:

a.   Migrants' employment in the country of origin; Finnish regions' attractiveness for migrants; gender balance in migrants' employment; migrants' employability in various economic sectors; migration unemployment rate; the share of highly skilled and low-skilled migrants.

Thus, statistics on migrants' employment in the country of origin reveals that the highest level of employment are recorded among the migrants from Estonia, the UK, Sweden, China, Turkey and the USA. Migrants from Iran, Somalia, Iraq and the former Yugoslavia Republic demonstrate the lowest employment rates.

Gender balance in foreign labor migration is quite an interesting issue. Females reveal the same employment results as males do - women have been primarily employed in trade (16%), education and research (13%) and healthcare (12%). These numbers don't seriously differentiate from males' statistics: 17% have been working in sales, and then 15% -- in finances, insurance and business.

In Finland regions' attractiveness in the framework of foreign labor migration is studied thoroughly. Thus, Finnish Ahvenmaa region is found to offer the most favorable conditions for migrants' employment. The second place goes to Uusimaa region. It is obvious that southern Finland turns out to be the most attractive for migrants as compared to its northern part. Thus, in Lapland, Kainuu only 15% of migrants are able to find jobs.

3.   Successful human capital development. Foreign labor migration influences both current and potential human capital development in a recipient country. Human capital is a complex phenomenon, one of the way to evaluate it is by means of the Human Development Index. This is especially important when it comes to performing cross-country analysis, for example. The UN is calculating the Human Development Index on the annual basis. This Index includes such parameters as lifetime, living standards, literacy, education. In the context of our study it would be interesting to compare countries' parameters and observe how the selected criteria within this index are implemented by the OECD member states and Finland.

Table 1 below demonstrates native workers' and foreign labor migrants' distribution in Finland in terms of their vocational education level. Balance, the main feature of Finnish vocational system, stands out vividly here, as the levels of education among migrants and native workers are quite comparable. Successful achievement of such a balance became possible due to constant labor force development and, of course, it is supported politically.

In particular, the Finnish National Board of Education has developed a strategy titled "Learning and competence 2020". This document stresses on the development of such skills as creativity, interaction, active participation, self-expression, influence, self-education, responsibility. Together all these skills result in the formation of national intellectual capital.

In Finland, the major geographical sources of immigration are very much predictable: nearly 20% of all labor migrants came from the former Soviet Union republics, the other two major donor countries are immediate neighbours - Sweden (12,8%) and Estonia (10.3%).

It is obvious that the countries of migrants' origin are increasingly influencing human capital quality. Thus, taking into account this parameter, the overall Finnish Human Development Index would be amounting to 0,882 as the countries of foreign labor migrants mostly possess very high, high or middle indices. In this regard, it would be interesting to compare the data with Russia: the overall Russian human development index is 0,755, while foreign labor migrants coming to work in Russia are mostly from the

*Strategies for Effective Adaptation*

*Figure 1. Southwest Finland's occupational barometer, as of 2015*
*(Ministry of Employment and the Economy of Finland)*



OCCUPATIONAL BAROMETER OF FINLAND, I / 2015

**SHORTAGE**

Audiologists and Speech Therapists
Commersial Sales Representatives
Contact Centre Salespersons
Dental Assistants and Therapists
Dentists
Early Childhood Educators
Generalist Medical Practitioners
Nursing Associate Professionals
Nursing Professionals
Psychologists
Social Work and Counselling Professionals
Special Needs Teachers
Specialist Medical Practitioners

**IN BALANCE**

Accountants
Accounting and Bookkeeping Clerks
Accounting Associate Professionals
Actors
Air Conditioning and Refrigeration Mechanics
Ambulance Workers
Announcers on Radio, Television and Other Media
Application Programmers
Bakers, Pastry-cooks and Confectionery Makers
Bartenders
Bricklayers and Related Workers
Building Architects
Building Caretakers
Building Frame and Related Trades Workers Not Elsewhere Classified
Business Services Agents Not Elsewhere Classified
Business Services and Administration Managers Not Elsewhere Classified
Buss and Tram Drivers
Butchers, Fishmongers and Related Food Preparers
Buyers
Car, Taxi and Van Drivers
Cashiers and Ticket Clerks
Chefs
Chemical Engineering Technicians
Chemical Engineers
Chemical processing Plant Controllers
Civil Engineering Labourers
Civil Engineering Technicians
Civil Engineers
Cleaners and Helpers in Offices, Hotels and Other Establishments
Cleaning and Forwarding Agents
Cleaning and Housekeeping Supervisors in Offces and Other Establishments
Concrete Placers, Concrete Finishers and Related Workers
Construction Supervisors
Crane, Hoist and Related Plant Operators
Data Entry Clerks
Domestic Cleaners and Helpers
Door-to-door Salespersons
Earthmoving and Related Plant Operators
Economists
Electrical Engineering Technicians
Electrical Engineers
Electrical Mechanics and Fitters
Electronics Engineering Technicians
Employment Agents and Contractors

Engineering Professionals Not Elsewhere Classified
Fast Food Preparers
Finance Managers
Financial and Investment Advisers
Fitness and Recreation Instructors and Programme Leaders
Floor Layers and Tile Setters
Food and Related Products Machine Operators
Food Service Counter Attendants
Forestry Technicians
Foresty and related Workers
Garbage and Recycling Collectors
Garden and Horticultural Labourers
Gardeners; Horticultural and Nursery Growers
Glass and Ceramics Plant Operators
Glaziers
Goverment Social Benefits Officials
Hand Packers
Health Associate Professionals Not Elsewhere Classified
Health Care Assistants
Home-based Personal Care Workers
Hotel Receptionists
Information and Communications Technology Operations Technicians
Insulation Workers
Interior Designers and Decorators
Laundry Machine Operators
Lawyers
Legal and related Associate Professionals
Lifting Truck Operators
Managing Directors and Chief Executives
Mathematicians, Actuaries and Statisticians
Mechanical Engineering Technicians
Medical and Pathology Laboratory Technicians
Medical Imaging and Therapeutic Equipment Technicians
Medical Secretaries
Messengers, Package Deliverers and Luggage Porters
Metal Finishing, Plating and Coating Machine Operators
Metal Moulders and Coremakers
Metal Polishers, Wheel Grinders and Tool Sharpeners
Metal Processing Plant Operators
Metal Working Machine Tool Setters and Operators
Mixed Crop and Animal Producers
Mixed Crop and Livestock Farm Labourers
Mobile Farm and Forestry Plant Operators
Odd-job Persons

Office Supervisors
Other Artistic an Cultural Associate Professionals
Packing, Bottling and Labelling Machine Operators
Payroll Clerks
Personal Care Workers in Health Services Not Elsewhere Classified
Personnel and Careers Professionals
Pharmaceutical Technicians and Assistants
Physiotherapy Technicians and Assistants
Plasterers
Policy Administration Professionals
Primary Shool Teachers
Process Control Technicians Not Elsewhere Classified
Real Estate Agents and Property Magers
Roofers
Rubber Products Machine Operators
Sales Demonstrators
Security Guards
Senior Goverment Officials
Service Station Attendants
Sheet Metal Workers
Ships' Deck Crews and Related Workers
Shop Supervisors
Shopkeepers
Software and Applications Developers and Analysts Not Elsewhere Classified
Sports Coaches, Instructors and Officials
Spray Painters and Varnishers
Stall and Market Salespersons
Stonemasons, Stone Cutters, Splitters and Carvers
Structural Metal Preparers and Erectors
Survey and Market Research Interviewers
Teaching Professionals Not Elsewhere Classified
Telephone Switchboard Operators
Training and Staff Development Professionals
Translators, Interpreters and other Linguists
Transport Clerks
Travel Attendants and Travel Stewards
Travel Guides
Waiters
Valuers and Loss Assessors
Web and Multimedia Developers
Welders and Flame Cutters
Wood Processing Plant Operators

**SURPLUS**

* Administrative and Executive Secretaries
* Advertising and Marketing Professionals
Agricultural and Industrial Machinery Mechanics and Repairers
Archivists and Curators
Bank Tellers and Related Clerks
Beauticians and Related Workers
Biologists, Botanists, Zoologists and Related Professionals
Broadcasting and Audiovisual Technicians
Freight Handlers
Graphic and Multimedia Designers
Hairdressers
Heavy Truck and Lorry Drivers
House Builders
Information and Communication Technology Installers and Servicers
Information and Communications Technology User Support Technicians
Print Finishing and Binding Workers
Printers
Product och Garment Designers
Public Relations Professionals
Pulp and Papermaking plant Operators
Secondary Education Teachers
* Secretaries (general)
Sewing Machine Operators
Shop Sales Assistants

countries with middle and low indices (see Table 2 below for more details on this comparison). Table 2 shows that in Finland there is a substitution of natural loss with high Human Development Indices through

*Table 1. Redistribution of native workers and labor migrants in Finland in terms of education level (in %)*

| Level of Education | Native Workers in Finland | Labor Migrants in Finland |
|---|---|---|
| Tertiary | 37% | 33% |
| Secondary | 45% | 42% |
| Elementary | 18% | 25% |
| Total | 100% | 100% |

(Education at a glance – OECD indicators, 2015)

*Table 2. HDI qualitative evaluation of foreign labor migrants in Russia and Finland*

| Country of Origin of Foreign Labor Migration | HDI of Foreign Labor Migrants in Finland | HDI of Foreign Labor Migrants in Russia |
|---|---|---|
| Germany | 0,905 | |
| Sweden | 0,904 | |
| UK | 0,863 | |
| Estonia | 0,835 | |
| Serbia | 0,766 | |
| Russia | 0,755 | |
| China | 0,687 | |
| Thailand | 0,682 | |
| Iraq | 0,573 | |
| Somalia | -- | |
| Belarus | | 0,756 |
| Kazakhstan | | 0,745 |
| Georgia | | 0,733 |
| Ukraine | | 0,729 |
| Armenia | | 0,716 |
| Azerbaijan | | 0,700 |
| Moldova | | 0,649 |
| Uzbekistan | | 0,641 |
| Kirgizia | | 0,615 |
| Tajikistan | | 0,607 |

(Human Development Index Report, 2016)

migration. At the same time, in Russia the situation is just the opposite: natural loss of high HDI is not compensated as foreign labor migrants come from the countries with roughly the same or lower indices.

As a result, migration policy in Finland is considered to be highly adaptive, balanced and first of all preserving national interests and human capital of the country. Success of such migration policy is partially preconditioned by the availability of the best system of labor market parameters' projection in Europe. The projection results of this system are used by both policymakers and ordinary citizens. Having highly detailed statistical data available is also a crucial issue.

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Danish immigration policy and its implementation are also of special interest for us. The campaign called "We Need All Youngsters" was launched back in 2003 by the Danish Ministry for Refugees, Immigration and Integration Affairs. It was aimed at fostering equal opportunities in the education system and at the labor market. Since December 2011, the campaign has been transferred to the jurisdiction of the Ministry of Children and Education. The campaign also has a separate and independent branch called the "Retention Caravan". The main objective of these two large-scale campaigns is to improve the integration of young immigrants, including second-generation immigrants, into the labor market by promoting their educational attainment, particularly in the field of vocational education. The second objective is to encourage these young students to pursue training in the areas where future shortages are predicted and where young people with migrant background are underrepresented. "We Need All Youngsters" has created a team of young role models with immigrant backgrounds who have been successful in education and/or career. These role models are travelling around the country discussing their experiences with other young people within immigrant communities, giving advice on how to choose and successfully complete education programmes. A team with the title "Parent role models" was also created to share experiences among the parents of these young people.

Recruitment campaigns for various courses in vocational training schools and especially for the courses in social work and healthcare (where shortages in human resources have been forecasted in the near future already) were also launched, targeting primarily immigrant teenagers (16-20y.o.). A similar campaign was conducted with the aim of recruiting young people for the police, armed forces, emergency and security services. Teachers in vocational training schools have been offered courses to improve their skills in teaching students whose mother tongue is not Danish.

Among its other aims, the Retention Caravan develops new pedagogical tools and methods in collaboration with vocational training schools that are geared towards ethnic minority youth. In response to a shortage of training places and apprenticeships, the Retention Caravan has also developed a user-friendly online guide for students looking for apprenticeships. This guide assists those seeking apprenticeships in writing applications and CVs and helps them to perform better in interviews. The Retention Caravan is also recruiting mentor teams among the retired skilled mechanics and blacksmiths to help vulnerable youth during their vocational training courses.

Another tool for a balanced migration policy is providing a wide range of rights for immigrants. Nowadays, there exists the Multiculturalism Policy Index that calculates migrants' rights in various countries.

The Multiculturalism Policy Index is a scholarly research project that monitors the evolution of multiculturalism policies in 21 OECD member states. This project has been launched and implemented by the Queen's University in Canada. The project is designed to provide information on multicultural policies in a standardised format for further comparative research and overall better understanding of the state-minorities' relations. The project provides an index for each of the three types of minorities: one index covers immigrant groups; the second one covers historic national minorities; and finally the third one concerns indigenous peoples. The Index was calculated at three time points - 1980, 2000, 2010 (see Figure 3 for the latest year data).

Thus, the values of the Multiculturalism Index, in part of immigrants in particular, ranges from low level (up to 3.0 pp) in Italy, France and Germany to medium (3.0 to 5.5 pp) in the USA, Portugal, Spain, the UK, Norway and then up to high level (6.0 to 8.0 pp) in Australia, Finland, Sweden and Canada.

In evaluation of multicultural policies related to immigrants, the following eight indicators are used:

*Figure 2. Multiculturalism Policy Index by Queen's University in Australia, 2010*
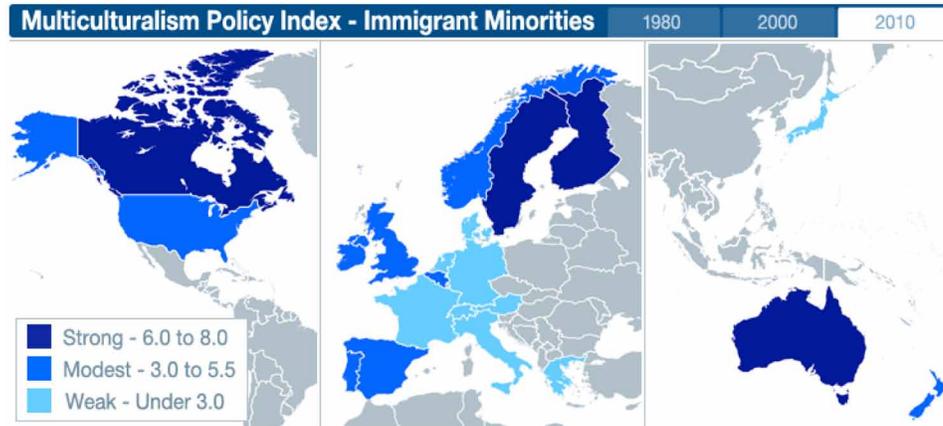


- Constitutional, legislative or parliamentary affirmation of multiculturalism at the central and/or regional and municipal levels and the existence of a government ministry, secretariat or advisory board to implement this policy in consultation with ethnic minority community;
- The adoption of multiculturalism in school curriculum
- The inclusion of ethnic representation/sensitivity in the mandate of public media or media licensing
- Exemptions from dress code
- Allowance of dual citizenship
- Funding of ethnic group organisations or activities
- Funding of bilingual education or mother-tongue instruction
- Affirmative action for disadvantaged immigrant groups

Thus, if a state tries to implement the abovementioned eight criteria, the balance of interests in immigration policy becomes more effective. In 2010, the highest Multiculturalism Index was recorded in Canada (7.5), Sweden (7), Finland (6), and the United Kingdom (5.5). At present, it can be noted that true multiculturalism has been reached only in Canada, where immigrants form 20.1% of the total population.

One more area that contributes to equilibrium in immigration policy is seeking to reduce social tension in society. This parameter can be measured by means of the Social Progress Index, a combined indicator that measures the levels of social well-being and social progress in different countries of the world. The Index was developed in 2013 under the supervision of the world-famous M. Porter, Harvard University professor and a specialist in strategic management and international competitiveness.

The Social Development Index is designed to assess social development by the following key criteria: quality of healthcare, level of environmental sustainability, level of tolerance and social inclusion, personal safety issues, nutrition; access to basic medical care; level of education. In 2014, the top five world leaders by the Social Development Index were: Iceland, New Zealand, Switzerland, the Netherlands and Norway. Separate indicators of Iceland, like level of tolerance and social inclusion, are especially impressive.

Recruiting qualified and highly qualified immigrants is another direction in migration policy regulation aimed at improving the balance of national interests. The system of attracting both qualified and highly qualified migrants is not exactly a new idea: in Canada, this system was introduced as early as in 1967.

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Since then, significant preferences have been given to people younger than 35 years old and those with academic degrees or high-level professional qualifications. In particular, in Canada, 62% of permanent residence permits are issued on the basis of qualifications; in the USA the share of such permits is13% only. However, Canadian merit-based system still faces some criticism, as many occupations of medium complexity are in demand inside the country, while the merit-based system still gives priority to highly qualified personnel primarily.

In what concerns attracting highly skilled and skilled immigrants, American experience with legislative initiatives and employers' initiatives is also of interest:

1.   Legislative initiatives. In 2001, the US senators drafted the DREAM Act, which facilitated and accelerated permanent immigration through conditional residency, with the potential for eventual citizenship for young illegal immigrants (under 35) who were brought to the USA as children and who have not committed crimes. They can study at universities or serve in the US Army. In 2012, the senators prepared a draft law that would allow residency permits to those migrants who graduate with a master's degree from an American university or those who have received a degree in the United States.
2.   Employers' initiatives. In 2015, M. Zuckerberg, the Facebook founder, donated $5 million to the education programme for young illegal migrants residing in the San Francisco region: "America was founded as a nation of immigrants. We shall welcome intelligent and hardworking young people of different nationalities in order to help every individual in our society to realize their full potential. With our help, more young migrants will rise by the social elevator to new opportunities, and then our country will make great progress" (Mark Zukerberg gives…, 2015).

A similar policy in the field of migration regulation is being implemented in Germany. Introduced in August 2012, the system of blue cards enables non-EU citizens to live and work for four years in Germany and other EU countries. Requirements for blue card holders are as follows: university education and knowledge of German language; a labor contract worth an annual income of €46,400 (€3,867 per month); a labor contract for occupations with labor shortage (e.g., scientists, mathematicians, engineers, doctors, computer programmers) with an annual income of €36,192 (€3,016 per month).

In various tools aimed at the equilibrium of immigration policy, the lists of occupations with labor shortages is of considerable interest. Such lists are widely distributed internationally and help accept migrant workers as "positive" regulators of migration flows (the most famous examples in this regard would be Australia, Canada and Finland). Unlike quotas, the lists do not set limits but the opposite -- they create preferences. For example, every year the Department of Immigration and Border Protection of Australia forms the list of needed occupations and the skills required for such jobs. Let's take the 2015 list as an example: the Australian Skilled Occupation List of 2015 details 200 occupations that required a minimum level of education equivalent to higher education (Australian Skilled Occupation List, 2015). Among them were: construction project managers, project builders, engineering managers, production managers, childcare center managers, medical administrators, nursing clinical directors etc. (see Figure 4 for a fragment of this list).

The government of Canada also annually compiles a list of positions to be potentially filled by migrants - it is called The Canadian Skilled Occupation List. Unlike in Australia, the Canadian list has only 50 occupations listed; the applicants are also required to have higher vocational education. However, preferences in the Canadian and Australian lists are very similar and mostly focused on attracting highly

*Figure 3. The list of deficit occupations in Australia*
*(Australian Skilled Occupation List, 2015)*

| Occupation | ANZSCO Code | Assessing Authority |
|---|---|---|
| Construction Project Manager | 133111 | VETASSESS |
| Project Builder | 133112 | VETASSESS |
| Engineering Manager | 133211 | Engineers Australia/AIM |
| Production Manager (Mining) | 133513 | VETASSESS |
| Child Care Centre Manager | 134111 | TRA |
| Medical Administrator | 134211 | VETASSESS |
| Nursing Clinical Director | 134212 | ANMAC |
| Primary Health Organisation Manager | 134213 | VETASSESS |
| Welfare Centre Manager | 134214 | ACWA/VETASSESS |
| Accountant (General) | 221111 | CPA/ICAA/IPA |
| Management Accountant | 221112 | CPA/ICAA/IPA |
| Taxation Accountant | 221113 | CPA/ICAA/IPA |
| External Auditor | 221213 | CPA/ICAA/IPA |
| Internal Auditor | 221214 | VETASSESS |
| Actuary | 224111 | VETASSESS |

qualified personnel – human resources managers, purchasing managers, financial managers, senior managers (in trade, business, broadcasting and the like) (see Figure 5 for a fragment of the Canadian list).

The experience of Finland in this field is also very interesting. Migration regulation closely follows the macroeconomic situation, thus, immigrants are attracted in accordance with a list of positions to be filled.

The Ministry of Employment and Economic Development of Finland publishes annually the list of the jobs most in demand as well as jobs which do not have such shortages (see Figure 6 for a fragment). An important role in determining these lists is played by the Employment Service under the Ministry of Employment and Economic Development, which takes into account: employment perspectives, motivation, and inclination. If necessary, psychological testing and language tests are used to confirm the language skills of immigrants.

The Finnish list of designated occupations differs significantly from Australian and Canadian lists, since the former is oriented not only at attracting highly qualified labor force, but also on qualified workers who have elementary and secondary vocational education only (such as gardeners, social workers, accountants, cleaners, cooks etc.)Figure 6 proves that the Finnish list is very much diverse in terms of education/qualification level.

Therefore, we can conclude that it is necessary to take into account the following OECD member states' experiences while developing optimal migration policy:

- Implementing the principle of "integration upon arrival for migrants" (Finland)
- Achieving balance at the labor market (Sweden, Denmark)

*Figure 4. List of deficit occupations in Canada, fragment*
*(Canadian Skilled Occupation List, 2015)*

1. NOC 0013 Senior managers – financial, communications and other business services

2. NOC 0015 Senior managers - trade, broadcasting and other services, n.e.c.

3. NOC 0111 Financial managers

4. NOC 0112 Human resources managers

5. NOC 0113 Purchasing managers

6. NOC 0121 Insurance, real estate and financial brokerage managers

7. NOC 0311 Managers in health care

8. NOC 0711 Construction managers

9. NOC 0712 Home building and renovation managers

10. NOC 0811 Managers in natural resources production and fishing

11. NOC 0911 Manufacturing managers

12. NOC 1111 Financial auditors and accountants

13. NOC 1112 Financial and investment analysts

14. NOC 1113 Securities agents, investment dealers and brokers

15. NOC 1114 Other financial officers

16. NOC 1123 Professional occupations in advertising, marketing and public relations

17. NOC 1212 Supervisors, finance and insurance office workers

18. NOC 1224 Property administrators

19. NOC 2113 Geoscientists and oceanographers

20. NOC 2131 Civil engineers

- Granting a wide range of rights to migrants (Sweden, Finland)
- Reducing social tension (Iceland)
- Attracting highly skilled and qualified migrants (USA, Germany, Canada, Australia)
- Developing and publishing the lists of jobs currently in shortage at the labor market (Australia, Canada, Finland)

## LABOR MIGRANTS' ADAPTATION IN THE OECD LABOR MARKET: THE CASE OF BOTTLENECK VACANCIES IN NORDIC COUNTRIES, BALTIC STATES AND CENTRAL EASTERN EUROPE

This part of the chapter deals with the cases of bottleneck vacancies in Nordic countries, Baltic states and Central Eastern Europe as well as the analysis of migrants' employability and bottleneck vacancies' analysis in these zones. Data on migration trends, characteristics, institutions, traditions and employability is extremely important for both migration policy and labor market regulation.

Demand for skills or immigrant labor does not guarantee an easy passage by default. Employability skills such as literacy and numeracy, technical skills, and good-quality personal skills (integrity, reliability, punctuality, learning capacity) are often in demand. According to employers' surveys by the ILO, the ETF, and Cedefop, "employability skills" rather than "the ability to do work well" are crucial

*Figure 5. List of deficit occupations in Finland, fragment*
*(Bottleneck Vacancies in Finland, 2013)*

| Occupation (ISCO-08)* | Development since 2008 |
|---|---|
| Nurse | ↗ |
| Medical doctor | ↗ |
| Practical nurses [...] personal care* | ↗ |
| Sales worker and telemarketer* | → |
| Special needs teacher | ↗ |
| Social worker | → |
| Dentist | ↗ |
| Early childhood educator | → |
| Dental assistant | → |
| Cleaner | → |
| Social work associate professionals | ↗ |
| Dental hygienist* | ↗ |
| Psychologist | → |
| Accountant | → |
| Laboratory nurses and radiographers* | ↗ |
| Pharmacist | ↗ |
| Speech therapist | ↗ |
| Entrepreneur* | ↗ |
| Senior social worker and [...] manager | ↗ |
| Chefs and cooks* | ↗ |

at the OECD labor markets. We shall discuss some of the key drivers behind labor migration towards the OECD and underline certain challenges in relation to migration policy change.

There are significant differences between the OECD member states in terms of migrants' integration at the local labor markets. Certain countries have programmes and practices more relevant to migrants' integration and these apparently result in higher employment rates. Bottleneck vacancies analysis shall be considered to be a good tool for migrants' integration at a labor market.

The data provided by the OECD has shown that migrant workers experience the greatest difficulties with employability in Greece, Spain, and Portugal. Luxembourg and Germany appear to have the best migrant employment rates. This situation correlates with the general unemployment rates in these countries: high unemployment in Greece, Spain, and Portugal and much lower unemployment rates in Luxembourg and Germany. Thus, taking into account serious unemployment rate differences between the EU-10 (Austria, Belgium, Denmark, Finland, France, Germany, Luxembourg, the Netherlands, Sweden, the United Kingdom) and newer EU member countries, it would be plausible to state that due to poorer employment figures in Eastern and Western Europe, Western countries of the EU have been targeted

*Figure 6. The rate of migrant and resident population employability in the OECD countries, as of 2015*
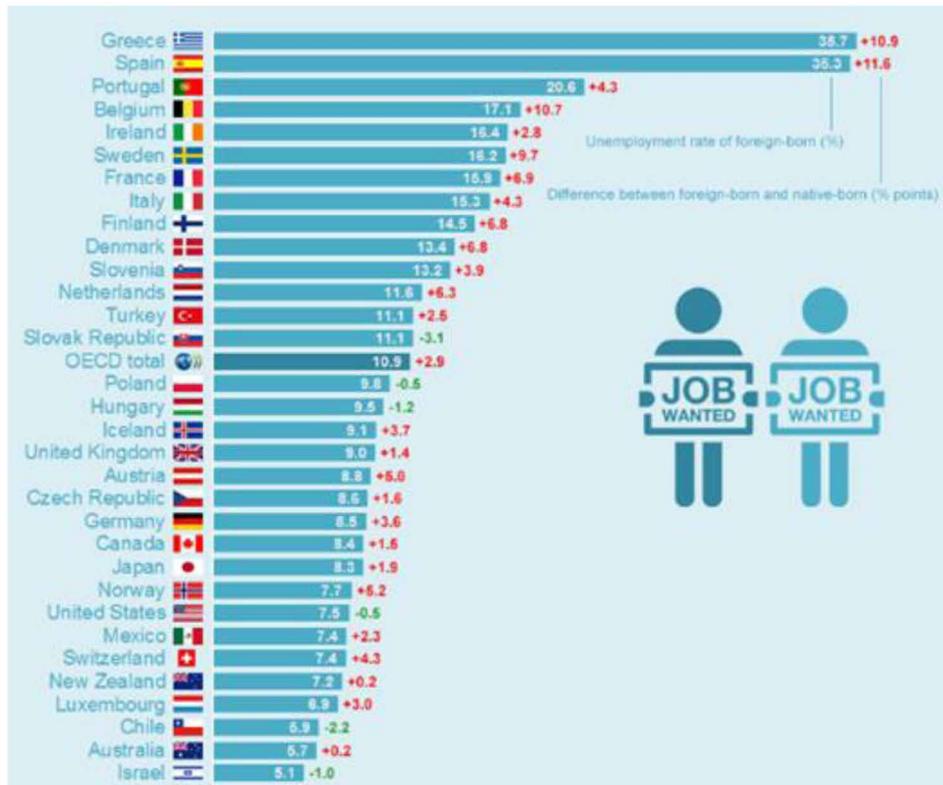


by much larger migration inflows from the East. This is similar to developing countries in Asia and Africa. For instance, in 2013, developing Asian and African countries were the main migrant-sending countries. labor migration from poor countries to more developed ones are likely to continue growing on all the continents.

Economic differentials are known to be the key drivers determining migration flows between countries. There were certain times, when immigrants were highly wanted. For example, in the post-war period, there was a considerable gap between unemployment rates in Western European receiving countries and sending countries. These countries invited temporary workers from Southern Europe, Turkey and the Maghreb to make up for the local workforce shortages. However, when the economy is not prospering, migrant workers become an easy target for discrimination as anti-immigration sentiment becomes significantly stronger, for a range of both economic and social reasons. The correlation between the level of country's development measured by GDP volume and the number of migrants living there is significantly high for such countries as Spain, the UK, France, and Germany (see Table 3 for more details).

The average wage in the migrant-sending countries usually does not exceed 20% of the corresponding amount in receiving countries (according to the International Labor Organization) which is an important driver in international labor migration (Global Economic Prospects, 2006). Furthermore, differences in quality of life, a measure reflecting overall well-being, in receiving and sending countries is also an important driver.

*Figure 7. Unemployment rates in the selected EU countries, 2005-2013*
*(Source: UNESCO Science Report)*
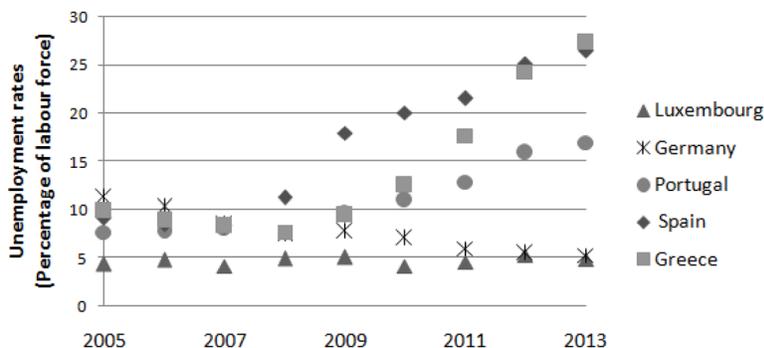


*Figure 8. Differences in unemployment rates between EU-10 and newer EU member states, 2005-2013*
*(Source: UNESCO Science Report)*
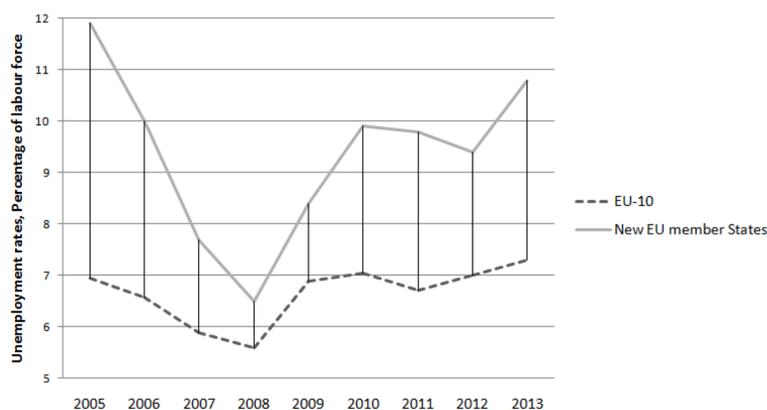


*Table 3. GDPs of the selected receiving states and their volume of immigrants, data as of 2013*

|  | GDP According to the IMF, bln $, 2013 | Number of Migrants According to UNESCO, mln people, 2013 |
|---|---|---|
| Germany | 3.610 | 9.8 |
| France | 2.535 | 7.4 |
| United Kingdom | 2.450 | 7.8 |
| Spain | 1.523 | 6.5 |

(UNESCO Science Report)

Thus, in this paper, we are offering some evidence to conclude (Tsapenko, 2009) that "the key drivers of migration are the gaps in economic development and corresponding standard and quality of life in sending and receiving countries".

Let us analyze 800 bottleneck vacancies (as of the EU Overview report: Mapping and Analysing Bottleneck Vacancies in EU labor Markets, 2014) according to the following criteria:

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*Table 4. Top-5 demanded occupations in the selected OECD member states*

| # | Country | Occupations in Demand | # | Country | Occupations in Demand |
|---|---------|----------------------|---|---------|----------------------|
| 1 | Finland | Nurse<br>Social worker<br>Dentist<br>Preschool teacher<br>Psychologist | 7 | Norway | Technician<br>Mountain metallurgy technician<br>Truck driver<br>Industrial engineer<br>Chemical engineer |
| 2 | Sweden | Mountain metallurgy engineer<br>Crane operator<br>Geodesist<br>Software developer<br>Chemical engineer | 8 | Denmark | Electrical engineer<br>IT engineer<br>Software developer<br>Civil engineer<br>Engineer |
| 3 | Slovakia | Welder<br>Construction worker<br>Heavy industry technician<br>Biotechnologist<br>Mechanic | 9 | Slovenia | Welder<br>Truck and tractor unit driver<br>Processing industry technician<br>Sales assistant<br>Bricklayer |
| 4 | Hungary | Nurse<br>Mechanical engineer<br>Doctor<br>Electrical engineer<br>IT developer | 10 | Poland | Welder<br>Locksmith<br>Bricklayer<br>Driver<br>Security guard |
| 5 | Czech Republic | Cook<br>Technical representative<br>Sales representative<br>Truck driver<br>Waiter | 11 | Lithuania | Sales manager<br>Accountant<br>IT specialist<br>Doctor (especially outside big cities)<br>Needlewoman |
| 6 | Latvia | Specialist in agriculture<br>Construction worker<br>Needlewoman<br>Long-vehicle driver<br>Packer | 12 | Estonia | Electrician<br>Carpenter<br>Welder<br>Bricklayer<br>Plumber |

(Employment offices of the OECD member-states)

*Table 5. Top-15 demanded occupations grouped by the levels of education*

| Higher Vocational Education | Secondary Vocational Education |
|---|---|
| Preschool teacher<br>Psychologist<br>Pharmacist<br>Engineer<br>Forest worker<br>Industry engineer<br>Chemical engineer<br>Mountain metallurgy engineer<br>Geodesist<br>Software developer<br>Electrical engineer<br>IT engineer<br>Civil engineer<br>Construction worker<br>Heavy industry technician | Nurse<br>Social worker<br>Dentist<br>Excavator operator<br>Woodworking machine operator<br>Forestry worker<br>Technician<br>Mountain metallurgy technician<br>Truck driver<br>Crane operator<br>Welder<br>Mechanic<br>Bricklayer<br>Agricultural equipment mechanic |

- Geographic – including Central and Eastern European countries, Nordic and Baltic States
- Level of education – including higher vocational education (HVE) and secondary vocational education (SVE)

According to the EU Overview report "Mapping and Analysing Bottleneck Vacancies in EU Labor Markets" (2014), vacancies in various economic sectors do require different qualifications. Out of 800 vacancies reviewed in 12 OECD member-states, 600 vacancies were requiring higher vocational education and 200 were requiring secondary vocational education. As a result, the rankings of bottleneck vacancies for both higher and secondary vocational education in the OECD member states were developed (see Tables 4 and 5).

Our bottleneck vacancies' analysis shows that specialists with higher vocational education and secondary vocational education are equally demanded in 12 selected OECD member states. At the same time, specialists with secondary vocational education are more demanded in the Baltic States whereas those with higher vocational education are highly demanded in the Nordic countries where knowledge economy development is on the rise. In Central and Eastern European countries, such vacancies at the local labor market are rather balanced – both specialists with secondary vocational education and specialists with higher education are needed.

In the course of bottleneck vacancies' analysis special emphasis should be made on high-tech/non-high-tech economic sectors. Vacancies demanded in high-tech economic sectors (235 vacancies with higher vocational education and 78 vacancies with secondary vocational education) are mostly represented by mountain metallurgy technicians, software developers, chemical engineers, mechanics, biotechnologists, heavy industry technicians, IT engineers, and electrical engineers. These vacancies are particularly demanded in Sweden, Denmark, Norway, Slovakia, and Hungary.

Non-high-tech bottleneck vacancies (365 vacancies with higher education and 122 vacancies with secondary vocational education) are represented in such economic sectors as construction, light industry, forestry, transportation and trade.

Medical staff vacancies (doctors, psychologists, pharmacists, nurses, dentists, social workers) are also in high demand. Healthcare specialists are primarily demanded in Finland, Hungary, and Lithuania. One possible reason for that could be rapidly ageing population in these countries resulting in higher demand for healthcare professionals. Vacancies in non-high-tech economic sectors are demanded in Latvia, Lithuania, Estonia as well as in Czech Republic and Slovenia.

Dissemination of information on the bottleneck vacancies analysis is highly important since it shall be applied for further analysis of current situation at the labor markets taking into account the actual foreign labor migration trends. Regularly updated data on bottleneck vacancies available for foreign labor migrants (on the example of the selected OECD member states) would contribute to much better understanding of both current and future potential labor market situations by all interested stakeholders. Experience and best practices of the selected OECD member states may become highly useful in searching for optimal solutions of the labor migration regulation issues.

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## CONCLUSION

The research made it possible to come to the conclusion that, in respect to foreign labor migrants in Finland, Sweden, Iceland, Canada, Australia, Denmark, the USA alongside with the Baltic States and the selected Central Eastern European countries effective measures have been systematically implemented for a relatively long period of time by now.

Migration policy in the mentioned above OECD member states is first of all aimed at the society needs and thus results in negative factors' annihilation. A complex system of preventive measures is primarily aimed at migrants' integration into the receiving society, and these results in the OECD human capital development. A thoroughly planned system of different measures in their consecutive implementation includes migrants' adaptation in terms of culture and language and specificity of the local labor markets. It helps these countries overcome the present-day challenges: population ageing, depopulation, productivity gap.

High necessity of current transformations in the global migration policy is highly obvious taking into consideration, in particular, the already visible OECD experiences. It is obvious that full, valid, and up-to-date information on the labor market demands and necessities will contribute to much better result-oriented decision-making. Information collection on foreign labor migrants is clearly not enough, it is also important to use it for further analysis of current situation at the labor market and in the consequent decision-making. OECD experience might become highly useful in finding brand new solutions for successful regulation of the global foreign labor migration.

Thus, in order to develop an optimal migration policy, governments shall take into account different aspects of this policy implementation - education, training, innovations, workplace practices and relations, development of specific industries etc. That is why the OECD annually develops a list of in-demand occupations along with the reference skills required for them. Despite the decades of harmonization efforts, there are still gaps in the OECD members' labor markets in terms of labor demand, employment and barriers. In this chapter, we have looked at some macro indicators and reviewed about 800 bottleneck vacancies to identify the differences across blocks of the OECD member-states, sectors and levels of education referring to skill levels in demand. There are huge gaps between Nordic states and more southern members of the OECS. Differences in the levels of economic development also seem to have their effect on labor demand in different countries.

Taking into account the existing OECD experiences in successful migrants' adaptation strategies, the following recommendations could be proposed on the global level:

1.  Development of a comprehensive monitoring system over foreign labor migration should start with collection and processing of information from various sources (churches, mosques, statistical institutes, pension funds, tax services and so on). Information should be collected and analyzed by the most meaningful demographic parameters - age, gender, education level etc. Availability of complete, reliable and always up-to-date information would facilitate successful administrative decision-making in this field. These decisions shall include future migration flows planning depending on country's challenges and labor market situation.
2.  Migration flows projection. Obviously, migration flows' projection today is the most important precondition for determining the future needs of the economy. Therefore, it is necessary to strengthen on the labor market forecasting parameter which will be an important step towards more effective migration policy as well as social tension reduction.

3.  It is highly recommended to approve, on the state level, a widely recognized principle of "integra-tion before migration" through wider provision of additional information on culture and history of the receiving country, its specific features, realistic prospects and opportunities of all incoming people. Implementation of this principle as a fundamental one would create better conditions for migrants' integration into the local societies, and not as national diasporas, as it is currently the case in some many countries global wide.

4.  Implementation of all these measures stemming from the best OECD practices would mitigate globally the situation with foreign labor migrants and shift the phenomenon of migration as such from the category of "threats" (to a country, society and/or local labor market) to the category of "opportunities" in terms of human potential development.

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## KEY TERMS AND DEFINITIONS

**Balance in a Labour Market:** A characteristic of Nordic states' labour market containing 3 provisions - well-tuned system of labor market projection parameters; well-organized system of statistics representing unique and complete data on foreign labor migrants; successful human capital development.

**Bottleneck Vacancies:** Refers to vacancies for occupations which are considered to be in short supply and consequently these are described as shortage occupations herein.

**Brain Drain:** A territorial movement of highly skilled and qualified migrants in order to change permanent residence or temporary stay in the territory for study.

**Integration upon Arrival:** A fundamental principle of Finnish migration policy combining 2 provisions - migrants demonstrate willingness to be integrated and the host society is willing to accept migrants.

**Moderate Assimilation:** A type of migrants' integration policy in Russia, a hybrid assimilation that considers 3 out of 5 assimilation features (level of communication with compatriots, level of national language conservation, traditions, culture, national identity).

**Strategies of Effective Adaptation of Foreign Migrants:** A combination of different tools implemented by the OECD member-states in order to balance interests between migrants and the host society.

**World Migration Policy:** A migration policy which shall be regulated at global level and resulted in a fact that migration shall play a positive role in socio-economic, demographic and political development of a country and its negative consequences will be smoothed.