

The Impact of Labor Migration on Human Capital Development El impacto de la migración laboral en el desarrollo del capital humano

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ABSTRACT

The growing role of labor migration is one of the most notable trends in international migration flows. This migration has become an important factor in economic development and a source of the increasing interdependence of countries and regions in today's globalized world. It impacts migrants' country of origin as well as the destination country, chiefly affecting human capital in both groups of nations. This article systematizes the positive and negative effects of labor migration focusing on human capital while suggesting a system of indicators characterizing such effects. Special attention is paid to the analysis of policies related to such migration. This study explains how countries of origin and destination must carry out effective and fair management of labor migration to make the most of its benefits at an international level.

Keywords: 1. labor migration, 2. human capital, 3. development, 4. migration policies, 5. Europe.

RESUMEN

El papel creciente de la migración laboral es una de las tendencias más notables en los flujos migratorios internacionales. Esta migración se ha convertido en un factor importante para el desarrollo económico y es fuente de una creciente interdependencia entre países y regiones en el mundo global actual. Su impacto se siente tanto en los países de origen de los migrantes como en los de destino, afectando principalmente al capital humano de ambos países. Este artículo sistematiza los efectos positivos y negativos de la migración laboral con respecto al capital humano, al mismo tiempo que propone un sistema de indicadores que caracterizan tales efectos. Se presta especial atención al análisis de las políticas relacionadas con este tipo de migración. Esta investigación argumenta que tanto los países de origen como los de destino deben llevar a cabo una gestión eficaz y justa de la migración laboral para aprovechar al máximo de sus beneficios a nivel internacional.

Palabras clave: 1. migración laboral, 2. capital humano, 3. desarrollo, 4. políticas migratorias, 5. Europa.

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INTRODUCTION⁴

Increasing social and economic differences between countries have been making hundreds of millions of people migrate across borders. As emigration has become a way of raising living standards in less developed nations, foreign labor is currently more commonly available in more developed countries.

The United Nations (hereafter referred to as the UN) estimates that there are more than 258 million migrants in the world today. Migrant workers are estimated to number more than 150 million (United Nations, 2017). According to the World Bank, in 2016, migrants sent more than 429 billion U.S. dollars to their countries of origin, three times the amount of official development aid provided to those developing countries during that year. The total amount of remittances exceeded 600 billion U.S. dollars (World Bank, 2018). These statistics confirm that today's global social processes can hardly be imagined without international migration. Regardless of their type, migrations are one of the oldest global social processes that impact both the country of origin and the countries of arrival.

Developed countries tend to take a selective approach in dealing with immigration as a social, economic, and human capital factor. The best example is the United States, where the government tries to make the best use of every form of immigration. Highly skilled migrants have made a substantial contribution to the further development of U.S. science, technology, and medicine. Educational migration enables universities to obtain additional financing, while low-skilled foreign workers are a source of cheap labor for small and medium-sized businesses.

However, migration is not a purely positive phenomenon. Government mismanagement of migration has resulted in mounting ethnic tensions, ethnic crime, non-observed and shadow economies, illegal employment, and drug trafficking.

Migration is a social “catalyst,” as it were. For instance, in countries with efficient government and low levels of corruption, it functions as a development factor. It provides human capital for growing industries, stimulating investment and competition. Whereas the opposite occurs in countries that have systemic government problems and fail to take adequate action against corruption. By becoming part of a flawed system, migration gives a boost to the illegal labor market, fuels a shadow economy, and is a source of various illicit schemes (Grebeniyuk, 2017). This may trigger even more destructive developments such as ethnic conflicts or domestic political tensions.

Migration also has social and economic effects on sending countries. Some sociologists and economists thought of labor exports as a purely positive phenomenon, arguing that they benefited labor markets, had favorable social effects on financial systems, and were a political stability factor (Taran, Ivakhnyuk, Conceição Pereira Ramo, & Tanner, 2009; Zagulyaev, 2010). However, in sending countries, money inflows through remittances raised the population's living standards and purchasing power. As a result, government elites did not try to carry out structural reforms or optimize their governance. Moreover, in 2011, although emigration increased, the government of sending countries did not adopt policies to lower its

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emigration levels (United Nations, 2013). This resulted in the fixation of social, economic, and political adversities in sending countries and stimulated emigration.

Currently, the negative effects of labor emigration that used to be disregarded in sending countries are beginning to manifest themselves, even though those countries continue to be benefited from labor exports in ways such as money transfers and the prevention of labor market tensions. Although it is a source of money and curbs unemployment, emigration erodes human capital, leads to economic stagnation and structural crises, and dependency mentalities.

METHODOLOGY

In modern sociological and economical research, the theory of human capital developed by economists such as Becker (1962), Schultz (1961), and Denison (1968), plays a significant role. Sociological aspects of the human capital theory were developed as a branch of economic sociology (Bourdieu, 2002; Granovetter, 1985; Coleman, 2001). This theory views labor migration as an investment in human capital and allows to model and predict the benefits of migration in terms of the costs for relocation (Carling, 1996; Sjaastad, 1962; Chiswick, 1978; Yang, 2008; Rothgang & Schmidt, 2003; Kolosnitsyna & Suvorova, 2005; Dinkelman & Mariotti, 2014). The theory of human capital is used to study both the motives and driving forces of migration and the consequences of migration movement.

This article analyzes the impact of positive and negative effects on human capital due to legal and undocumented labor migration in sending and receiving countries. Also, it suggests a system of statistical indicators of such effects that may help quickly identify current trends.

The choice of evaluation methods is key to building a system of indicators to analyze social processes such as labor migration. Reaching or exceeding specific thresholds is an indication of negative trends. Thus, the use of critical indicators appears to be the most appropriate method.

However, concerning labor migration, it is not sufficiently clear what such thresholds should be. For example, increasing exportation of low-skilled labor with low-skilled emigrants making up a growing proportion of the sending country's economically active population would mean more money coming into the country from abroad, lower tensions in its labor market, and lower pressures on its welfare services.

On the other hand, even a slight increase in the emigration of professionals such as scientists and high skilled labor would cause direct and significant damage to the sending country's human capital. Nevertheless, different countries can afford to lose different amounts of low-skilled labor—and consequently different proportions of the economically active population—through emigration. These are thresholds that would be based on factors such as the condition of a sending country's labor market, dynamics of investments, and development dynamics of small- and medium-scale businesses.

Applying sets of absolute, average, and relative indicators would be the most accurate method to analyze labor migration. The dynamics of such indicators would reveal positive or negative trends. Evaluating changes that various indicators undergo in time is essential for understanding migration processes and the processes that it affects.

The methods used in this study to assess the effects of labor migration on a nation's human capital constitute a three-stage algorithm. The first stage involves the identification of specific positive and negative effects of international labor migration on the human capital of receiving and sending countries. The second stage involves the development of a system of indicators and a methodology to use this system to assess these effects. Lastly, the third stage involves the development of methods to collect statistical information.

It should be noted that labor migration leads to changes in human capital, regardless of the category of sending and receiving countries (developed or developing). For example, labor emigration decreases the quantitative characteristics of national human capital for all kinds of states (Popescu, Diaconu, & Maxim, 2014). Also, quality indicators of human capital are notably reduced, because of the emigration of highly qualified specialists, in both developed and developing countries. Thus, the methodology proposed by the authors is universal and suitable for south-north migration and south-south migration.

HUMAN CAPITAL AND LABOR MIGRATION

Human capital is a renewable resource that can be accumulated. Theodore Schultz (1981), who studied investment in human capital and knowledge, states that "investment implies the commitment of resources to acquire future income and satisfaction" (1981, p. 141). The calculation of human capital value should consider investing in job training, professional education, expenditures and revenues from migration, and healthcare and education.

Investment in human capital should also be examined in the context of labor migration. The first person who paid attention to this was Larry Sjaastad (1962). However, Barry Chiswick (1978) was the first to use a human capital model to analyze labor migration. The logic of his model is as follows: if labor migration is perceived as a form of investment, a migrant initially incurs costs that will eventually turn into income or a rise in their standard of living. Hence, one would calculate the net worth of relocation and consider moving to another country.

Analysis of this model (Kolosnitsyna & Suvorova, 2005) shows that the decision to move, whether to another country or not, is based on three main factors: employment conditions in both country of origin and the receiving country, age, and relocation costs. Let us consider them one by one.

Employment conditions in both countries are represented in the model by earnings. It is a well-known fact that although immigrants share the same occupation, age, and work experience with nationals from the receiving country, they still earn less (International Labour Organization, 2015), mainly because of the incomplete transfer of human capital and asymmetric information in the labor market. Subsequently, however, the earnings of migrants grow faster than those of locals (Kommersant, 2017).

Age is a significant restriction factor for all potential migrants. Being a natural characteristic, it is not adjustable. Migrant's age represents the period during which the migrant would be able to benefit from migration as an investment in his or her human capital. This means that age is the main deterrent to both national and international movements of labor.

Costs are part of any relocation. Inquiries, transportation, housing, looking for a job, learning a foreign language or improving one's knowledge of it, and integration into a new culture, all cost money. Larry Sjaastad (1962) divided migration costs into two categories: monetary and non-monetary. Anticipated non-monetary costs, albeit not directly quantifiable, often matter more to a would-be migrant than potential monetary. The principal non-monetary cost is the psychological problem of separation from one's family.

Migration costs vary depending on the distance between countries, age, and availability of migration networks. A direct correlation between the three factors exists. For example, the further away the destination country is from one's country of origin, the costlier it is to obtain information about employment opportunities, and the more expensive relocation is to it (Artal-Tur, Peri, & Requena-Silvente, 2014). At the same time, migration networks help facilitate obtaining the necessary information for migrants, which considerably reduces its costs.

The psychological costs of relocation also depend on the distance between the two countries: e.g., the longer this distance is, the more expensive it is for a migrant to visit or phone their family, and the more difficult it is for them to receive news and parcels from their country of origin. The existence of migration networks also helps reduce psychological costs and helps get communication with compatriots to exercise religious practices.

Regarding migrant's age, a middle-aged migrant would generally have a family. Thus, relocation costs would rise in proportion to family size. On the other hand, psychological costs are lower for young people (Becker, 1962). They tend to seek independence from their families, they may not have as many friends as middle-aged migrants, and to them, losing ties with friends does not mean loss of "useful contacts" as often as it does to older migrants (Bodvarsson & Hou, 2010). Older migrants are less willing to part with all one is attached to and habituated.

Another cost of migration is language proficiency. Therefore, moving to another country already speaking the language or a similar one can solve relocation problems. Some researchers (Chiswick & Miller, 2014) believe that the popularity of English as an "international" language, one taught worldwide, explains the large scale of migration to the United States, Canada, and Australia. In any case, language is more of a problem for older than for young people.

An additional feature of migration is the assessment of their future in the receiving country. Any migrant has their expectations, but one who is prepared to wait for benefits is more prone to relocate. Being badly off at the beginning often means affluence eventually.

One can draw some conclusions from the model. First, most labor migrants are relatively young. Numerous studies suggest that the average age of migrants is lower than that of the population of receiving countries (United Nations, 2017). The profitability of any investment is proportional to how long it brings revenue.

Second, migration becomes clear when there is a large income difference between the migrant's country of origin and the destination country. This explains the typical global human resources dynamic that nationals of least developed countries with low per capita incomes seek by moving to countries with higher per capita incomes.

However, it is not that simple: one's disposable income depends not only on how much one works and earns but also on taxes and levies one pays. This means professionals and highly

skilled workers are interested in moving from a country with an even income distribution system to a country where the economic equality of the population is not the government’s priority. For example, a private dentist living in Sweden, where they must pay an income tax of more than half their salary, would seek to move to the United States and pay a tax rate of 30%. Conversely, low-skilled workers benefit more from moving to countries with relatively equal income distribution systems —countries where the State raises the minimum wage and trade union pressure forces employers to pay their workers higher wages.

Lastly, relocation costs are a major factor in labor migration. Consequently, all other things being equal, would-be migrants opt to go to a country that is located relatively close to their country of origin.

EFFECTS OF LABOR MIGRATION ON HUMAN CAPITAL

Social and economic studies suggest that labor migration exerts some specific effects on the human capital of sending countries (Table 1).

Table 1. Effects of Labor Migration on Human Capital of Sending Countries

Positive effects	Negative effects
Less pressure on the labor market.	Loss of skilled labor, brain drain, less input by those who stay.
Advanced training or acquisition of new skills.	Lower education standards of migrants and their children.
Use of money transfers from abroad to set up micro- or small enterprises.	Development of dependency mentalities declines in private enterprise.
Poverty reduction.	--
Larger investment in education in response to personal out-migration strategies.	--

Source: Elaborated by the authors.

Let us analyze these effects. Special attention should be paid to brain drain as an effect both of temporary and permanent emigration. How damaging the loss of skilled and professional labor is to a sending country depends on the latter’s general development level and the state of its economy. For instance, the relocation of scientists from the United States to other countries has no significant effect on U.S. science. The gaps it creates are quickly filled by scientists who come to the United States from countries all over the world every year, resulting in a turnover of researchers rather than brain drain (Cervantes & Guellec, 2002)

Alternatively, mass migrations of Russian scientists and engineers in the early 1990s ravaged entire sectors of the economy and fields of science. Overall, in this article, labor emigration is seen as damaging to sending countries’ human capital, despite some positive economic effects. This holds not only for highly skilled and professional migration but also for low-skilled labor.

By stimulating labor emigration and thereby helping reduce pressure on their labor markets, countries make their human capital sustain significant losses. Central Asia, a region comprising Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, is a good example.

In the 1990s, due to the loss of large proportions of their administrative, educational, military, scientific, and medical elites, Central Asian countries deprived themselves of essential human resources for sustainable development (Ryazantsev & Grebenyuk, 2008). Nearly all sectors in those countries are badly short of skilled personnel, and some sectors are practically dead because of this.

Negative economic trends in Russia in the early 2000s set off a new wave of labor migration, which continues to impact the country's human capital.

Vast proportions of labor migrants end up living permanently in the receiving countries. Human capital losses in sending countries are mostly irreplaceable. Educational migration is part of this phenomenon—some of the most talented, ambitious, and industrious young people go abroad to study and often stay there for good.

Researchers pay a great deal of attention to the effects that the return of migrants to their country of origin has on their human capital. The International Organization for Migration (2003) said that the “prospects of working abroad have increased the expected return to additional years of education, and led many people to invest in more schooling, especially in occupations in high demand overseas” (2003, p. 212).

However, the repatriation of low-skilled migrants does not have the same effects as that of high-skilled migrants. The repatriation or turnover of highly skilled migrants benefits the sending country. The return of scientists, doctors, teachers, managers, and entrepreneurs who have found jobs abroad, acquired new competencies and skills, and absorbed a new work culture, is a significant contribution to the sending country's human capital. This category of migrants often masters and bring home technologies that can only be bought abroad. They also bring back new managerial methods, business strategies, and forms of work organization.

The repatriation of low-skilled labor is a different story. If a low-skilled migrant plans to return after a while, the skills, and competencies he or she will have learned abroad are unlikely to be very much in demand at home. Returned migrants would hardly expect anything better than a “McJob” (a low-paid job with limited prospects, usually at a fast-food restaurant), or a “3D” (dirty, dangerous, and demeaning) job—a low-skilled, often high-intensity job, e.g., at an assembly line or in construction, mining, or food processing. In this job category, one learns no unique skills that can significantly contribute to one's human capital. Therefore, skills that a migrant may have acquired before returning would generally be of little value in their country of origin's labor market.

Frequently, low-skilled returnees are unable to find work in their field and accept a less productive, lower-paid job. This is because that sectors in receiving countries where migrants find work or acquire new skills have no counterparts in their countries of origin. For instance, developing countries generally have more deficient child and elderly care services than developed nations do. Migrants who have gained work experience in such services in developed countries may risk being unemployed if they return home. Otherwise, they may have to take a job in a different sector requiring less or no human capital input, which is often the case in migration receiving countries during economic crises when demand for labor plummets in nearly all sectors. This is an obstacle to direct investment, as today, virtually all industries in developed countries are high-tech sectors and need highly skilled personnel.

Migrants' money transfers to their countries of origin have a significant *direct* effect on poverty reduction and an *indirect* effect on human capital in those countries. A migrant's family spends part of the remitted money not on current consumption but on education and healthcare. For example, it enables the migrant's children to stay at school instead of cutting short their studies to work (Edwards & Ureta, 2003; Yang, 2008).

Yet this is not always the way labor migration works. Studies of the Malawi labor market carried out in the 1970s found that vacancies in agriculture left by emigrants were promptly filled by their children (Dinkelman & Mariotti, 2014) who had dropped out of school to increase their families' incomes. The children's earnings were added to their parents' remittances from abroad.

Also, money transfers give migrants' families access to better medical services, as well as improves their hygiene and nutrition. All this has beneficial public health effects, including lower child mortality and higher birth weight (Hildebrandt & McKenzie, 2005). Public health is an essential human capital factor (Klugman, 2009).

On the other hand, in receiving countries, migrants often live in overcrowded apartments (Vargas-Silva & Fernández-Reino, 2019). They save on food and healthcare and work in poor conditions that may threaten their health. Regularly, migrants contract tuberculosis and pneumoconiosis, and frequently their high mobility facilitates the spread of infectious diseases such as syphilis and HIV. A study by Kahn et al. (2003) showed that 27 % of Senegalese male migrants were HIV-positive while about 1% of the remaining population in Senegalese regions were HIV-positive. Migrants who become infected with infectious diseases may pass them on to people in their countries of origin, which would affect those countries' human capital.

Some studies (Popescu, Diaconu, & Maxim, 2014) suggest that return labor migration can compensate for human capital losses. Returnees may bring valuable skills and the expertise they have acquired abroad. They may use the savings made while working there to start a business at home and could use the managerial skills they learned abroad and run it.

It was found that 51% of Turkish migrants who returned to Turkey from Germany set up their own business, as of the end of 2018, Turkish nationals accounted for 1.7% of the German population (Statistisches Bundesamt, 2019; Dustmann & Kirchkamp, 2002).

For example, in China, the major shareholders in more than 60% of companies with foreign capital are ethnic Chinese (Strovsky & Jiang, 2008), creating the paradox that they are the principal foreign investors. While in Taiwan, about half the energy companies based in the Hsinchu Industrial Park have been set up by returnees from the United States.

Return migration from North America and Europe has been relatively large in scale. According to Guillermina Jasso and Mark Rosenzweig (1982), about 50% of migrants who arrived in the United States in the 1970s returned to their countries of origin by 1980. The German Interior Ministry estimated that, between 1993 and 1997, an average of 45,000 Turks were returning from Germany to Turkey yearly (Kirdar, 2007). Although in the early 2000s, the flow of returnees declined, about 35,000 Turks returned to their country of origin during 2002. According to Kirdar (2007), most Turkish people between the ages of 45 and 54 migrated to Europe, while most returnees were under 35 and over 55 years old.

Brain drain is much less of a threat to developed countries than to developing nations, but it does pose a risk to the developed world. For instance, Canadian professionals and highly skilled workers move to the United States, and Canada imports labor of this category from other countries to plug the gap. However, the quality of outgoing labor is difficult to compare with that of incoming labor. Losing one genetic scientist may outweigh the immigration of hundreds of information technology specialists.

Yet movements of professionals and skilled personnel between developed countries are usually temporary and may be beneficial as returnees may bring back new skills and competencies. On the other hand, immigrations from developing countries are a constant process independent of migrations between developed countries.

The actual possibility of migration and higher earnings abroad may stimulate a desire for education. The acquisition of occupational qualifications means wider employment opportunities in one's home country, even though it may have been migration plans that stimulated the acquisition of those qualifications. For the same reason, people's migration plans may lead to substantial investments in education. The possibility of older-age migration may stimulate personal investment in education in a sending country. This may lead to an excess of skilled labor, and in such a situation, the emigration of skilled labor would not have any significant negative effects (Rothgang & Schmidt, 2003). For example, India trains more information technology (IT) specialists than it needs, and in the Philippines, medical training institutions also produce too many graduates (Calenda, 2016).

Research into the economy of Tajikistan shows that labor emigration from that country has a strong effect on its human capital. New technologies that labor migration helps bring into Tajikistan contribute to the quality of its human capital. The ability of migrants' families to invest more in education due to remittances is the main positive, beneficial effect of Tajik migration (Olimova, 2010).

Tajik migrants' money transfers to their country of origin, which are substantial, also have an indirect but negative effect on the country's human capital—they stimulate dependency mentalities and discourage private enterprise. According to a report by Mirzobo Yormirzoyev and Ron Mittelhammer (2015), remittances to former Soviet Union countries swelled tenfold from 1.7 billion U.S. dollars in 2002 to 16 billion U.S. dollars in 2010. However, these transfers were not invested in the economies of migrants' countries of origin but, on the contrary, deterred business in them. They caused dependency mentalities to grow in scale and served to limit supply in the labor market. Migrants' families are discouraged from work in their own country, which has been demonstrated statistically. Therefore, private enterprise, a significant economic factor, has been declining (Yormirzoyev & Mittelhammer, 2015).

Education standards as one of the leading human capital factors are also a significant factor in migration. Education standards play a serious role in various aspects of employment, e.g., time spent looking for a job, earnings and workplace quality, number of remittances sent, and in the speed and depth of their integration into the society of the receiving country, something that is extremely important in today's era of growing migration.

As can be seen in Table 2, one can identify the following social and economic effects of labor migration on human capital in receiving countries:

Table 2. Effects of Labor Migration on Human Capital in Receiving Countries

Positive effects	Negative effects
Improvement of workforce quality through the inflow of skilled and comparatively young labor.	Decreases in general standards of human capital due to predomination of low-skilled labor and residual trends.
Reducing costs for firms due to the provision of needed and highly motivated workers.	Increase in poverty as a result of migrants losing jobs.

Source: Elaborated by the authors.

A more detailed analysis may be of interest. Labor immigrants become part of the receiving country’s human capital depending on their skills, education standards, age, and health. Immigrants may cause the receiving country’s human capital to either improve or deteriorate.

In a knowledge economy based on fifth- and sixth-structure technologies,⁵ human capital becomes a strategic resource critical to sustainable development, national competitiveness, and public welfare. More developed countries try to improve the quality of labor immigration by selecting younger and skilled workers. Currently, there is worldwide intra-industrial, inter-industrial, interregional, and international competition.

Through employment and educational channels, countries such as the United States recruit skilled personnel for rapidly developing sectors such as I.T., which benefit from some of the best specialists from India, China, South Korea, and Russia.

The predominance of low-skilled labor causes the overall standard of national human capital to decrease. However, there is usually considerable demand for low-skilled labor. Although, inflows of low-skilled labor, accompanied by significant outflows of skilled labor, are particularly damaging to a country’s human capital.

Low wages paid to migrants and their consequent poverty in the cheap labor segment may also cause their human capital to deteriorate. This makes foreign workers save on food and healthcare and prevents them from training to improve their skills. In turn, the gradual erosion of migrants’ human capital causes them to contribute less to the receiving country’s economy by worse performance and cutting down on purchases of goods and services.

HUMAN CAPITAL AND MIGRATION POLICY

Changes in present-day migration processes produce different human capital effects that are contrasting in sending and receiving countries. Accordingly, the migration policies of sending countries differ significantly from those countries that receive migrants.

⁵Technological structure —a set of technologies characteristic of a certain development level of production and economic processes. The term was proposed in the 1980s by soviet economists Dmitry Lvov and Sergei Glazyev (Glazev & Lvov, 1985). According to this concept, there are six structures. The concept of the sixth structure corresponds most closely to that of the Fourth Industrial Revolution (Schwab, 2016).

Labor emigration exercises a wide range of positive social and economic effects on sending countries —money transfers from migrants, decreasing unemployment, higher living standards, and much more. But it does quantitative and qualitative damage to national human capital in ways such as discouraging private enterprise and curbing improvements in skills and competencies.

From the authors' perspective, the theory that return migration compensates for human capital losses is only partially true. Examples given in the previous section refer to countries with developed market relations and favorable climates for foreign investment, such as Turkey, India, or China. Return migration has not produced any registered significant compensatory effect in countries such as Russia, Armenia, Tajikistan, Uzbekistan, or Kyrgyzstan.

From the standpoint of human capital, sending countries should base their migration policy on three principles.

Firstly, they should stimulate the outflow of unskilled and low-skilled labor, which would help reduce pressure on the domestic labor market and cut public spending due to money remittances from migrants. Overall, this would have a critical effect on national human capital. Such a policy should be supplemented with investment in export-oriented industries that use large amounts of unskilled or low-skilled labor.

The State should also take action to raise education standards. However, all such policies need time, competencies, and capital inputs that sending countries do not always possess. While stimulating labor emigration is the easiest way to raise living standards and reduce unemployment, the State should make maximum efforts to develop and consolidate skilled labor. It should replace the economic model based on labor emigration with one focused on exports of goods and services. Russia has successfully carried through this form of remodeling in its I.T. sector.

Secondly, sending countries should stimulate their highly skilled out-migrants to come back to their country of origin by creating jobs. Thirdly, sending countries should encourage returnees to invest in their economy and set up small or medium-sized businesses.

For receiving countries, labor migration is a human capital factor both in quantitative and qualitative terms. Low-skilled foreign labor plays a quantitative role, while skilled foreign labor is both a quantitative and qualitative factor. For these reasons, receiving countries should put the following principles at the basis of their migration policy:

Firstly, destination countries should receive as many low-skilled migrants as their labor market requires. Otherwise, it can cause tensions in their labor market and other adversities that mainly affect migrants themselves.

Secondly, they should mainly stimulate inflows of high skilled labor. This would significantly benefit national human capital. In-migration should be selective with programs for specific categories of incoming workers, such as engineers, programmers, scientists, and teachers. Focusing on highly skilled and professional immigration that can bolster research sectors would boost high-tech production.

Practice shows that sending and receiving countries have different, sometimes diametrically opposite, objectives to pursue in stimulating migration. Table 3 draws comparisons of goals

pursued by sending and receiving countries based on the studies by Stephen Adler (1977) and Jorgen Carling (1996).

Table 3. Comparing Migration Policy Objectives of Sending and Receiving Countries

Objectives	Sending countries	Receiving countries
Numbers of migrants	relatively large	dependent on the needs of the national labor market
Status of migrants	legal	“flexible”
Age status	young age	middle age
Level of qualifications/education	low	low and high
Wages/salaries	high	low
Mobility	high	low
Technology levels in migrants’ (potential) employment sectors	medium	low and high
Further education/training	advanced	low

Source: Elaborated by the authors based on Adler (1977) and Carling (1996).

As Table 3 shows, sending countries seek to minimize national human capital losses caused by migration. Thus, they should encourage the legal, organized, and humane emigration of young low-skilled workers who would be able to undergo advanced training and acquire new competencies abroad. Also, sending countries need their emigrants to have jobs abroad that involve using medium-level technological sophistication. This would enable such migrants to acquire competencies that they would bring back if they returned to their countries of origin.

Receiving countries need the highest-standard immigrant human capital. At the same time, they have a demand for low-skilled labor that domestic resources cannot satisfy. They would try to minimize competition between migrants and natives seeking jobs in sectors that use medium-sophistication technologies. There are situations in receiving countries where a shortage of domestic human resources requires hiring workers from abroad. In this case, the receiving country normally makes a list of vacancies. A foreign citizen who has the necessary qualifications and applies for entry, according to this list, can enter the country under a simplified entry procedure. For example, the Migration Advisory Committee in the United Kingdom gives independent advice to the government, providing a shortage occupation list (Migration Advisory Committee, 2020). British employers have looser restrictions to recruit overseas workers, including outside the European Union, for jobs included in these lists.

SYSTEM OF INDICATORS

Based on the analysis of the effects of labor migration on human capital in sending and receiving countries, analytical systems of indicators were developed. These systems are based on dynamics series, which provides a realistic picture of the positive and negative effects of migration on human capital. Table 4 shows the system for sending countries.

Table 4. System of Indicators for Sending Countries

Indicator	Variables	Interpretation
$\frac{LeM_{sse}}{LeM} \div \frac{EAP_{sse}}{EAP}$	<p>LeM_{sse}– number of migrants with specialized secondary education.</p> <p>LeM– total number of labor migrants.</p> <p>EAP_{sse}– size of the economically active population with specialized secondary education.</p> <p>EAP– the size of the total economically active population.</p>	<p>Holders of specialized secondary education qualify as a proportion of all migrants and as a proportion of the economically active population with specialized secondary education.</p>
$\frac{LeM_{he}}{LeM} \div \frac{EAP_{he}}{EAP}$	<p>LeM_{he}– number of migrants with higher education.</p> <p>EAP_{he}– proportion size of the economically active population with higher education.</p>	<p>Holders of higher education qualifications as a proportion of all migrants and as a proportion of the economically active population with higher education.</p>
$\frac{LeM_{pge}}{LeM} \div \frac{EAP_{pge}}{EAP}$	<p>LeM_{pge}– number of migrants with postgraduate education.</p> <p>EAP_{pge}– size of the economically active population with postgraduate education.</p>	<p>Holders of postgraduate degrees as a proportion of all migrants and as a proportion of the economically active population with postgraduate degrees.</p>
$\frac{\bar{A}_{lem}}{\bar{A}_{eap}}$	<p>\bar{A}_{lm} – average age of migrants.</p> <p>\bar{A}_{eap}– average age of the economically active population.</p>	<p>The ratio between migrants' average age and the average age of the economically active population.</p>
$\frac{R_{e\&m}}{R}$	<p>$R_{e\&m}$ – number of remittances spent on education and healthcare.</p> <p>R– the total amount of money transfers to the home country.</p>	<p>Remittances spent by migrants' households on education and healthcare as a proportion of total money transfers to their home country.</p>
$\frac{LeM_{wp}}{LeM}$	<p>LM_{wp}– migrants using their qualifications at work.</p>	<p>The proportion of migrants using their qualifications at work.</p>
$\frac{ELM_{WL-SJ}}{LM}$	<p>ELM_{WL-SJ}– labor emigrants with higher (postgraduate, graduate, undergraduate) or secondary specialized education qualifications who are employed in low-skilled jobs.</p>	<p>Holders of higher (postgraduate, graduate, undergraduate) or secondary special education qualifications who are employed in low-skilled jobs as a proportion of all migrants.</p>

Source: Elaborated by the authors.

These indicators are difficult to apply to some countries due to the large scale of undocumented migration.

As mentioned above, large-scale exports of labor inflict losses on human capital in the sending country. The higher the skills of migrants, the heavier such losses are. Similarly, if surplus labor exists, it can be integrated into the economic system, for example, via sole proprietorships. Repatriates help compensate for such losses but only if returnees bring back new job skills.

The government of sending countries needs to research the characteristics of outgoing labor migrants, especially regarding their skills and education standards. First, one needs to understand how the education standards of immigrants differ from those of the economically active population of the receiving country. It is a negative trend when, for example, more migrants have higher education than the economically active population of the receiving country. This kind of immigration harms the country's human capital.

Particular attention should be paid to skills mismatches when a migrant is employed for a job below their qualification level. This curbs the migrant's career progress and may cause them to lose their skills. If they return home, such migrants would normally be unable to seek the kind of jobs they had held before going abroad.

In managing migration, it is essential to take account of migrants' age. This requires calculating the dynamics of the ratio between the average age of emigrants and the average age of the sending country's economically active population. However, one should not interpret these indicators in isolation from each other. On the one hand, a steady increase in the average age of migrants may be an indication of improvements in their qualifications. While on the other, it shows the human capital loss as migrants move upward in company managerial hierarchies.

Emigration can exercise indirect effects on sending countries, especially to its human capital, through money transfers made by migrants to their families. It benefits national human capital if the money spent on education and healthcare by families makes up a steadily growing proportion of the total amount of remittances sent by migrants.

However, it is a special methodological task to study the structure of remittance expenditure by migrants' families. It can be carried out through a series of questions about remittance expenses in the periodic national statistical observations of household budgets. One-off examinations cannot provide up-to-date information because household expenditures have a dynamic structure. It is also difficult to determine what proportion of remittances and what shares of other incomes are spent on education and healthcare.

Consequently, we have proposed a system of indicators that reflect the positive and negative effects of migration on the human capital of the receiving countries. Table 5 shows the system of indicators for receiving countries.

Table 5. System of Indicators for Receiving Countries

	Indicator	Variables	Interpretation
1.	$\frac{LiM_{he}}{LiM}$	LiM_{he} – labor immigrants with higher education. LiM – total number of immigrants.	Holders of higher education qualifications as a proportion of all immigrants.
2.	\bar{A}_{lim}	\bar{A}_{lim} – average age of immigrants.	The average age of immigrants.
3.	$\frac{LiM_{he}}{LeM_{he}}$	LiM_{he} – number of labor immigrants with higher education. LeM_{he} – the number of labor emigrants with higher education.	The ratio between the number of immigrants with higher education and the number of emigrants with higher education.
4.	$\frac{LiM_{>3}}{LiM}$	$LiM_{>3}$ – number of migrants who have lived in the receiving country for more than three years.	People who have lived in the receiving country for more than three years as a proportion of the total number of immigrants in it.

Source: Elaborated by the authors.

The quality of labor resources becomes a significant factor in all spheres of society, especially in the context of the sixth technological order and the construction of a digital economy. Countries that are global leaders struggle for intellectual resources. Intellectual elites relocate from less developed countries to more developed countries with points of attraction, such as universities, research centers, and large corporations.

Information about the quality of incoming labor makes it possible to imagine its effects on the receiving country's economic activities and products. Low-prestige job vacancies create demand for foreign workers with low education standards. However, these days high technology penetrates sectors, such as retail, real estate, utilities, agriculture, and construction. Qualification requirements for foreign labor rise as high skilled workers are quicker to new technologies and use them in their jobs, which helps popularize these technologies and, in turn, create demand for skilled personnel.

Age is also an essential characteristic of foreign labor to consider. By becoming residents of the receiving country, young immigrants have a positive effect on its age structure. Alternatively, the lower the average age of immigrants is, the less time they will have spent on their education. The duration of a migrant's stay in the receiving country is also an important factor. Therefore, longer stays translate into more adaptability to the requirements of its labor market and society.

However, large-scale undocumented migration, which is not recorded in official statistics, complicates the application of this system of indicators. This problem especially is serious for migration corridors passing across land borders. For example, in Russia, more than 50% of all labor migrants are irregular (Aleshkovskii, Grebenyuk, Kravets, & Maksimova, 2019). Most undocumented migrants are unskilled and low-skilled workers. In this regard, if there are

estimates of the number of undocumented migrants, it will be possible to adjust data on the number of unskilled migrants to calculate the proposed indicators.

Population replacement is also an important issue, notably relevant for countries that, along with labor immigration, have significant emigration (e.g., Russia) (Grebenyuk, 2017). Comparing these streams of migration in terms of quality would show their effects on national human capital

CALCULATION

It is an advantage of the proposed method to calculate a system of indicators that, in addition to being a means of analysis, helps detect weak points in statistics. Therefore, implementing this method to calculate a system of effects indicators of labor migration on receiving countries can be a good illustration, as shown in Table 6, with Russian official statistics as primary data (Federal State Statistics Service, 2019).

Table 6. Calculation of System of Indicators for Receiving Countries

Calculating parameter	Year				
	2014	2015	2016	2017	2018
Indicator 1	Holders of higher education qualifications as a proportion of all immigrants				
Indicator value, %	0.80	0.99	1.46	1.76	1.75
Growth rate, %	100	124.5	146.6	120.9	99.5
Indicator 2	The average age of immigrants				
Indicator value, years of age	34.1	38.8	39.7	39.6	39.4
Growth rate, %	101.2	113.6	102.3	99.8	99.5
Indicator 3	The ratio between the number of immigrants with higher education and the number of emigrants with higher education				
Indicator value, %	99.3	121.2	136.5	154.7	146.0
Growth rate, %	259.7	122.0	112.6	113.3	94.4

Source: Elaborated by the authors based on Rosstat's⁶ (2019) data.

Rosstat does not compile statistics on the education levels of labor migrants, and, for this reason, our Indicator 1 calculations are based on Rosstat statistics on high-skilled migrants who held work permits rather than graduates of higher education institutions. This replacement has some shortcomings but is acceptable within the framework of this method. Values for Indicator 4, "People who have lived in the receiving country for more than three years as a proportion of the total number of immigrants in it," are impossible to calculate as there are no official statistics on this category of migrants.

⁶ Rosstat, Russian acronym for Federal State Statistics Service of the Russian Federation.

Indicator 1 calculations show that labor migrants represent an extremely low level of human capital. High-skilled migrants have accounted for a maximum of 1.76% of the total. Simultaneously, high skilled immigrants are numerous enough to completely replace the Russians with higher education qualifications that go abroad to work.

Meanwhile, the average age of labor migrants rose between 2014 and 2016 and stayed at 39 years of age in 2017-2018, suggesting that incoming human capital has grown over the past five years.

Foreign nationals hired in Russia for low-skilled jobs represent a relatively low level of human capital. At the same time, migrants' average age suggests that there are some positive trends in place. We suggest that Rosstat should make its statistical reporting system more accurate by stating numbers or proportions of migrants with higher education qualifications and classifying migrants according to the length of stay in Russia.

CONCLUSION

Current migration processes, due to their intense dynamics, have powerful social and economic effects. They affect almost all spheres of society. As well as impact both sending and receiving countries, especially their human capital.

This article systematizes the positive and negative effects of international labor migration on human capital in both sending and receiving countries. For instance, in sending countries, labor migration tends to have stronger negative effects on the human capital, whereas the positive effects of the workforce circulation cannot be observed.

Migration is both a quantitative and qualitative factor in the human capital of receiving countries. These countries have different, often diametrically opposite, goals to pursue in their migration policies, and this chiefly manifests itself in their policies concerning high-skilled migrants and migrants' age, education, and training standards.

The multidimensional social and economic nature of labor migration requires implementing statistical methods to assess its positive and negative effects on human capital. The dynamics series of absolute methods (including average) and relative indicators is deemed to be the most accurate method to analyze labor migration. Such dynamics will show both positive and negative effects. It is advisable to use this dynamics method to study migration processes and the processes they affect.

Therefore, the indicators described in this article make it possible to monitor migration processes and identify trends. As well as to help develop a management system that ensures labor migration brings maximum benefits to both sending and receiving countries.

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