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# Causes and consequences of intellectual migration of human capital in the context of national security: Public administrative aspect

Igor Shpektorenko[1], Victoriia Zahurska-Antoniuk[2*], Roman Pasichnyi[3], Ganna Ortina[4], Oksana Orhiiets[5], Oleh Pavlovskyi[6]
[1]Department of Public Administration and Local Self-Government, Dnipro University of Technology, Dnipro, Ukraine; shpektorenko@ukr.net (I.S).
[2]Department of International Relations and Political Management, Zhytomyr Polytechnic State University, Zhytomyr, Ukraine; zahurska-antoniuk@ukr.net (V.Z.A.).
[3]Department of Political Science and International Relations, Lviv Polytechnic National University, Lviv, Ukraine; pasichnyi@ukr.net (R.P.).
[4]Department of Management and Public Administration, Dmytro Motornyi Tavria State Agrotechnological University, Zaporizhzhia, Ukraine; ortina@ukr.net (G.O.).
[5]Department of Management and Administration, Berdyansk State Pedagogical University, temporarily moved to: Zaporizhzhia, Ukraine; orhiiets@ukr.net (O.O.).
[6]Head of the Main Directorate of Military Education and Science of the General Staff of the Armed Forces of Ukraine, Kyiv, Ukraine; pavlovskyi@ukr.net (O.P.).

**Abstract:** The article considers theoretical and practical approaches to processes of the international intellectual migration and investigates modern processes of this phenomenon, their feature, the precondition and the reason at the present. The special attention is given to the role of intellectual migration of human capital on the landscape of national security of countries. It is shown that although the problem of intellectual migration of human capital, "brain drain", previously attracted economists and sociologists, today it is in the center of attention of political scientists and researchers of international relations. The relationship between intellectual migration of human capital and soft power is considered.Potential vectors of public administration combatting negative consequences of intellectual migration of human capital within the plane of national security.

***Keywords:*** *Education, Human capital, Intellectual migration, International Mobility, Public administration, Soft power.*

## 1. Introduction

The competitiveness of any socio-economic system is determined by the presence of an intellectual component in it and the corresponding mechanisms for its effective use. Modern economic processes are characterized by significant intellectual content, in connection with which specialists with knowledge that allows them to perform mentally complex work are becoming increasingly in demand. The totality of qualified specialists forms the intellectual capital of a socio-economic system, which can be interpreted as intellectual and thinking abilities, professional knowledge and skills, the use of which increases productivity and efficiency of activities (Prato, 2022).

Migration of intellectual capital is becoming one of the trends in the development of modern society, and the "brain drain" - the departure of scientists and qualified specialists outside the country, region in search of a more favorable place to apply their abilities - is a problem for many countries and regions that are unable to create conditions for the worthy realization of the creative potential of the holders of intellectual capital.

Burov (2020) correctly points out that intellectual capital is a necessary component of national security infrastructure. According to the researcher, a person's intellectual and creative potential is


* Correspondence: zahurska-antoniuk@ukr.net

becoming more and more significant as the nation's intellectual capital, which has a big impact on the nation's national security, and the organization and preservation of educational and creative potential becomes essential state infrastructure.

Today, the competition between states is ongoing based not on material resources, but rather on the ability to create knowledge and innovations, which is impossible without high quality of human capital. A highly educated and skilled populace not only contributes to the country's knowledge base and innovative potential, but also fosters an innovative ecosystem in technology, ideas, and climate. As a result, a nation is less susceptible to information warfare, proxy conflicts, and even "aggressive" soft power from rival states. All of these demonstrate the critical role that intellectual human capital plays in a nation's national security in the twenty-first century. As a result, one major risk element for national security is the intellectual migration of human capital.

In the second half of the 20th century, a new term began to be used to describe international population migrations – "brain drain". In modern economic and scientific literature, the term "brain drain" means the departure from the country of highly educated and highly qualified specialists engaged in intellectual activity, creation, development, and implementation of new technologies (Skovronska et al., 2023). Later, the "brain drain" began to be classified as intellectual migration – the migration of people in scientific and creative professions – scientists, engineers, medical and other specialists, as well as representatives of the creative intelligentsia.

The problem of "intellectual migration" has affected practically all developed and developing countries of the world. In particular, scientists from Germany prefer to work under contract in Canada or Asia. Canadians strive to gain a "position" in US universities, and Americans receive internships in Europe in large numbers. In the era of economic globalization, the departure of scientists to work under contract abroad is as natural a process as external labor migration of the population.

At present, researchers have not yet given a precise definition of the term "intellectual migration". In a broad sense, intellectual migration implies the migration of scientists, researchers, as well as student migration, the growing popularity of which is particularly noticeable.

Intellectual migration is the cause of: "brain drain", which is characterized by a decline in the economic productivity of the donor country (Roudgar, 2014) and a decrease in the number of highly skilled labor force, as well as a decline in the investment attractiveness of the country, which leads to further student and labor emigration (Roudgar, 2014); "brain gain", which is characterized by an increase in economic productivity and investment attractiveness of the country, as well as "brain circulation", which is also known as temporary labor migration (Puşcaciu et al., 2018). Brain circulation is a process in which student and labor migration is observed with subsequent return to the home country, while the purpose of this migration is training and accumulation of the necessary experience. This option is the most beneficial for developing countries.

From the above it follows that intellectual migration is the movement and redistribution of intellectual capital, and consequently, human capital, which, in the case of a "brain gain" or "brain drain", moves in only one direction. The development of the modern global world labor market, as well as the intensification of the struggle for intellectual capital, have become the reasons why developing countries (including China) have begun to take measures to retain human capital in the country.

There is also a phenomenon, which is usually not paid enough attention to – internal brain drain. It is about human capital flight from academia to business. Specifically, if the United States lags behind its rivals in the global arms race to create the most sophisticated arsenal of AI capabilities, it might forfeit its military superiority and become more vulnerable to cyber and misinformation assaults (Nekhai et al., 2024). Beyond these cautions, the National Security Commission on Artificial Intelligence has issued a warning that rivals like China are gaining ground in several crucial areas, endangering the United States' position as the leading authority on AI research (Martín et al., 2021). The committee stated in 2019 that "we are concerned that America's role as the world's leading innovator is threatened" (Heckman, 2019). The panel of technologists from the private sector has advised the Trump administration to increase efforts in attracting top talent for AI research and to reevaluate plans to

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reduce funding for basic research by 10% and research and development by 5% in the fiscal 2020 budget in order to maintain a strategic advantage.

The brain drain from academics to industry is accelerating due to limited federal funding availability. "This trend damages our ability to train the next generation and influences the direction of research toward more commercially-applied problems. The government must redirect this trend soon" (Heckman, 2019).

This landscape of intellectual migration of human capital, together with its sound impact on national security, determines high relevance of research in this field.

## 2. Literature Review

According to scientists, intellectual migration has gone through several stages in its development, reflecting the stages of the scientific and technological revolution and changes in the global economy (Boeri et al., 2012).

The first stage covered the second half of the 1940s, when several thousand specialists in physics, rocket science, and other similar specialties were semi-forcedly taken from defeated Germany to the United States.

The second stage was the 1950s, when a mass voluntary departure of talented scientists and university graduates from Germany, Great Britain, Italy, and to a lesser extent France, began to the United States, Canada and Australia. As a result, the United States alone received at least 100 thousand highly qualified specialists during the period mentioned, while many scientific schools in Western Europe became noticeably poorer. A feature of the intellectual migration process at this stage was the fact that highly qualified specialists migrated from some economically developed countries to others (Giousmpasoglou et al., 2017).

The third stage, covering the period from the early 1960s to the late 1980s, brought about fundamental changes in the nature and geography of international migration: developing countries, especially Asian countries, but also Latin American and African countries, became the main donor regions of intellectual migrants. According to some estimates, in the 1960s and 1970s alone, 700,000–800,000 specialists – scientists, engineers, doctors, medical personnel, programmers, etc. – moved from these regions to the United States, Great Britain, Canada, and Australia. The "brain drain" affected India (engineers and doctors) to the greatest extent, the Philippines (nurses), China, the Republic of Korea, Egypt, Algeria, Nigeria, and the West Indies. To this must be added tens of thousands of students who, after completing their studies in the United States, Canada, and Great Britain, remained there without returning to their homeland (Khan et al., 2020).

The fourth stage, which began in the late 1980s, is still ongoing. The "brain drain" at this time affected, first of all, the countries of Central and Eastern Europe and the CIS, from where a mass migration of scientists, technical specialists, and people of liberal professions began to the USA, Canada, Germany, Israel, and some other countries.

In total, according to UN experts, during the post-war period until the mid-1990s, intellectual migration led to the displacement of more than 2 million people worldwide (Boeri et al., 2012).

Scholars have suggested a typology of nations, according to which all states that are now in existence may be classified into two categories (Bar-El et al., 2018). States that have highly developed science, advanced technology, and high-tech goods are included in the first category. The primary paths of worldwide processes are established by these major states. States that are falling behind in terms of economic and technical advancement belong to the second category. Due to the importation of advanced technology from industrialized nations, they are attempting to overcome technical lag and quicken the growth of their economy. Globalization can therefore be understood as a kind of tool used by the first class of states in their battle for global intellectual potential, as a kind of intense geoeconomic rivalry for global leadership in a variety of scientific, engineering, and technological domains, and as a means of geopolitical competition for global dominance.

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## 3. Methods

The theoretical basis of the study is formed by the works of scientists, which lay the foundations and specify the definitions of the concept of migration, typology of migration processes, essential characteristics of this phenomenon, reveal the content of migration as a social process, theorize developments in the field of intellectual migration. The methodological foundations of the study are a systemic approach, a structural-functional approach, institutional analysis, as well as generalization and interpretation of empirical data by methods of qualitative analysis.

The study used methods of synergetics, abstraction, generalization, methods of qualitative and quantitative analysis of information, methods of comparison and other methods of scientific knowledge of social reality.

## 4. Results

Migration of specialists is caused by the same factors as migration of unskilled labor. First of all, it is necessary to note the different levels of economic and social development of countries. Scientists and specialists leave their country for another if they find there higher material compensation, opportunities for creativity and self-development, better laboratory equipment, more comfortable living conditions, more civil rights and democratic freedoms.

When skilled workers and engineering and technical personnel, scientists and specialists emigrate, the donor country ends up being a big loser. It loses all the capital costs invested in training these personnel (Zalyubovskii et al., 2024). The domestic market loses the best part of the labor force, the intellectual elite, whose scientific and educational potential served as the basis and guarantee of economic development in the conditions of scientific and technological progress (Vinichuk et al., 2023). Thus, the donor country worsens its current position, loses prospects for development in the future. Accordingly, all the losses of the donor country turn into a gain for the recipient country. According to the most conservative estimates, the US savings in the field of education and scientific activity alone amounted to more than $15 billion over the last decade of the 20th century. The profit received from the use of foreign specialists in Canada is 7 times higher, and in the UK - 3 times higher than the amount allocated as aid to developing countries (Hewitt, 2020).

The United States has had and continues to have a decisive impact on the process of intellectual migration, being the main center of attraction for intellectual migrants, attracting approximately 2/3 of their total number. For example, back in the mid-1960s, a new immigration law was adopted there, stimulating the influx of specialists from developing countries, and in the 1990s, a special amendment was adopted, increasing the quota for highly qualified specialists from the former USSR to 50 thousand people per year. As a result, the share of migrants among highly qualified specialists in the United States is about 20%, and among engineers - 40%. Since the costs of training one specialist in the United States are usually significantly higher than in other countries, such an influx of intellectuals allows them to save many billions of dollars (Khan et al., 2020).

For many nations, particularly those whose economy depend heavily on trained labor, brain drain is a serious problem. The prosperity and development of the nation may be greatly impacted by the departure of such personnel. Governments need to create plans to hold on to their skilled labor force in order to solve this problem (Yermachenko et al., 2023). Retraining and upskilling the local labor force improves employment opportunities and changes how foreign companies see emerging nations.

The worldwide freelance marketplace Upwork released the Future Workforce Report 2022, which states that 60% of hiring managers in the US alone are having trouble filling positions with qualified candidates and are, as a result, looking into innovative solutions to address the talent gap. Expanding their scope to include unexplored areas such as Africa is the solution (Guattam et al., 2024).

Investing in extensive digital skill development programs can help stop the brain drain by equipping individuals with the necessary abilities to find long-term, well-paying jobs with promising career opportunities (Zilinska et al., 2022). It will be conceivable to provide an incentive for inbound investment from outside firms in order to build the skilled workforce, maybe with additional support

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from advantageous incentives. Additionally, one creates a vast talent pool that can be accessed virtually; according to Hewitt (2020), 38% of African software engineers currently work for organizations situated in other nations. Governments benefit from this as well since the workers stay in their native countries, support the national economy, and serve as a platform for African digital talent.

Iranian researchers issued a warning about an unparalleled brain drain tsunami in 2023. A fresh wave of departure hit a tipping point, spurred by the recent statewide protest crackdown and a severe economic downturn. A growing number of Iranian healthcare professionals have been leaving the country in 2022 due to issues with their jobs, their economic situation, and their lack of social and political freedoms (Tsymbaliuk et al., 2023). This has raised concerns about a significant decline in the nation's healthcare system, but officials are refusing to acknowledge the issue. Iran has always been plagued by younger generation emigration and brain drain, but analysts claim that since last year's repression of the Woman, Life, Freedom protests, the urge to leave has been rising considerably quicker (Sinaiee, 2023).

Globally, there has been a sharp rise in the number of high-skilled migrants and their fluxes within the global stock, as well as a growth in "asymmetric and skewed patterns" across several dimensions (Giousmpasoglou et al., 2017). A pattern is becoming more and more that shows highly skilled migrants moving from a larger to a more constrained selection of destination nations. The latter, in particular, comprises the Gulf Cooperation Council (GCC) nations as well as the industrialized nations of Australia, Canada, the United Kingdom, and the United States (Berger, 2022).

Nearly half of the people of Bosnia and Herzegovina are immigrants. In Albania, forty percent of them. In 2017, almost one-third of the workforce with a university education in both nations, along with North Macedonia, resided overseas (Giousmpasoglou et al., 2017). Brain drain affects even EU countries: about one in five highly educated and competent individuals in Romania, Bulgaria, and Croatia leave their home countries in search of opportunities overseas.

One of the main effects of globalization is this increasing tendency of migration, particularly that of the skilled. Over the past 30 years, rich countries have expanded their need for skilled migrants from developing countries, in addition to the persistent push from emerging countries to produce labor.

## 5. Discussion

The combination of human, material, and financial resources that determine the state of science and education - two closely related key areas - is the intellectual potential of society, as defined in the narrower sense of the human capital flight concept (Vorobei et al., 2021). The measured value of these areas reflects the ability created and accumulated in society for creative creation of new knowledge, technologies, and products. In this tandem, science plays a system-forming role in the replication of an intellectual resource (Litvinova et al., 2020). The fact that science now defines the degree of socioeconomic growth, true independence, authority, and power of any state specifies its unique position in the accumulation and development of society's intellectual capacity.

According to George's research (2023), India has historically been a significant supply nation for talented migrant workers, with its scientists, engineers, healthcare professionals, and IT specialists looking for chances outside. Known as a "brain drain", this issue has been more prevalent in recent years, with over 17 million Indians currently residing abroad. Remittances and knowledge transfer are beneficial, but India is losing out on human capital, economic expenses, and the effects of inequality as a result of this migration (Ostapenko et al., 2023; Kovaliv et al., 2023). Comprehensive data highlights the magnitude of India's exports of labor. In the field of medicine, more than a million Indian physicians and two million nurses work in the US, UK, Canada, and Australia. The $150 billion global IT workforce in India is part of an industry worth 88% of which is generated by sales outside of the country. More than two million IT workers have moved since the early 2000s. 200,000 Indian students travel overseas each year to pursue higher education, of whom 85% never return. Overall, the world's greatest skilled diaspora is made up of migrants from India. This migration is becoming more expensive (Klymenko et al., 2016; Ortina et al., 2023). When migrants permanently depart India, returns on investments made in

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publicly funded higher education are forfeited. There is a severe lack of physicians and nurses; India would require an additional 2.4 million doctors to fulfill WHO requirements. This makes the disparity in healthcare access between rural and urban areas worse. Despite the fact that migrant workers' remittances totaled $80 billion in 2018, analysts calculate India wasted billions on unpaid income taxes and pension contributions.

According to George (2023), benefits also exist. Returning migrants bring with them knowledge of state-of-the-art IT systems, cutting-edge research methods, and healthcare services (Tabassum et al., 2017). Trade and investment are facilitated by their ties. The Indian diaspora enhances its credentials in the knowledge economy by making significant contributions to scientific discoveries, literary masterpieces, and technical advancements elsewhere. The accomplishments of NRIs like Nobel Laureate Subrahmanyan Chandrasekhar, writer Salman Rushdie, and former Intel CEO Vinod Dham provide India international reputation as a source of highly competent personnel. In important venues, as academics, researchers, journalists, and commentators, Indians living abroad represent India's position (Kalyayev et al., 2019). Their widespread presence in popular Western discourse serves to counterpropaganda by projecting Indian viewpoints. Scholars of Indian descent, such as Devesh Kapur of UPenn, influence discussions about the historical background of Kashmir.

There is a widespread outflow of professionals and skilled laborers from Sri Lanka (SL). The Ministry of Health has indicated that between May 22 and May 23, around 1000 doctors moved. A health security crisis is being brought on by the mass migration of physicians, specialists, and other health care workers, which is mostly affecting the impoverished who rely on public sector healthcare (Zharovska, et al., 2023). The Computer Society of SL reports that about 10,000 IT engineers have departed the country. In addition, EconomyNext revealed that one of the most impacted industries is construction, as industry professionals are leaving (Shamne et al., 2019). Australia has become a hot spot for professionals to relocate to because it offers the best cities, higher salaries, a higher standard of living, free healthcare and education, better infrastructure, temperate climate, socioeconomic stability, and the chance to obtain citizenship (Mendis, 2024). Professionals and skilled labor have been migrating from Sri Lanka due to a multitude of circumstances. Some of the factors that drive migration include a decline in per capita income, a sharp decline in the value of the rupee relative to the US dollar, higher inflation, an onerous tax system, a lack of opportunities for growth and gainful employment, political unpredictability, poor public services and infrastructure, an escalating economic crisis, a disrespect for the rule of law, a loss of faith in the system, and a loss of hope for a better tomorrow (Mendis, 2024). This situation resembles state of the art in brain drain from Ukraine. In the third year of war, the reasons of intellectual capital migration from Ukraine changed in comparison with 2022, a year of war onset. In 2023-2024, the bulk of emigrants from Ukraine are people from the rear regions, for whom the drivers of emigration were inflation, the emergence of new legislative challenges for small and medium businesses, increasing trends in forced mobilization, etc (Gupta, S.K., et al., 2024). Many of these "late" migrants have higher education and a good professional base, and also speak foreign languages and have good chances of finding employment abroad (Kussainov et al., 2023). Their decision to emigrate, unlike among the emigrants of 2022, is well thought out and balanced, which increases the risk of their non-return even after the end of military operations.

The US and the UK continue to rank as the two most powerful nations in terms of global soft power, according to the "Global Soft Power Index 2024" published by Brand Finance, the well-known brand valuation firm with headquarters in London. Notably, China is now the nation brand with the greatest rate of growth, outpacing both Japan and Germany. It also ranks third in the soft power index for the first time, with its advancements outpacing those of any other nation (GT staff reporters, 2024).

According to Brand Finance's Managing Director for China, Scott Chen, China's progress in the two areas of "Business and Trade" and "Education and Science" is the reason for this increase (GT staff reporters, 2024). Julien Segbo, the director of the Confucius Institute at the University of Abomey-Calavi in Benin, provided a shining example when he stated that more and more African students are opting to study in China

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(Isaieva, et al., 2020). "It is not only because China offers a variety of scholarship programs, but also because the quality of higher education in China is gaining wide recognition (Kryshtanovych et al., 2022). Like many classmates, I came to China for education. I have gained professional knowledge here, broadened my horizons and experienced the charm of different cultures" – this opinion of a student is representative (GT staff reporters, 2024).

In the age of globalization, migration for education across international borders is a "soft power resource". Top host nations in education of foreign students as of 2020 are shown on Figure 1 below.

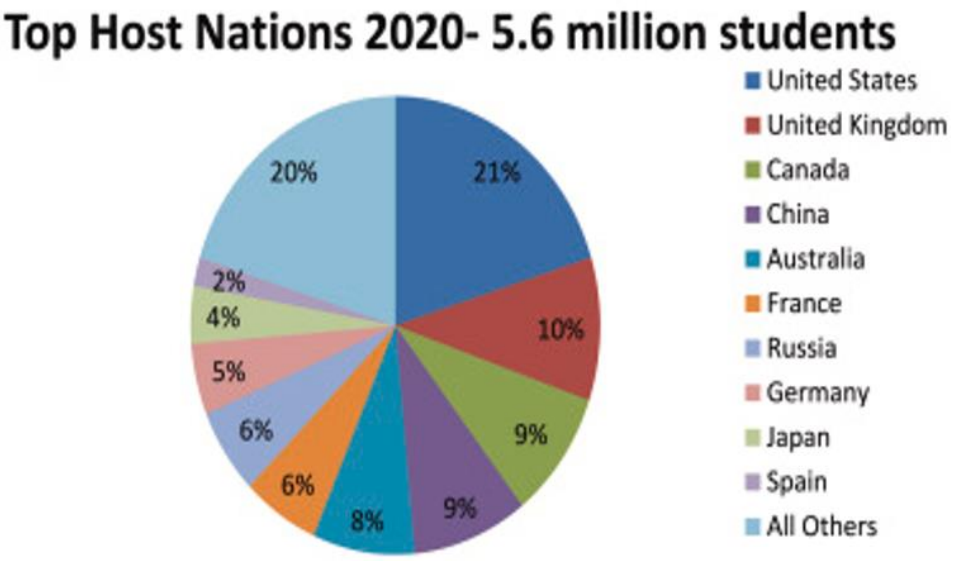


**Figure 1.**
Top host nations in education of foreign students as of 2020 (Guattam et al., 2024).

States have been including a larger role for higher education in their foreign policies in an effort to develop soft power. A nation's capacity to draw in foreign students or to arrange exchanges is a potent instrument of public diplomacy with long-term benefits (Gavkalova et al., 2022). Studying abroad has a favorable impact on attitudes and connections even for places where there has been a history of bilateral enmity. International students who return frequently end up advocating for their host countries through third parties (Gauttam et al., 2024).

Knight (2015) distinguished three generations of IHE in the modern age. The "satellite model", which refers to the establishment of satellite offices, branch campuses, research centers, and management offices abroad, is the second generation (Popovych et al., 2023). The first generation, known as the "classic model", consists of collaborative activities both domestically and internationally through international partnerships and the exchange of international students and staff. By "co-founding international universities" in other nations through international partnerships, the third generation improves upon the second generation model (Knight, 2015). Universities are keeping an eye on and noting the political and economic environments of the countries in which they choose to open their offices, especially with regard to elements perceived as externalizations of soft power, according to Aparecido & Schettini's (2022) research on Brazil's educational system. In a same vein, Saudi Arabia has deployed soft power by establishing several institutions and colleges abroad with the goal of promoting Islamic culture globally (Alzubaidi and Mohammad, 2020).

The Chinese government is utilizing educational diplomacy to disseminate Chinese language, culture, and official narratives in an effort to foster a sense of national pride. To strategically spread its soft power, Beijing founded several Confucius institutions throughout the globe (Lo and Pan, 2016; Martin and Elias, 2021).

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Simultaneously, encouraging scientists and students to migrate overseas and sending them there also turned into a covert soft power tactic. Through education, China is benefiting in both directions. Education is typically seen as a soft power that may benefit the host nation. On the other hand, China benefits from being a sending nation as well. The dynamics of the number of Chinese students studying overseas from 2007 to 2019 are displayed in Figure 2.

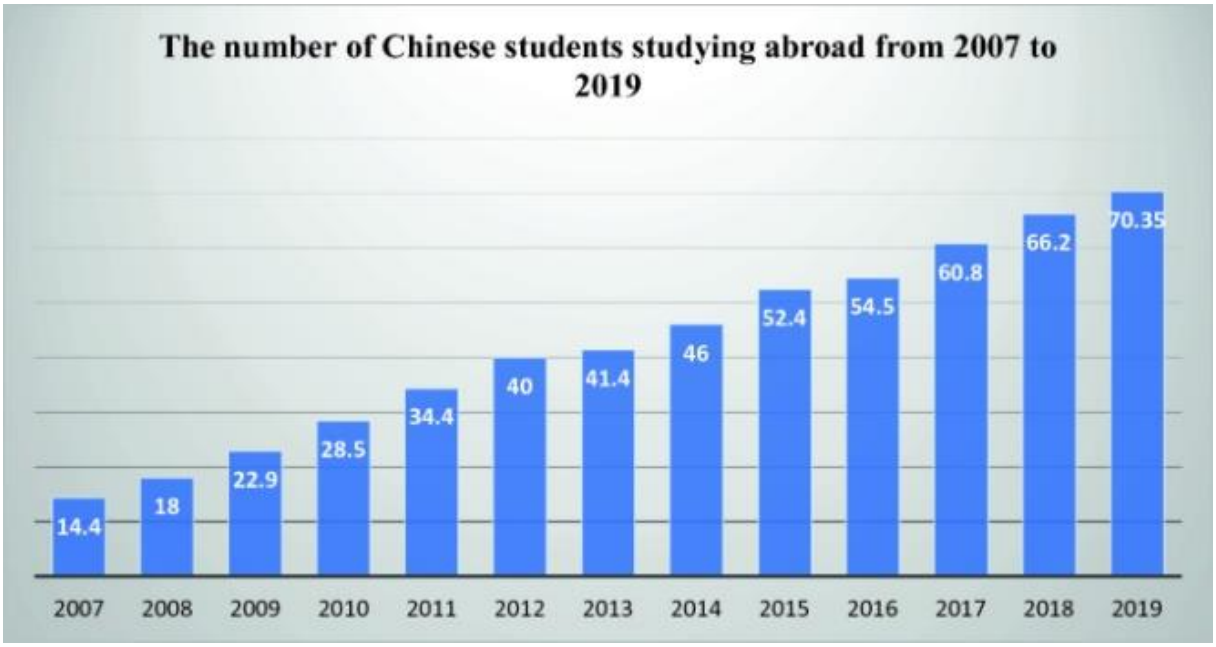


**Figure 2.**
Number of Chinese students studying abroad for the period of 2007-2019 (Li, 2021).

China has effectively formulated its foreign policy objectives and equipped its students to act as Chinese ambassadors while they study abroad thanks to its Internationalization of Higher Education (IHE) strategy (Han and Tong, 2021). Additionally, after analyzing the framework for China-African educational collaboration, Martin and Elias (2021) came to the conclusion that Beijing's primary goal in forming this alliance is to advance geopolitical and geoeconomic goals in the area.

The same concerns encouraging scientists to migrate (even on temporal basis) with the aim of joining foreign teams in various research fields, in particular strategic (such as IT, telecommunications, and critical infrastructure) and defense-related (Zayats et al., 2024). This even broadens possibilities for industrial espionage and allow China to bypass strict limitations imposed by Five Eyes Alliance.

Thus, the spectrum of intellectual capital migration as one of very significant factors determining national security is broad, complex and includes even 'brain gain' as a source of potential threats (Gupta, M. et al., 2021). Naturally, these above-mentioned processes of intellectual migration of human capital are ongoing with their initiation and supporting by public administration of appropriate countries, and, accordingly, namely public administration bodies should develop measures to overcome threats.

States have a number of options for addressing the issue of absentee students. Though it appears to be the most straightforward, in actuality, it is also the most challenging (Deyneha et al., 2016). By doing this, the relative attractiveness of return will increase from an economic and sociopsychological perspective. Economically speaking, the problem of unemployment among university graduates, or the unemployment of the intellectual class, is typically hidden in broad labor market analyses because, when compared to unemployment as a whole, it frequently represents a much smaller percentage of the nation's total population (Khomiuk et al., 2020). As a result, when different government initiatives discuss combating unemployment and creating new jobs, they often focus on small businesses, farmers,

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and industrial workers rather than intellectuals (Cherniaiev et al., 2024). Because of this, university graduates are less financially situated in the workforce than people without a college degree, particularly if the graduate chooses to go into teaching or fundamental science as their job.

From a sociopsychological perspective, the problem appears to be considerably more intricate. One objective situation is that an educated individual has higher expectations for the social and political transparency and effectiveness of the nation in which they reside (Gaman, et al., 2022). His or her lofty aspirations don't always align with the real situation, nor do they in all nations.

And it is evident that the elites of certain nations face a far more important and, often, intolerable obstacle when it comes to a genuine overhaul of the current socio-political system, the reorganization of the infamous "deep state", and not only economic modernization (Gaievska et al., 2023). By the way, this explains why so many students participate in civil protests throughout the globe, and why in certain cases the protests are solely planned and led by students (just think back to the 1968 protests or South Korea).

As a result, compared to those who studied at home, those who studied overseas had a wider comparative socio-political perspective. He or she thus has far more grounds for subjective dissatisfaction with the moral and psychological environment that has emerged in their nation (Byrkovych, et al., 2023). This student's rejection of reality at home becomes even stronger if they attended a Western university, the majority of which are marked by blatantly left-wing progressive traditions and a spirit of civic activism, which has a serious impact on their long-term outlook on life (Roudgar, 2014).

The broad conclusions that may be made about stopping the brain drain are reasonable and rather standard. On the one hand, this pertains to how desirable the job market is in one's home nation in terms of pay scale, opportunities for professional advancement, etc (Bazaluk et al., 2023). However, as actuality demonstrates, these are not the sole deciding factors. Subtle socio-psychological factors should also be taken into consideration since they also have an impact.

Raising salaries competitively and boosting productivity in highly skilled jobs - many of which are in the public sector - would encourage employees to stick around (Kondur et al. 2024). In addition, public sector reforms must be implemented in tandem with private sector growth and job creation in order to prevent the exodus of highly qualified workers.

Another important policy option is to increase and enhance post-graduate and higher education, even if there are worries that this strategy may encourage even more emigration and cause greater losses (Avedyan et al., 2023). This strategy has previously been used by a number of nations, such as Romania and Croatia, to prevent more of their students from leaving the country in pursuit of higher education overseas.

Cooperation between nations in knowledge creation, innovation, and education appears to be a practical and likely the only effective strategy for countering aggressive soft power efforts (Arivazhagan et al., 2023). This strategy would enable achieving a true balance between "brain drain" and "brain gain" without endangering national security.

Obviously, however, that such large-scale projects unlikely can be effectively developed and implemented without close cooperation with business sector, academia, and mass-media. Here, quadruple-helix model application seems the most appropriate.

## 6. Conclusions

The cost of intellectual security is high. The national governments should exert a great deal of effort.

Negotiations with important destination nations on issues like subsidy losses from emigrating talent will be aided by the pursuit of equitable win-win relationships rather than adversarial attitudes. Bilateral talks acknowledge the advantages of both parties. It is crucial to have a balanced perspective that goes beyond the exaggerated talk of "brain drain" and zero-sum thinking. Temporary expenses associated with high-skilled migration can be transformed into long-term strategic advantages for donor countries if they are addressed with empathy and forethought. In actuality, a large number of donor nations are

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able to maintain globally competitive talent exports that increase prospects for their young people while also spurring national growth via wise policies that balance costs and benefits. The best sustainable course is to enable safe, lawful, and circular migration while increasing meritocratic access.



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