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Brain Drain versus Brain Gain Approaches

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Abstract: High-skilled human resource is becoming one of the most valued resources currently to improve economies. Enterprises and governments in developed states employ this human capital from all over the world to counteract to the lack of qualified labour force. This transfer of specialized human resource has effects on the wellbeing and development of sending nations and positive consequences in the host country; however, there is the possibility the country of origin benefits from the brain drain (brain gain), thus, one of the ways is the scientific networks, other way is to boost the trade between home and host countries, with their remittances, etc. This study a review of the subject is carried out through documentary analysis.
Keywords: Brain Drain, Bran Gain, Skilled Migration, Effects

1. Introduction

The objective of this work is to review the antecedents, situations and consequences of the brain flow to the most developed and developing countries, and its worldwide repercussion and state possible mechanisms to counteract these effects. The brain drain is a global phenomenon, which is not new, but it has changed its nuance, to become part of the expropriation of people by large transnationals and first world countries, with negative repercussions in their countries of origin.

The discussion on the economic repercussions of skilled migration for the nations of origin is an enduring issue. This situation has been debated for nearly fifty years or more. Throughout this period, most of the researchers alleged that skilled migration is harmful for the home nations, whilst the host economies profited from the inflow of skilled workers.

Moreover, talent is turning into one of the mainly levered resources in contemporary economies. Companies and governments in developed nations hire and hold onto skilled migrants from all over the world to confront to the scarcity of specialized laborers. This transfer of skilled labor can have either negative or positive repercussions on the prosperity and development of sending countries.

2. Brain drain, brain gain and economical effects

Brain drain concerns to the substantial amount of migration of specialized workers to industrialized states looking for better wages, better terms of employment, investment opportunities, more advanced technology access, more steady political climate, and a better quality of life (Puthan, 2022), however it has a negative impact on the countries of origin since they lose a part corresponding to the most significant factor of production. Whereas brain gain is the benefit for the host or sending country as a result of the immigration of highly qualified people, which implies tapping into the technical, economic, and social capital of overseas professionals for the benefit of the receiving or the country of origin.

An estimation of 272 million of international migrants reached worldwide in 2019 as indicated by the United Nations, depicting a rise of approximately 17% from 2013. Roughly 3.5% of the global population lives in a dissimilar country from where they were born, some of these flows are highly qualified people who migrate from the south (developing countries) to north (developed countries) (Berger, 2022).

According to Garcia (2008), since the emergence of the first universities, scientists and intellectuals have moved around the world, therefore leading to the "cross-fertilization" of ideas between scientific communities with different degrees of development. The "scientific nomadism" is a common phenomenon in the community of scientists and engineers. Thus "brain circulation" is not in itself a problem. The mobility of scientists and professionals becomes a social issue, susceptible to being addressed through policies developed by the State, when the exchange flows of scientists and professionals determine a net loss in the stock of more qualified human capital.

The present upsurge of economic globalization has unlocked a window of chance for human capital to accumulate where it is already plentiful and yet best rewarded, for instance, in the developed countries. This tendency has been reinforced by the regular introduction of selective immigration policies in numerous OECD nations since the 1980s. In conjunction with customary self-selection outcomes on the supply-side, this elucidates the inclusive trend for migration rates to be much upper for the highly-skilled. Globalization indicators disclose that between 1990 and 2000, the world Export/GDP ratio has been increased by 1.5 and the

FDI/GDP ratio by three. During the same time, the total figure of foreign-born people legally residing in the OECD member nations has also been grown by 1.4, with a larger growth for highly skilled migrants than for low skilled migrants (Docquier & Rapoport, 2007).

In the late 1960s a great number of scientists and engineers moved from developing to developed nations; it was the first time that unsettle about high educated migration increased. Such reallocation of skilled workers was seen as harmful to sending nations; also, it decreased the productivity of laborers left behind, and it involved negative fiscal repercussions, as Groizard and Llull (2007) argue.

Furthermore, it is a stock-flow imbalance between nations that invest in the training of their scientists and professionals in order to improve human capital that they consider meager and others that, due to their greater wealth and academic organization, act as poles of attraction. This process is known as "brain drain" since in 1963 the Royal Society gave such a name to the emigration of qualified English professionals to the United States. Moreover, it occurred in another way, for instance when the United States of America monopolized the doctors from the United Kingdom. In that case the dispossession took place between two developed countries, one that emerged from the Second World War in 1944 with 80% of the gold in bars and the other heavily beaten and stripped of its empire in the same war, as Fernandez et al (2009) claims.

However, in the 1970s the brain drain augmented radically. Thirty years ago, the United Nations estimated the total number of highly skilled South-North migrants for 1961-72 at only 300,000; later, in 1990, the U.S. Census disclosed that there were more than 2.5 million highly skilled immigrants from developing nations residing in the U.S. alone, discounting people under age 25. Nation studies commissioned by the International Labor Organization also demonstrated that closely 40% of Philippines' emigrants are college educated, and, more astonishingly, that Mexico in 1990 was the world's third major exporter of college educated migrants. Since this year, the main reasons of the brain drain have increased in strength owing to a combination of modifications on the supply side that contribute to positive self-selection among migrants and of quality-selective immigration policies on the demand-side. Quality-selective immigration policies were first announced in Australia and Canada in the 1980s in the manner of point-systems previously being progressively implemented by other OECD nations. For instance, in the European nations such as France, Germany, Ireland or the UK have lately embraced policies directing at appealing a qualified workforce (Docquier & Rapoport, 2007).

Recently, new provoking opinions have arose advising that skilled migration can produce net gains for people left behind thanks to positive externalities. For instance, the chance of migrating to a country with higher wages increases the expected revenues to education; this rise generates spurs for people to invest in human capital that, with tentative migration projections, might leave the nation with a higher level of human capital, according to Groizard and Llull (2007)

The conventional literature views brain drain as being harmful to sending countries. If migrants present a larger amount of human capital per laborer than the population left behind, then the stock of human capital per laborer declines. Both in the case of temporary regulation costs and externalities, this fall produces a wellbeing loss (Groizard & Llull, 2007).

A new upsurge of dynamic patterns increases the possibility of advantages from skilled migration for developing nations. The most common justification is that migration does not abandon the process of human capital development unchanged. If the revenue to education is fairly low in the home nation, chance to migration will not only decrease human capital stock but also will rise the prosperity of education attainment for those left behind, boosting the process of skill creation; as a result, a net brain gain may happen. When it presents opening country to skilled migration generates an encouragement to invest in education that, if large enough, may outcome in an increase in the human capital ex-post in the existence of uncertain emigration scenarios (the chief idea is that some of those who invest in education to attain the chance to migrate, persist in their nation), as Groizard and Llull affirm.

On the other hand, in Latin America, the boom in studies on the emigration of highly qualified people took place mainly in the 1960s and early 1970s. The concern for this issue was consistent with the pattern of economic development that was being promoted then, consisting of a model of endogenous development and the promotion of industrial growth at National levels. Depending on the countries and different historical moments, the main factors of the "brain drain" have been related to political and economic issues. Since the 1990s, another factor that conditions the migration of young people is the mobility of "brains" in the framework of globalization and internationalization of markets, the so-called competitive advantages and the centrality of knowledge in this process (Garcia, 2008).

In the eighties the concern to quantify the brain drain, was added the identification of another possible way to attend this asymmetric movement of scientists and professionals to developed countries, the "brain exchange". This phenomenon was about to make up for losses due to emigration via the promotion of mobility and the exchange of highly qualified resources between nations of origin and developed nations.

At the same time of the changes in conditions of knowledge production and after the revolution in computer technologies, in the 1990s began to explore the design of policies to achieve a "brain gain" through creation and strengthening of networks of scientists and professionals. These networks seek to act as links between networks local and global scientific development and technological. The network allows those who have settled in other countries to have the possibility to help and collaborate with colleagues and scientific communities based in their countries of origin from technical reports, consulting or other forms of academic bond.

According to Garcia (2008), regarding to the scientist network, 41 integrated knowledge exchange networks have been identified by expatriates belonging to 30 countries (which in some cases have more than one network). The list comprises seven Latin American networks, which had their centers in Colombia, Argentina, Venezuela, Uruguay, El Salvador and Peru. For instance, we can mention the following networks: the National Program for Engagement with Scientists and Argentine Technicians Abroad (PROCITEX); the Colombian Network of Researchers Abroad (CALDAS); the TALVEN network with support from UNESCO to re-link Venezuelan scientists; the Association franco-uruguayenne pour le développement scientifique et technique (AFUDEST); the Inter-Regional Network of Latin American Scientists Program and the Caribbean (ALAS / UNESCO); the United Nations Development Program (UNDP) that supported the program Transfer of Knowledge through Expatriate Nationals (Tokten), the ANACITEC Network for Argentine Scientists in the area of Medical Sciences, among others.

In the research of the Yevgeny Kuznetov Institute coordinated with the World Bank gives account of successful diasporas experiences (professional communities abroad) who have played an important role in economic, commercial developments and exchange technological and scientific of their nations of origin. India is an example.

At the beginning of the 2000s, throughout the dotcom crash, over 25,000 expert Indians who were educated in the United States of America went back home, most of them with the job experience as technical engineers in Silicon Valley (Cornell,2020). They arrived back highly qualified and with the labour experience in the private sector. Bangalore and Hyderabad (south of India) had already commenced to arise as technological centres in India, and this returned high-skilled human resource encouraged the IT greatly, eventually earning the name of 'the Silicon Valley of Asia'. Thus, Indian diaspora has been fundamental in the emergency process and consolidation of the software industry in India,

On the other hand, although the beginning of the brain drain could be more distant in time, the 1950s marked an important point, when British society faced the so-called this phenomenon, with the massive exodus of doctors, who settled in the United States. To this day, there have been many terms to indicate this "talent market". Among these names, the most used have been "elite emigration", "internationalized elites", "brain drain", "emigrated talents", "technology transfer" and "transnational knowledge exchange", as Fernandez et al. (2009) explain.

The figures, published by various media, shed more exact light on the true and dire results of these trips promoted by the North among the countries of the South. Between 1960 and 2000, the United States and Canada managed to attract more than 1.5 million professional immigrants from the Third World. Today 23% of the doctors of science that reside in the United States were trained outside those borders. Similarly, in Germany, 38% of qualified personnel are from India (Fernandez et al., 2009).

According to the digital magazine Rebelion, of the 150 million people who participate in scientific activities around the world, 90% are concentrated in seven of the most industrialized nations. The highest number of brain drain belongs to the insular Caribbean, a region where most of the nations that comprise are English-speaker, as Fernandez et al. claims.

To have a measure of this situation in the Caribbean, it is known, for instance, 8 out of 10 Haitians with university degrees live abroad. Also in Latin America, from Guyana and Suriname, 86% and 90%, respectively, of their professionals have emigrated, as Fernandez et al argues. Likewise, latest migration data gathered discloses that, throughout the 1990s, the figure of higher skilled migrants living in OECD nations augmented by 8 million (40% of total migrants landed in that time). The degree of brain drain movement appears to be particularly large in latest years; e.g., in 2000 more than 50 % of the skilled migrant stock from Africa landed throughout the preceding decade, (as did 41% of Asians and 34% of Latin Americans), as Groizard and LLull (2007) point out.

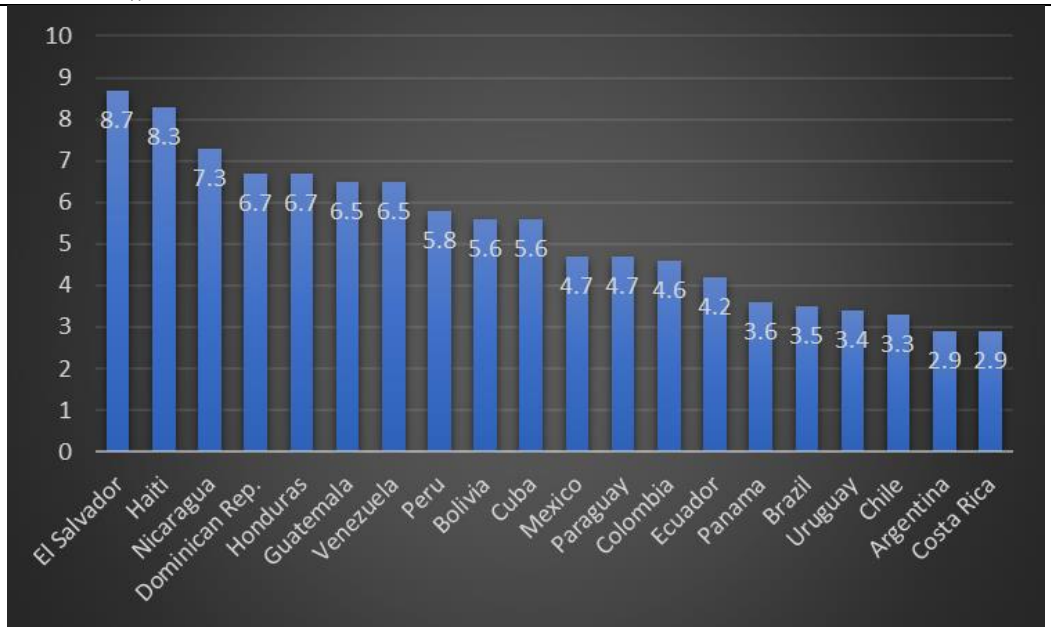

Figure 1.Human flight and brain drain in Latin America Source: Prepared by the author based on Global Economy.com, "Human flight and brain drain in Latin America" 2023, https://www.theglobaleconomy.com/rankings/human_flight_brain_drain_index/Latin-Am/

In the figure 1, it can be seen the average for 2023 based on 20 nations which was 5.28 index points of the human flight and brain drain index, 0 (low) - 10 (high) in Latin America. The head country is El Salvador with 8.7 index points, then Haiti has 8.3 index points and the lowest value is in Cota Rica with 2.9 index points. According to the same source, the Human flight and brain drain around the world, among 177 countries, Samoa has the highest value 10 index points, followed by Jamaica with 9.5. India ranks in the 104th place with 4.9 index points, and the lowest value is in Australia with 0.4 index points.

In Africa, about 20,000 professionals leave their countries each year. This look towards the West conditions the absence of nurses, doctors and teachers in many territories that need them to break the cycle of poverty and underdevelopment that they suffer. The World Health Organization (WHO) warned that the sub-Saharan region bears 24% of the global burden of diseases, including AIDS, and only has 3% of the world's skilled workers (Fernendez et al., 2009)

In developing countries, where trained human resources are produced with lots of efforts, sometimes with competitive training and intelligence, they are recruited with high salaries by developed countries. Even among the latter, there are also flows, for example, from Canada to the United States of America.

With inexperienced workers, migration is purely economic, as has occurred in Eastern European nations, which destination is Western European nations. In case of workers with more experience, then the migration is very advanced towards the more developed ones, as then also occurs from New Zealand to Australia (Fernandez et al., 2009).

The brain drain to the developed economies has a favorable impact on them: in the 20 years between 1976 and 1996, the fraction of world trade classifiable as "high-tech products" doubled (from 11% to 22%) while that the fraction corresponding to primary products was reduced from 34% to 13%, as Fernandez et al. (2009) claims.

There is a trend towards concentration in the production of knowledge, and industrialized countries concentrate more than 90% of all scientific production. Socially produced knowledge is globally privatized in favor of capital in these industrialized countries. Scholarships in industrialized nations for students from poor countries is another mechanism used to promote brain drain. Roughly a third of all scientists trained in the Third World do not work in their nations, and it is estimated that slightly more than 50% of those who travel to do a doctorate in North America or Europe, they do not return to their home countries, according to Fernandez et al. (2009).

Although originally the selective emigration of scientists and technologists began spontaneously, motivated by the bad living and working conditions; in recent years the promotion of this emigration has become an official policy of several countries, with incentives and procedures, like those mentioned above for the "cards" (green or blue) and the Federal Skilled Worker Program (FSWP) of Canada.

On the other hand, according to Brzozowski (2008), first, the supporters of the neoclassical perspective claimed that the skilled migration is promising at the international level: both for the origin and host nations. The chief advantages from this process occasioned in progress in world's science and technology for both developing and developed countries. Second, researchers from the world systems approach argued that the brain drain is to a large degree harmful, at least for the sending nations. The world system theory advocates have discerned the migration of highly skilled workers as an indicator of economic backwardness of developing nations of the South and the development of the developed nations of the North. The international flow of skilled workforce has been responsible for enlarging the economic inequities and dropping the economic potential of the poor South, particularly when shifting to the productivity degree.

The adverse aspects of brain drain for the developing nations have been also outlined by scholars. The brain drain also produced skews on the local work markets, increasing the joblessness and dropping the potential GDP, as Brzozowski explains.

The theoretical inquiry on skilled migration has been invigorated in the 1990s within the endogenous development structure. Different scholars have analyzed this phenomenon, such as Miyagiwa (1991) who emphasized the role of growing incomes to progress in education: the brain drain augmented the national revenue and the earnings to education in host nations, but in contrast, dropped the tendency to study and the revenue at home (qtd. Brzozowski). Haque and Kim (1995) claimed that brain drain decelerated the human capital growth in home economies, therefore collaborating to the lasting decrease of the economy's increase rate (Brzozowski, 2008).

In the middle of 1990s a new component of research, called the new economics of brain drain emerged. This new scheme has to a great degree changed the inquiry of economic repercussions of the means of skilled migration to the nations of origin. The researchers from this approach claim that skilled migration might have favorable impact on both home and host nations. Therefore, they aimed their attention to the optimistic aspects of brain drain, which had been deserted or omitted in earlier literature.

The specialist who depict the new economics of brain drain school claim that brain drain might produce, under some situations, some positive consequences to the sending economy or the so-called "brain gain". Furthermore, these consequences may counteract the harmful effect of skilled outflow on human capital reserve and economic development in these nations.

The home countries may profit from the emigration of skilled laborers in four ways:

- Effect of encouraged education (Lucas, 2005) - known also as "brain gain" – the migration viewpoint rises the appeal of educational investments in the sending nation, therefore contributing to augmented accumulation of human capital and quicker development (qtd. Brzozowski, 2008);
- Return migration (Stark et al., 1997)– some of the members of the Diaspora might go back to their home country, generating social, physical and human capital accumulated oversees, therefore, contributing to the economic growth (qtd. Brzozowski);
- Remittances (Ghosh, 2006)– migrants transfer part of their revenue to the home country. These transfers in some cases comprise a great part of the national revenue, and if suitably consumed might help to enhancement the economic development (qtd. Brzozowski). For instance, in 2021, El Salvador was positioned as the Latin American country in which remittances had the highest value in relation to GDP with 26.1%. Honduras and Jamaica were the second ones among the Latin America and Caribbean countries with 25.3% each (Statista Research Department, 2023).
- Diaspora repercussions (Kugler and Rapoport, 2005)– even residing abroad, members of the Diaspora might be a valuable benefit for the nation of origin, proposing advice, acting as intermediates or merely investing their money. This consequence might be perceived directly - as the FDIs of migrants and their firms, or indirectly when the Diaspora members push other entities to do so.

The most noteworthy and outstanding beneficial consequence of brain drain, related with this new perspective is that of encouraged education. According to some researches migration possibility solo might be a strong tool, which aids the economies of developing nations to overcome the underdevelopment snare, and rise the extended rate of development. In some theoretical examples, a chance of advantageous brain drain has been recommended – the circumstance when the positive encouraged education consequence is resilient to the scope that it strengthen the harmful outflow of skilled workers. Subsequently the developing country ends up with more skilled people that would have been contrarily, in case the boundaries would have been closed, as Brzozowski argues.

Furthermore, Beine et al. (2003) in their research, they assessed the hypothesis of the brain gain on a group of 50 developing nations. Their experiential analysis has demonstrated that brain gain is possible when the migration skilled rate is small size (ie. less than 5%). Despite more developing nations still suggested to lose

because of their brain drain, there is a small group who is beneficial. To the latter group belong the biggest developing countries, such as India or Brazil, according to Brzozowski (2008).

Another way of brain gain, might be that migrants can also receive remittances from their home country and invest physical capital in the host nation. And there is the possibility to strength a bilateral trade between sending and receiver countries which means not only the growth of export for the nation of emigration - but some goods and services are also imported, Brzozowski points out.

Moreover, when it isn't brain drain and becomes then brain gain, Checchi et al. (2007) claim three dissimilar means can be notable for an advantageous brain drain or brain gain, to function: A) skilled migrants increase economic wellbeing at home due to a fairly large flow of remittances; B) selective immigration policies in host nations might increment the appeal of migration for high skilled migrants, which in turn increments private returns to education and encourages additional investment in education at home; C) skilled migration might benefit the growth-enriching technology conveying, trade and FDI between the source and the receiving nation, being a part of the network effects.

The development of migrant networks generates FDI and trade connections which aid to fortify the gains from trade and the diffusion of knowledge, which at last stimulus the development in the sending nation. Networks or diaspora externalities arise as a repercussion of a decrease in transaction and other information costs related to the commitment problem that is innate in agency relationships, according to Groizard and Llull.

3. Conclusion

The literature suggests several potential channels through which skilled migration can affect welfare and growth in sending countries; the most controversial of which is the effect on human capital, which is also likely to be the most important, but there are also other elements to take into consideration when evaluating the impact on welfare of human capital flight. Also, all the scholars who defend the brain gain, coincide that remittances from the host countries and then its appropriate use, can contribute to develop the sending country. The creations of networks among different countries can encourage to the FDI in their members' home country, as well.

In addition, it is noteworthy to mention that one of the main reasons why there is a brain drain of skilled workers is because in their home country did not find the expected conditions or job to develop professionally, for instance jobs with low wages. Among the home countries there are still several ones that do not valorize their especialized workers, thus causing a brain drain. On the other hand this phenomenon might be counteracted with new policies in order to persuade or motivate the high skilled worker does not leave his or her home country, otherwise, to facilitate them to invest from abroad to his or her home country.

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