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Does the emigration of skilled labor from Hungary merit being called a brain drain?

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Spring 2021

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History of Emigration from Hungary

Castles (2015) states that migration is a collective action arising out of social, economic, and political change affecting the whole society in both sending and receiving areas. These reasons often overlap making it difficult to separate economic from social, cultural, and political reasons. Since the end of WWII Europe has become a migration destination. This was caused by decolonization, rapid economic growth, and the EU becoming a free trade and migration zone particularly in Western Europe. Emigration of highly skilled people is a problem more or less across the EU, it is worth noting that there is an important difference in Hungary. Western Europe is challenged by the threat of their professionals moving to the USA as the latter offers an almost unmatched mix of money, research personnel concentration, and meritocracy. However, if we look at Eastern Europe and in this case Hungary, apparently not only the USA seems to have this kind of pulling attractiveness but also some Western European countries, predominately the Benelux states, UK, and Germany.

Személyi (2011) states that, traditionally, emigration waves occur during or immediately after large crises or changes in the society of the origin country. There is only one exception in the case of Hungary: the transformation of the political system in 1989. The early to mid-1990s saw a new labor frontier for Western Europe with the newly former USSR satellites, including Hungary. However, emigration actually decreased throughout the 1990s. This can at least partly be attributed to the euphoria of the people anticipating the hopefully upcoming freedom and social wealth. However, emigration rose for skilled people due to later changes in laws. The significant outflows from Eastern Europe heading west during this time were largely of ethnic minorities to homelands or safer areas. For Hungary, this was the minority Roma population moving West. However, Hungary was also considered one of the more stable former Warsaw Pact countries and it received many migrants hoping to use Hungary as a transit country as well, due to its border with Austria. Since Hungary itself was still forming a new government at this time, they were unprepared for immigration as they had no offices or laws addressing the subject. According to Düvell (2014) in 1994 there were up to 2 million migrants in Central Europe, mostly in Hungary, wanting to move west. A lot of attention was paid to migrants wanting to use Hungary as a transit country at the time for both regular and irregular migration

since these migrants stood out ethnically since in addition to Balkan migrants Hungary received many Afghan migrants looking to move west. This triggered biased investigations into transit migration at the time. Many of these migrants are thought to have been set on moving on from Hungary due to Hungary's homogenous cultural and difficult language as well as increasing anti-immigration policies and views. Specific numbers within Hungary are unknown; however, emigration of both citizens and refugees is still thought to be higher than immigration throughout the 1990s and into the 2000s.

Galgóczy (2013) notes that the early 2000s saw another boom in migration out of Hungary to Western Europe. Short-term migration, long-term foreign employment, and emigration potential all rose significantly from the early to mid-2000s. With Hungary joining the EU in 2004, emigration increased significantly and reached an unprecedented high in 2005 despite restrictions from Western EU countries which expired completely in 2011. After a drop in emigration in 2006, this rate along with long-term foreign employment, remained constant near early 2000s levels until 2008. However, short-term migration had decreased. Any underlying long-term trend will be upset by unique discrete events or shocks. For example, the worldwide global economic crisis (2007-2010) in the words of the OECD (2012). Hungary experienced a strong spike in emigration in 2008 likely due to the shock of the global economic crisis. Since 2010 (end of the global economic crisis), the emigration of the highly skilled has increased considerably once again and the number of those intending to emigrate permanently and those emigrating permanently is at an all-time high and increasing year after year. This coincides with the Fidesz party coming to power and staying there ever since. A lot of increase in emigration and emigration intentions is not considered to be due to economic reasons despite Hungary's worsening economic position but rather political reasons. 2015 hit a new all-time high in terms of both total emigration and educated emigration of Hungarian citizens as well as immigration and emigration of refugees. Hungary occupies a unique position with respect to refugees in the sense that it was heavily involved in the 2015 refugee crisis, yet the country became a frontline country without any immigrants. Juhász (2017) notes that in 2015, 391,384 irregular migrants and 177,135 legal asylum seekers entered Hungary. This was up 314% from previous year, but most were seeking to head west. Asylum-seekers submitted

applications in Hungary only for formal reasons and, almost without exception, they all moved on to Western Europe afterwards, Germany being their primary destination. By the end of 2015, only between 900 and 1,000 refugees stayed in Hungary. Half of them were in detention centers and were unable to leave, and most of the other half had already started immigration procedures. Many left due to financial reasons and the homogenous culture of Hungary.

Since the fall of communism in Hungary, the reasons for educated emigration have largely remained the same. According to Személyi (2011) a 2005 study, that was reproduced in 2008, on the demographics of Hungarian emigrants, one quarter of survey respondents had degrees in at least two science fields, 10% had educational qualification higher than PhD, and 4% were members of the Hungarian Academy of Sciences. These emigrants said they left due to the limited job market in Hungary for professionals in the natural and technical sciences, especially in R&D. As to the overall motivation structure of emigrants, the results in 2008 were the same as in 2005: the main push factor is income, but professional development/career opportunities, and the overall political situation in Hungary are also significant. At the destination countries they usually find what they felt they needed: satisfaction in current job is higher in every respect than it was in Hungary. Additionally, in 2008 75% of emigrants said they settled for the long term, which was up from 60% in 2005.



According to Szilasi & Halász (2018) a 2013 study found that in the case of Hungarians, predominantly economic and political, and to a lesser extent socio-cultural and geographic-

historical factors explain the strengthening of emigration. Due to current demographic erosion, decline in the number of births, social, educational and health care deficiencies, the future consolidation of the pension system, the growing proportion of deprived social groups, exodus of rural population and more, the current and the future situation will likely become worse due to the fact as the most affected age groups are getting younger. The average age of emigrants is 29/30 years old. According to data from Központi Statisztikai Hivatal (KSH), The Hungarian Central Statistical Office, 44% of migrants are under 30 years old and 77% are under 40. KSH also noted in 2013 that Hungarian students attending Hungarian universities and colleges decreased by 25% during the last decade. These students acquire their first work experience in host countries, continuing their socialization in an inclusive and multicultural social environment, establish long lasting social networks, advance their foreign language and interpersonal competences and all these attributes reinforce their migration potential even for a lifetime. Growing dissatisfaction with education policy and the social welfare system as well as uncertainty about the future are all motivational sources that intensify migration. Additionally, the macroeconomic situation of the country, the stagnant GDP since 2010, the increasing inter- and intra-regional inequalities caused by maldistribution of the social systems, the low level of average wages on the individual level, the enormous levels of debts burdening predominantly low and medium social strata groups, and the lack of savings are considered as the most crucial components leading towards emigration.

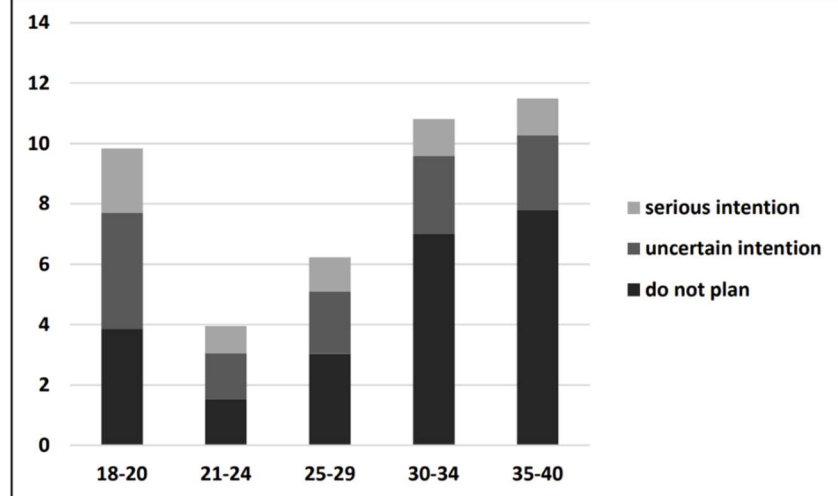
Push factors	%	Pull factors	%
economic and financial problems	39,4	economic, financial and material factors	35,3
lack of adequate jobs	20,5	quality and competitive jobs	14,3
dissatisfaction in politics	8,2	job and life experience in inclusive, multicultural surroundings	9,8
uncertain future	7,9	language learning	6,1
Mentality	6,2	mentality	6,1
low living standards	6,1	natural environment	4,2
social conflicts	5,1	appreciation	4,1
low level of appreciation	4,6	prosperous future	3,8
other influential factors	1,4	open, inclusive society	3,4

As mentioned in the table above, economic, and financial reasons are both the top push and pull factors for Hungarian emigrants. Saphier & Simonovits (2004) investigated Hungary's

Project Retour. Project Retour dealt with return migrants from 2003-2009, primarily through assisting the migrants in finding a job and reintegrating into the Hungarian scientific and skilled worker community but also by involving themselves in some social research and conference activities on the matter. It was the first organization who asked the migrants and some returners about their opinions and reasons behind leaving Hungary and coming back. This research was not intended to be scientific, and it was not published but instead posted on the website of Project Retour. Their methodology was based on a questionnaire made available on the website of the organization as for a couple of months in 2004 and the respondent could send it filled in as an attachment to an email address. They had 120 respondents, half of them were still living outside Hungary while the other half were returnees. Their conclusion was that the main factors were financial reasons and lack of career opportunities. Galgóczi (2013) states that wages in the UK, a top destination for educated Hungarian emigrants, are 3.3 times higher than those in Hungary. Additionally, wages are 2.8 times higher in Germany and Austria and 2.4 times higher in Ireland.

Due to the increasing wage gap between Hungary and Western European countries as well as what many educated Hungarians view as a worsening political situation, so migration intentions are changing. Szilasi & Halász (2018) notes that a 2011 study asked, “Are you planning to go abroad for a year or two in the next two or three years?” Around 43% of respondents said they had no intention of emigrating, around 37% said they had some intention of emigration, and around 19% said they had serious intention to emigrate.

Fig. 1.
Proportion of
different age-
groups in light of
emigration
intention (n=4806)
(ages; %)



The study also notes that women's participation is rising rapidly compared to previous periods. This is due to changes in the social judgment and involvement of women, their individual careers, labor market status, family expectation, and network expansions.

Historically, there has been a persistent gap between worker's social situations in Western and Eastern Europe. The fall of communism and move towards democracy has not helped or even worsened the gap in some cases. According to Bohle (2006) the unemployment rate in the West in the early 1990s was 9.2% while it was 10.3% in the Visegrád Group, which includes Hungary, and Slovenia; however, the rate in the mid-1990s to early 2000s was 7.5% in the West and 11.6% in Visegrád and Slovenia. Additionally, Eastern Europeans work longer hours for less wages on average. These workers have less bargaining power and social collectives.

The consensus on reasons for emigration from Hungary is that financial and economic reasons are the top push and pull factors. This is especially true for educated emigrants as their wage potential abroad, particularly in Western and Northern Europe, is more than twice their wage potential in Hungary. In response to this, the Hungarian government has started programs both to increase return migrants and financially aid the highly educated so they will stay in Hungary.

Government Response

Valkó (2016) notes that since the end of the USSR, the government has largely had a policy of denying the issue of emigration publicly. Modern politicians have either denied that mass emigration occurs at all, contradicting data or stated that emigration is a good thing for Hungary. András Giró-Szász, Secretary of State for communications at the Office of the Prime Minister, said "first of all, there is no such thing [in Hungary] as emigration; what it is, is the freedom to work anywhere in the EU. [A person] takes up a job in an EU member state, but [his or her] family lives here at home, [he or she] transfers the money earned there, they remit more than two billion euros a year, and significantly contribute to the Hungarian national economy, and this does not cause any tension whatsoever". He also stated, "These numbers are incorrect, the claim that emigration rates have increased since 2010 is false, the majority of

these people left before 2010 and this does not cause any problems whatsoever". However, data contradicts the claim that emigration rates have not increased since 2010. Prime Minister Viktor Orban, who came to power in 2010, has made many statements on how emigration is beneficial for Hungary. He stated that: "[Emigrants] do no wrong whatsoever to their home country, and moreover, within one year they send home amounts worth two billion euros...these people should be thanked!". He has also denied the existence of emigration at all when he said "It is absurd to speak of emigration from Hungary to Germany or the United Kingdom. These people are not emigrants, because we ourselves wanted to create one common economic realm in which people are free to take jobs anywhere". However behind closed doors the government has worked to examine why skilled emigrants leave, prevent skilled emigration, and increase the return rate of skilled emigrants.

Gyere Haza Fiatal, translated as "Come Home Young Person", was a program run by the Országos Foglalkoztatási Közhasznú Non-profit KFT – OFA (National Employment Foundation) from April of 2015 to June of 2016. It targeted young Hungarian professionals living in the United Kingdom and aided in moving back home and finding a suitable job in Hungary. It was specifically directed towards young people living in London, because in this city, the average age of Hungarian professionals is the lowest, and the average education level the highest. The process of the program was simple for applicants. First one would register online, then they would be interviewed and his or her background and skills were assessed by a representative from the OFA, then an interview with a representative of the prospective employer involved in the initiative would occur, and finally the person would return home with costs of this move covered by the OFA. Additionally, if accepted into the programme then a person would receive a monthly allowance of HUF 100,000 (EUR 325) for the duration of one year, to cover accommodation costs (or a part thereof) or travel expenses if the distance was over 100 kilometers or the commute took more than 5 hours back and forth. Sándor Czomba, Secretary of State for Employment in the Ministry of National Economic Affairs at the time stated that 40,000 people had already signed up for the program after a few weeks. However, it quickly turned out that Czomba's conclusion was wrong as the Facebook page for the website had been 'liked' by 202 people, and the total reach of the Facebook page amounted to 40,000. The

ministry later rectified Czomba's statement and stated that while the Facebook page had reached 40,000 people, by that time 581 people had registered for information on the website. By end of programme over 2,000 jobs were waiting to be filled in 134 partnering companies, 105 Hungarians had returned from the UK, and the entire budget of HUF 100 mill (EUR 300,000) was not spent. The initial aim of the policy was to have 50 Hungarian professionals return and with 105 returns this goal was surpassed. Yet it remains to be seen whether the return of 105 professionals to the Hungarian labor market will have a significant and lasting influence on the overall economy.

Röghöz kötés, meaning serfdom, name given by critics of part of the education reform in the fourth amendment of the Hungarian constitution. Starting in 2012, prospective students at a Hungarian institute of higher education who want to apply for a government-funded place are required to sign an agreement obligating them, within 20 years of completing their studies, to work in Hungary for a period that is the same duration as their studies. If they fail to do so, they must pay back the financial aid to the state. This was heavily criticized because it does not improve the education system which would encourage staying, it simply inhibits people from leaving. However, it is in theory a voluntary decision as to accept the financial aid. Rózsa Hoffman, Secretary of State for Public Education from 2013 to 2014, insisted that they "were not binding anyone to the land" and the agreement in question was "based on a voluntary decision". However, Hallgatói Önkormányzatok Országos Konferenciája (HÖÖK), the National Union of Hungarian Students, has argued that the measure violates people's fundamental rights. Additionally, others have agreed with Diána Szekeres (2013) who raised the question as to whether this student agreement can really be considered a civil law agreement concluded since a truly voluntary decision as the state and the student are not equal entities. She also notes that decreasing educated emigration should be done through policy work to improve their economic condition and employment opportunities and that this policy could drive young people away sooner as they could choose to become educated abroad instead. Similar to this policy are the Markusovszky and Than Károly Schemes. These programs are for doctors and pharmacists, respectively. Participants receive a monthly stipend of HUF 100,000 (EUR 325) for the duration of their residency/special training on the condition that they do not accept

gratuity money and agree to stay in full employment in Hungary after completion of their residency for a period of equal length.

While the government publicly denies the issue of brain drain, their policies state otherwise. Hosting return programs for young, educated emigrants and programs to aid in the funding of higher education on the condition that the person stay indicate the Hungarian government is aware of their brain drain problem. As shown by their specific programs for those in medical training, the brain drain problem is particularly true for their scientific community. What kind of problems and benefits can be caused by brain drain?

Brain Drain Theories

Early brain drain literature, pre-1990s, showed how brain drain is detrimental for the sender countries and benefits are rare and/or counteracted. This is true of Bhagwati & Hamada (1974). Bhagwati & Hamada (1974) state that if the government of a sender country has financed the education of an emigrant that it planned on recuperating in taxes, then the lack of recuperation results in a reduction in welfare for either or both the educated and uneducated labor depending on changes in national income, per capita income, and unemployment. They analyze three cases:

In the first case, migration does not have an impact on expected wages or national income in the sender country, but per capita income is increased. If emigration increases the per capita income of the emigrants as well, then the brain drain is beneficial for the sender country. In the second case, if in the sender country wages of only the educated rise then the wage demand of the educated will rise as well. This will reduce the employment level of high skilled workers. The national income of the sender country has not changed in this case, however; educated workers are demanding higher wages so less are employed in order to meet wage demands. In the third case, since the sender country's wages for the uneducated workers rose too then they will have increased wage demand and reduced employment as well. This increase in wage demands from the uneducated may result in a decreasing supply of educated workers in the sender country since workers may no longer view and education as essential. Therefore, the national income of the sender country will increase since the cost of education

to the government will decrease; however, this is counteracted by a reduction in output caused by decreasing skill levels and lower employment. Overall, the sender country's national income will decrease most of the time in this case.

Miyagiwa (1991) agrees with and adds to the third case of Bhagwati & Hamada (1974). It states that brain drain can cause a decline in the country's national income due to changes in wage demands and employment levels. It adds that it may also have a highly inequitable income distributional effect on the population of the origin country, especially upon the individuals who have intermediate abilities (secondary educated). The emigration of skilled workers will hurt mostly the skilled workers who did not emigrate through lower employment, while unskilled workers would be relatively less affected. It also notes that though knowledge created by emigrants and possibly enhanced through agglomeration and spillover can be used by origin countries like Hungary, it is not free or easy to access. It is limited geographically, culturally, and linguistically.

More modern brain drain theories both continue to show the detriments of brain drain, but also show how brain drain can improve a country's institutions and that knowledge created abroad can be used in a sending country.

Stark, Helmenstein and Prskawetz (1997) argued that the possibility of a successful international career is an incentive for the people to study, therefore in an origin country there will be more highly qualified people if brain drain exists than if not and they designated this process with the new term "brain gain".

Beine et al. (2003) used data on migration rates by educational level, in order to provide empirical evidence for the beneficial brain drain hypothesis at an aggregate level. They found that migration prospects have a positive effect on human capital formation. Countries experiencing a beneficial brain drain are those that combine low levels of human capital with low skilled migration rates; however, more countries experiencing a detrimental brain drain rather than a beneficial one. The countries that experience beneficial brain drain are demographically the largest, i.e., China.

Faini (2003) studied the effects of skilled migration, remittances, and education. The author states that there is not strong evidence to conclude that raising the skill level of emigrants is beneficial for education in origin countries because many emigrants had decided to be educated abroad. So, there is no lost investment from funding the education of many migrants since they are not educated in the origin country, but this also means there is less incentive to invest in education. Additionally, skilled migrants have lower remittances so there is little capital transfer from them. This causes them to have little effect on the demand side of their origin country's economy.

Poutvaara (2004) also focuses on the education aspect of the brain drain. It states that since the possibility of migration provides incentive to invest in education in the origin country thus improving the education in the origin country, an increasing number of students have the tendency to opt for internationally applicable educations to emigrate in the future. Due to this individual governments in the EU are changing the provision of public education from internationally applicable education towards country-specific skills. However, those countries may end up having too many skilled workers in one field and not enough in another. For example, a country could end up with too many lawyers and too few doctors.

Groizard and Llull (2006) examined GDP growth and skilled migration in 170 countries, and they showed in a regression that a 10% higher brain drain correlates with 0.8% lower GDP growth on average. Additionally, they disproved Stark, Helmenstein and Prskawetz's hypothesis of 'brain gain': in the countries experiencing a higher brain drain, the ratio of tertiary educated people is not higher.

Docquier and Bhargava (2007) acknowledge the fact that general emigration rates may hide significant occupational shortages, for example among engineers and doctors. In many developing countries shortages are particularly severe in the medical sector. It analyzed data on doctors with foreign qualifications working in the OECD countries from 1991-2004 and computed medical emigration rates. The results showed that even if some countries exhibited moderate total emigration rates, they suffered from significant medical brain drain.

Docquier (2012) evaluated the impact of emigration in OECD countries, including Hungary, in the 1990s on the employment and wage levels of the workers who did not emigrate. It found that emigration caused a wage decline for the uneducated worker and was a part of increases in inequality within all OECD countries.

Docquier (2014), however, found that emigration helps improve the institutions in origin countries, like Hungary, and that emigration to more liberal democracies has mainly positive implications in institutional and political change in the developing countries. Emigration increases the origin country's exposure to new, and generally more liberal, political ideas and practices through return migrants and diaspora networks. This is a part of knowledge transfer. While human capital is not freely available to everyone since ownership rights make it possible to exclude those not willing to pay for it through employment, knowledge can be used by anyone in the world for no cost or a very low marginal cost, aside from ideas protected by property rights. So, a sending country can use ideas from their own emigrants. New knowledge being used has increasing returns to scale for the economy. However, there are local limitations to the dispersion of knowledge. Knowledge and ideas are dispersed in groups, so a 'core-periphery' divide occurs. This causes the highly skilled to emigrate from underdeveloped 'periphery' countries and regions to the higher developed 'core' regions, where they gain from an over-proportional income increase whereas the "periphery" regions lose income potential. Therefore, disparity is enlarged. This means that capital stays away, and average productivity is low, and people are encouraged to emigrate once again. It is a vicious cycle.

The majority of these theories utilize collected data which is then put into a table and analyzed. Correlations are made between data, but causation is often not proved. Some also use regression analysis in order to show more of a causal relationship, but this is not common.

Most of the theories relay the negative effects of brain drain. Most focus on the negative effects educated emigration can have on education in the origin country, wages in the origin country, equality in the origin country, and lost investment in educated emigrants. However, some not the importance of improved networks and lower governmental costs over time. Are these theories true in the case of Hungary? As mentioned above, Docquier and

Bhargava (2007) notes that medical brain and brain drain in other scientific fields is normally significant for developing countries; this is true for Hungary.

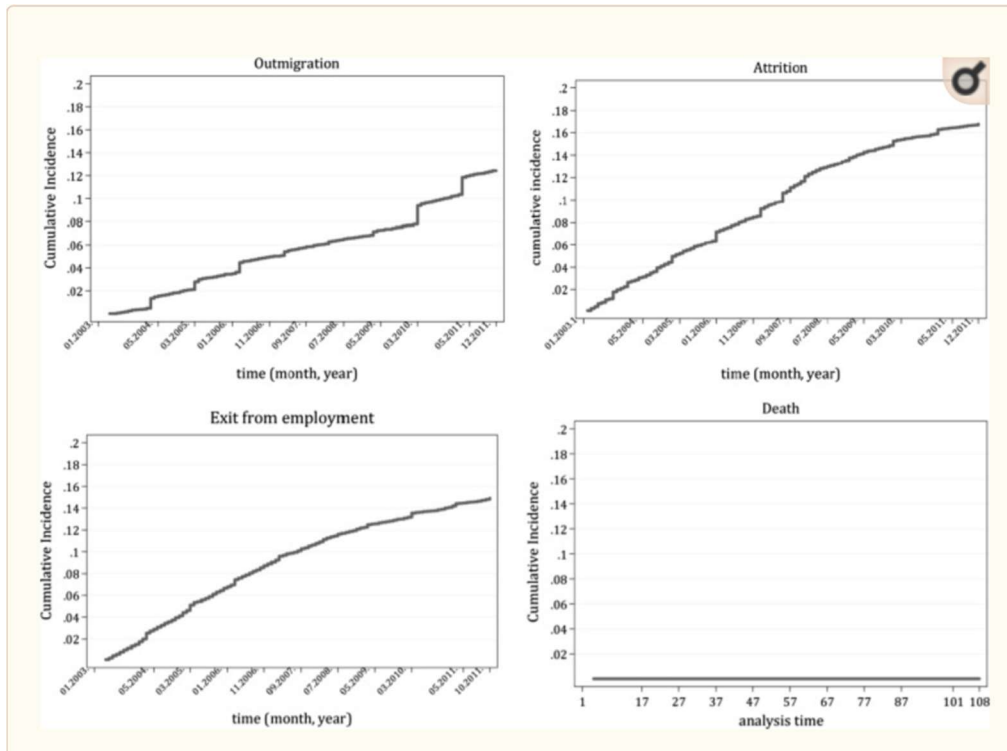
Science Brain Drain

An ad hoc committee had been appointed by the Magyar Tudományos Akadémia (MTA), the Hungarian Academy of Sciences, to examine skilled emigration in 1990. The outcome of the work was published for an academic debate by Hoch, Lovász, Marx, Szelényi, Tamás, Venetianer and Vizi (1991) warning that Hungarian scientists' "connection to the World Science is no longer manifested only in their publications, the traditional way of output, but in their free international movements as well". Two successive publications, Anveiler, Tóth and Marton (1993) and Berényi (1993), concluded that while the migrating scientists are for the most part of the best quality and the brightest mind, regarding the impact factor of their publications, they cannot do much unless the tools and financial background of research, especially in natural and medical sciences, are significantly improved. Berényi (1993) suggests that if cooperation between Hungarian research institutes and big international centers of research is improved significantly, the Hungarian researchers may feel less necessary to move abroad and only travel from one time to another. However, this advice was not utilized, and emigration rose quickly, particularly due to research and development laws.

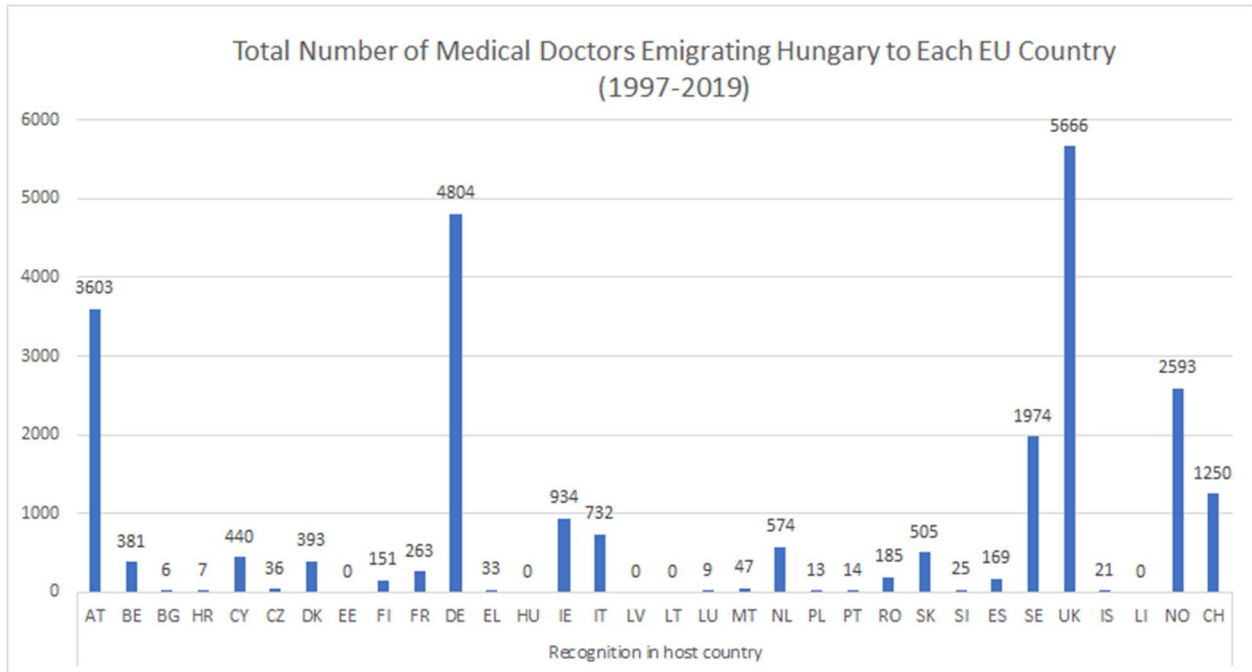
Személyi (2011) notes that Hungary is one of the few Eastern European countries to have a minimum wage since the early 1990s; however, it was this that was then blamed when many electronic manufacturing companies left Hungary for Romania. However, these companies did not cite the minimum wage as why. Starting in the mid-1990s the Vice President of Hungary decided that they should focus on labor intensive manufacturing for the West and stop innovation. Companies were stripped of their research and development activities as well as brand names and had to be flexible for contracts. This small step back towards communism caused workers to have to be flexible as companies quickly came in and out of Hungary. Many had to take short-term work through short-term contracts or leases. Workers were fired whenever a production contract expires and hired again when new contracts are in sight. This is part of why unemployment rose a lot from the early 1990s to early 2000s. Due to increased

competition in the job market, wages were pushed down. The early 2000s saw a mass exodus of electronic companies, many of which were the country's highest employers, from Hungary due to the restrictions on research and development from high skilled workers and reliance on low skilled workers for manufacturing. Since leaving, these companies have operated out of neighboring countries, mainly Slovakia, and created contracts with highly skilled Hungarian workers to work for them at the lower Slovakian wage rate. Many are forced to accept this due to the restrictions on R&D in Hungary. Poor labor conditions and wages such as this led to emigration. Poor wages are also an issue in the healthcare field.

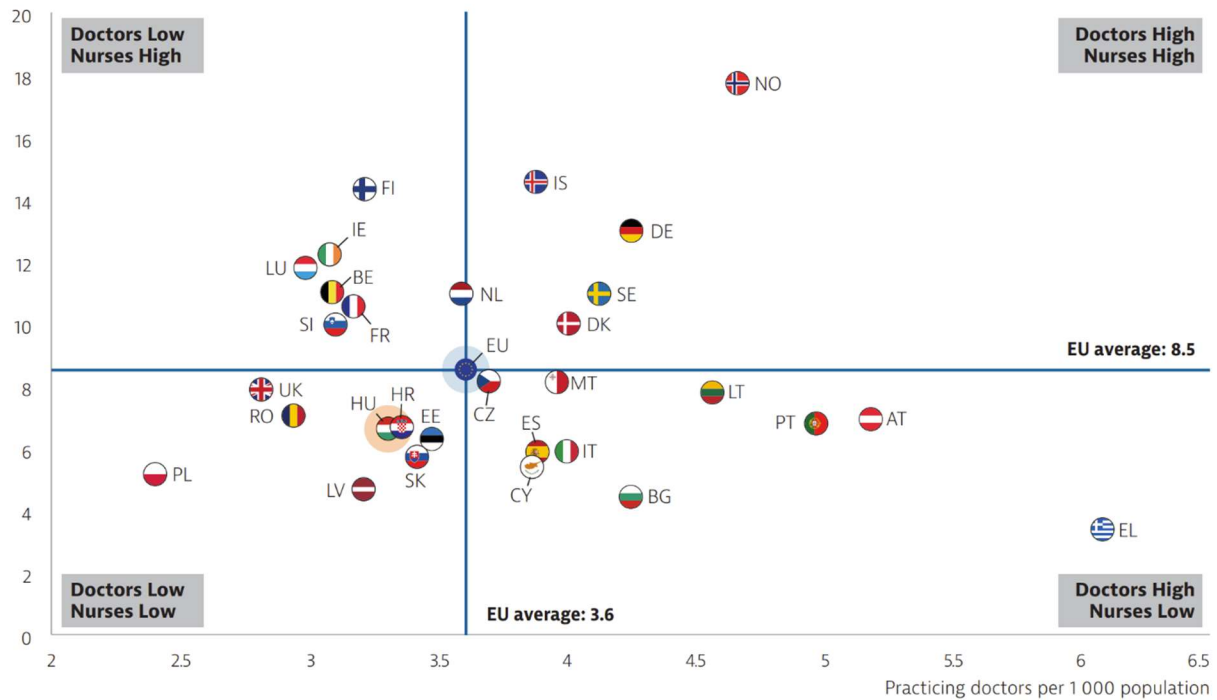
Varga (2016) states that between January 2003 and December 2011, 12% of the practicing medical doctors left the country, 17% left the domestic health workforce and went to a job outside the health sector in Hungary, and about 14% became inactive (retired, were placed on disability pension or child-care pension or became unemployed). Nearly all note that they emigrated or left the field of medicine for financial reasons. The average wage for a Hungarian doctor is HUF 547,000 (EUR 1,516) per month which is very low compared to other EU countries. To remedy this a new law was passed that will increase salaries by 2023 to HUF 687,000 (EUR 1,905) per month. However, the average wages in top destinations for Hungarian doctors are still much higher than this increased salary. Germany averages 5,416-6,667 EUR per month, the UK averages 2,559-6,823 EUR per month, Austria averages 3,400-9,000 EUR per month, Sweden averages 5,025-7,150 EUR per month, and Norway averages 14,408 EUR per month. Additionally, health spending in Hungary is well below the EU average and continues to fall behind. WHO (2017) notes that in 2015, Hungary spent EUR 1,428 per capita (7.2% of GDP) on health care, about half the EU average of EUR 2,797 (9.9% of GDP).



Hungary's accession to the EU in 2004 led to an increased mobility of Hungarian doctors, who have left in large numbers to work abroad. Between 2004 and 2007 75% of medical students said they intended to emigrate. This mainly affected the public sector, resulting in a shortage of health professionals exacerbated by the growing private sector, which is attracting an increasing number of doctors. Over the last 22 years, 24,828 doctors have left Hungary. This is the second highest amount in the EU-10. In 2019 there were 33,078 doctors actively working in Hungary. Since most of these doctors were under the age of 40 when they emigrated, they are most likely still working. Assuming they are all still working the emigration proportion is 0.4288. Straubhaar (2000) notes that brain drain is significant when the proportion is 0.20 or higher, therefore medical brain drain in Hungary can be considered significant.



Practicing nurses per 1 000 population



The UK is the most popular destination for Hungarian doctors. WHO (2019) notes that 15-20 Hungarian doctors every day inquired about work as doctors in the UK. There is a huge demand for doctors in the UK and in 2005, the first full year that Hungary was in the EU, 160

doctors emigrated to the UK, most of which were young and starting their careers despite most of their job descriptions requiring more experience.

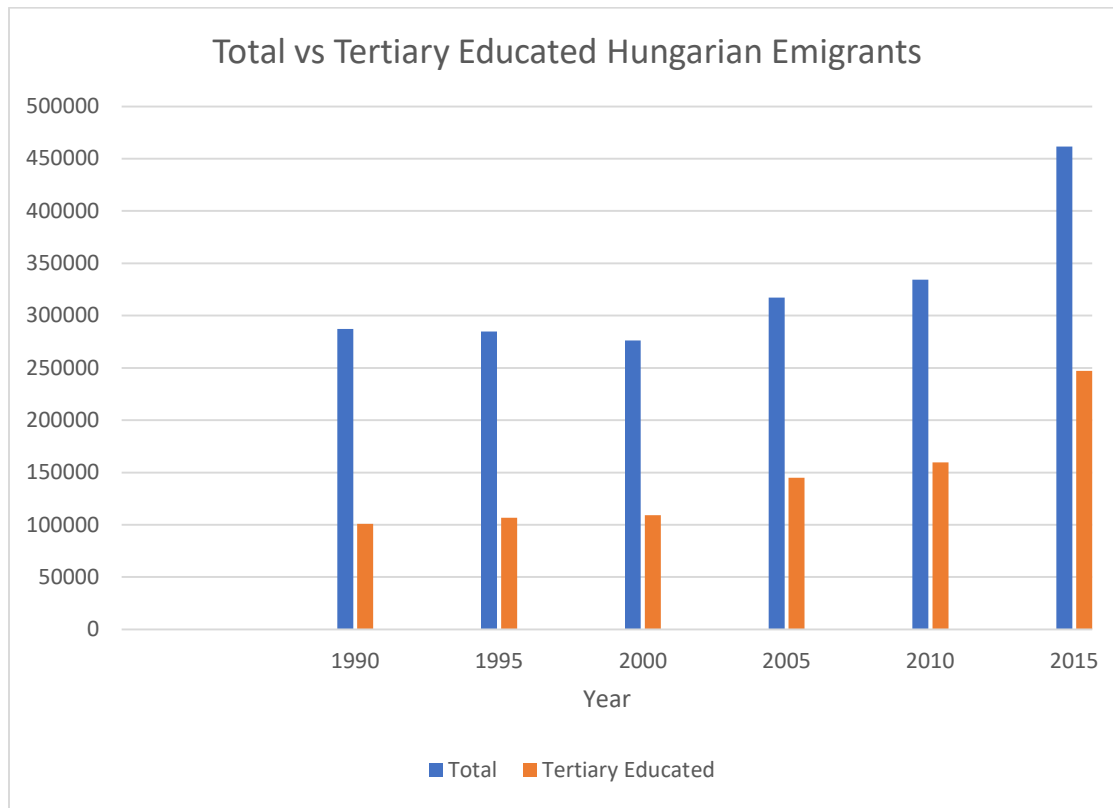
Another field experiencing major brain drain in Hungary is the field of natural sciences. This includes biology, chemistry, physics, and geology. Személyi (2011) found that between 1990 and 2000, approximately 20% of emigrants had degrees in natural sciences. This means that in the case of natural sciences for every four degrees issued one of them would emigrate during this time.

The emigration from those in a scientific field constitutes the highest emigration rate from Hungary. The main reason for this is wages and lack of research and development opportunities. Whether or not this emigration constitutes a brain drain can be further examined through data on educated and total emigration as well as factors that may be affected by high educated emigration rates.

Brain Drain Data

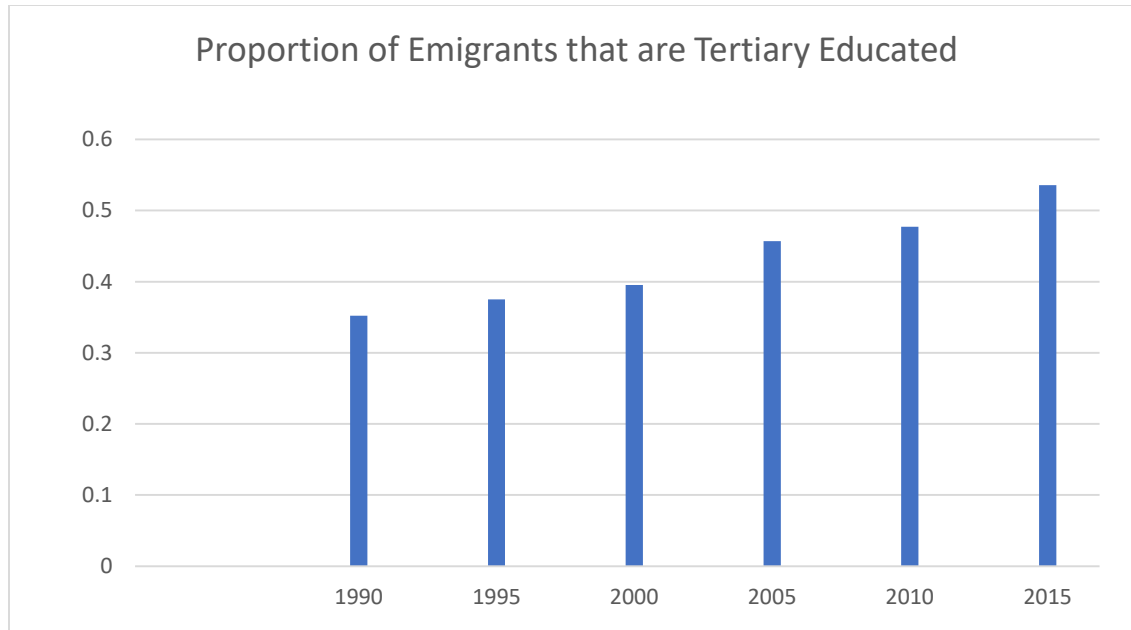
Blaskó conducted a study in 2014 called “Magyarok külföldön – Mennyien? Kik? Hol?” (Hungarians abroad - How many? Who? Where?” with Hungarian citizens aged 20–59 years who has emigrated after 1989. In this age group there was a sample of 1,198 individuals, and out of this 618 people emigrated after 2009. In terms of education, those with no more than lower secondary education represented 6% of the group, while those with higher education represented far more. Those who attended college accounted for 20% of this group compared to 12% of the population in Hungary and those who attended university represented 13% of this group compared to 8% of the population of Hungary. Additionally, the main finding of the analysis from a labor market perspective is that education is a key factor associated with the likelihood of emigration. The higher level of education found among emigrants is not caused by the fact that they come from a younger and more educated population. Even after controlling for age and other sociodemographic characteristics, it still holds that those with vocational training or secondary education are two and a half times more likely to emigrate than those with at most lower secondary education, while graduates of colleges and universities are nearly five times more likely to emigrate compared to those with at most lower secondary education.

Education Level of Emigrants



(to OECD countries, ages 25+)

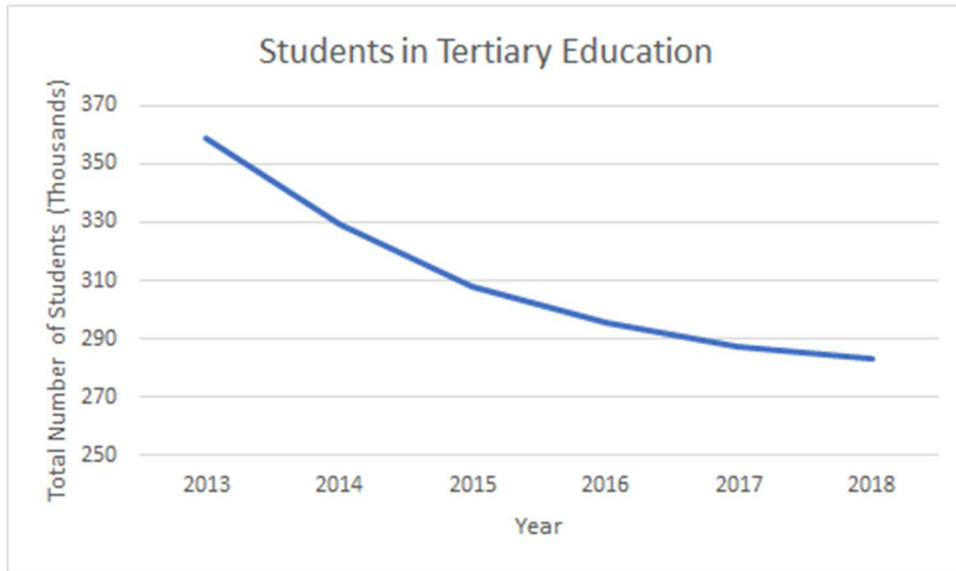
Despite a decrease in the total number of emigrants from 1990-2000, the proportion of those emigrants there were tertiary educated rose. There was additionally a significant increase in both the total number of emigrants and total number of educated emigrants in 2015.



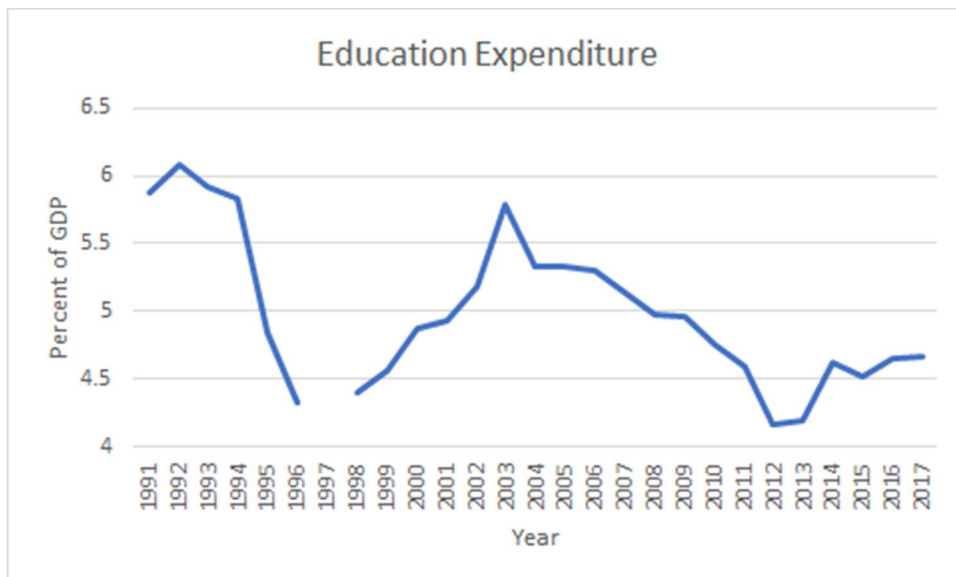
(to OECD countries, ages 25+)

According to Strubhaar (2000) brain drain is considered to be significant if the proportion of tertiary education emigrants is above 0.20 therefore brain drain in Hungary has been significant since 1990. From 1990-2000 educated emigration rose slowly. The significant rises in educated emigration come when Hungary first joins the EU and then again after the election of Fidesz as the majority party. 2005 is the first full year that Hungary is in the EU having joined in May 2004. Despite there still being some restrictions on the free movement of Hungarians in the EU, educated migration surpassed a proportion of .4 for the first time. It is also the largest increase in proportion in a five-year period to date. Educated emigration still rises in 2010, but not nearly as large of an increase as in 2005. 2010 is when the Fidesz party becomes the majority party, and it still is today. Five years later in 2015, educated migration increases significantly again at nearly the same proportion as from 2000-2005 surpassing .50. Therefore in 2015 over half of Hungary's emigrants were tertiary educated. Despite Hungary's worsening economics position, most left for political reasons.

Education Participation & Expenditure



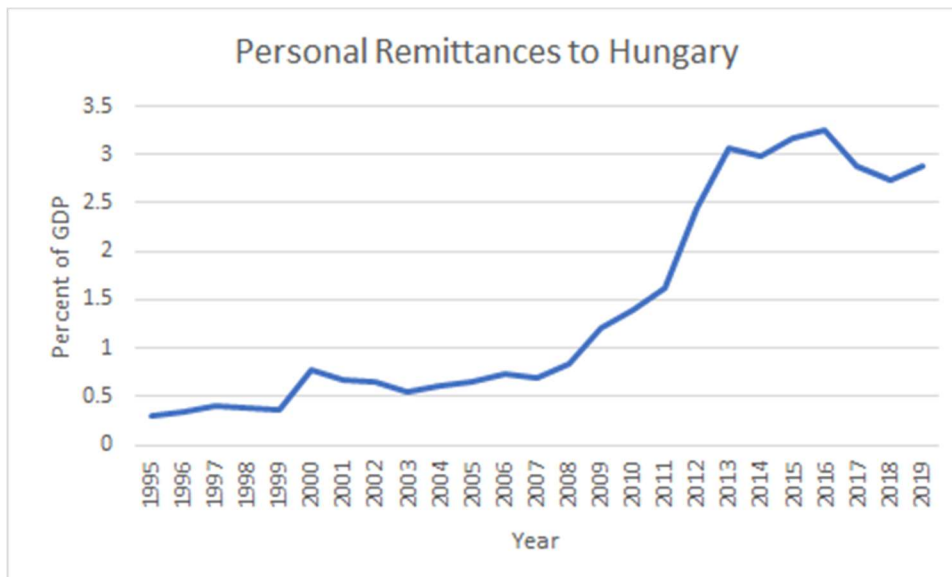
According to KSH (2018), the total number of students pursuing tertiary education in Hungary has been declining rapidly. Faina (2003) notes that an increasing number of students are deciding to be educated outside of their country of origin to emigrate sooner and more easily. This can be beneficial to the government as they can decrease their education expenditures; however, there are less highly educated people contributing to the economy.



In the case of Hungary according to the World Bank, education expenditure as a percent of GDP was highest in 1992 at 6.08%, this was a high period of emigration and began dropping

significantly in the mid-1990s when emigration slowed. It began rising again in the late 1990s with a peak in 2003, this was another high emigration period with the numbers of emigrants increasing yearly, however; it did not end in 2003 but rather 2006. Then an all-time low of 4.16% was hit in 2012, while emigration had been rising at unprecedented levels and hitting new all-time highs almost yearly since 2010. Since 2014, this rate has hovered around 4.6% with very little change and remains at 4.6% in 2017 when the data was last available. Additionally, in 2017 it was found that there was a 12% increase from 2016 in Hungarian students pursuing a tertiary education abroad. Despite increasing emigration and most emigrants being highly skilled, Hungary has not been increasing their education expenditure during periods of increasing emigration since the 1990s. This theorized benefit of brain drain in Beine et al. (2003) and Poutvaara (2004) is not true for Hungary and the increase in Hungarians becoming educated abroad could be a factor. This is the theory suggested in Faina (2003), since high levels of Hungarian emigrants are educated abroad then there is no lost investment in education, but also no incentive for Hungary to invest more in education.

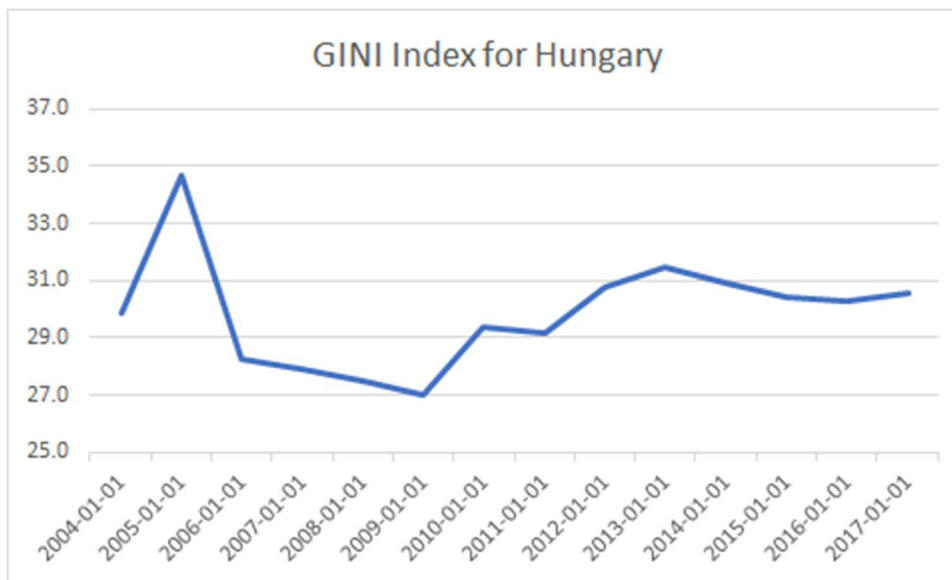
Personal Remittances



In Faina (2003), he argued that high skilled migrants do not send home any or a lot in remittances due to their family joining them and a weakening connection to their home country over time. According to Személyi (2011) Hungary's data on remittances from high skilled

migrants supports this. 65% of skilled migrants have sent remittance at least once to family or a non-profit. The amount is usually \$550-5,500 to family and under \$550 to organizations. This is usually around 3% or less of their income abroad, or 20% less than their Hungarian income if they had stayed. These figures are lower if one factors in those who have never sent remittances to Hungary. Therefore, this benefit of brain drain to Hungary is not substantial as it has little to no impact on the demand side of the economy. However, remittances from all emigrants as a percentage of GDP have been rising significantly since 2008 (the global financial crisis) and only recently leveling out more. So, despite the skill level of emigrants rising, remittances have risen as well; however, 3% of GDP is not a significant contributor to the demand side of the economy.

Income Inequality



The Gini Index is the degree of concentration in a country's income distribution. A Gini of 0 represents 0 percent concentration in a country's income distribution. In a country with a Gini coefficient of 0, everyone receives the same income. A Gini coefficient of 100 represents 100 percent concentration in a country's income distribution. In a country with a Gini of 100, one person receives all of the country's income. Everyone else gets nothing. Neither of these are realistic. A Gini coefficient of 50 could mean the top 10 percent of a country's population is very well-off, the next 50 percent are more or less equal, and the bottom 40 percent very poor.

50 could also be half have all the money and half have none, but this is not realistic. According to GINI Index for Hungary (2021), Hungary's Gini coefficient has fluctuated between 27 and 35 since 2004 but has now leveled off just below 31. The only huge increase was from 2004-2005; however, 2005-2006 had the highest educated emigration up to that point and income inequality went down for the next few years. It again increases at end of global financial crisis, which was also when the Fidesz party rose to power. Despite educated emigration increases throughout the 2010s, the Gini coefficient has remained pretty static since 2013. This goes against Miyagiwa (1991) and Docquier (2012), both theories suggest that inequality increases within a country with high educated emigration rates; however, this is not the case for Hungary.

Networks

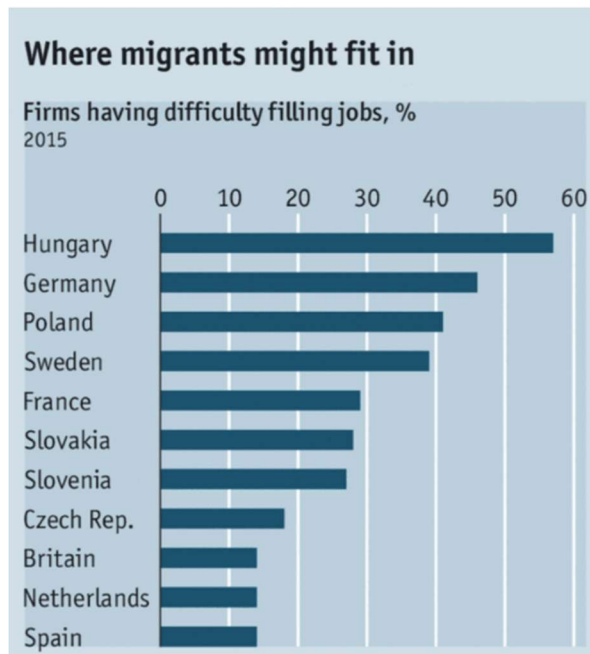
According to Személyi (2011) a 2005 study that was replicated in 2008, almost everyone answered yes to the question "Do you keep in touch with your Hungarian contacts?" Regardless of years spent abroad, most of them maintained at least 6 contacts. 50% also meet often with other Hungarians in their current country of residence. Additionally, one in six was maintaining their status as a member of a Hungarian professional institution in Hungary, but only 5% were members of a cultural one. When compared to such relations in their current country, we find that 15% are members of a professional institution in their country of residence and 50% are members of a cultural institution in their country of residence. It seems common in this group that professional relations to Hungarian institutions in the country of residence and in the origin country are equally/more important. At the same time, nation-related cultural needs are mainly considered as being fulfilled locally. Docquier (2014) notes how origin countries like Hungary can use the knowledge and ideas of their citizens abroad through diaspora networks. The data suggests that Hungary's diaspora networks are strong, and loss of knowledge is not likely.

Wages



Hungary has the highest projected wage growth rate in all of the OECD countries. Given that higher wages are the number one reason for emigration from Hungary, the rising wage rate is a promising sign that Hungary's brain drain is improving the wages of those who stay. As mentioned above, Bhagwati & Hamada (1974) states national income will increase if educated emigration leads to a rise in wages. This rise in wages could lead to a higher national income for Hungary, especially if this educated emigration is reducing the cost of education to the government, and it is shown above education expenditures are declining. This rise in wage rates is a potential benefit of educated emigration from Hungary; however less Hungarians are pursuing higher education due to rising wages in all sectors leading to labor market shortages.

Labor Market Shortages



As shown above, in 2015 nearly 60% of Hungarian firms said they were having trouble filling job openings. This is the highest amount in Europe. Belyó (2015) states that there were 339,000 jobs seekers in Hungary by the end of 2015. This is a 15.6% decrease from 2014. Only 6% of these job seekers had tertiary education. Additionally, 47% of employers said that had unfilled positions due to applicants' lack of necessary skills. This was the highest percentage

since 2010. A couple of fields that stood out in this study are healthcare and information and communications technology (ICT). There are several shortages in different fields within healthcare. As a response the government is working on creating more education and vocational training funding in infant care and pediatrics, forensic medicine, oxyology, traumatology, radiology, psychiatry, radiotherapy, pulmonology, infectology, pathology, neurology, and laboratory diagnostics. In ICT over 10,000 positions unfilled for decades. ICT contributes to 12% of Hungary's GDP. This has been expanding 4.5% annually since economic crisis (2008), but there are not enough skilled employees. Firms in both of these fields as well as others agreed that most recruitment difficulties come from low wages in Hungary compared to the rest of the EU, so most skilled workers in Hungary look for work abroad creating labor market shortages.

The overall proportion of educated emigrants to total emigrants is high and rising and is thought to have a relationship with all of the factors mentioned above.

Does it Constitute a Brain Drain?

Educated emigration from Hungary does constitute a brain drain by the technical definition of brain drain: "the departure of educated or professional people from one country, economic sector, or field for another usually for better pay or living conditions". This is clearly occurring in Hungary given that all proportions of educated emigration to total emigration are above 0.20 and rising, but does this brain drain hurt the economy, help the economy, or neither?

The main positive of educated emigration for Hungary is their strong networks and personal remittances. Hungary has strong network connections with their educated emigrants. 50% of Hungarian educated emigrants keep in contact with other Hungarians in their country of residence and 1 in 6 is still a member of a professional organization in Hungary. This implies that little knowledge is lost as new ideas from these emigrants are likely to be communicated to other Hungarians still in Hungary. Additionally, many of these emigrants are sending personal remittances to Hungary. Personal remittances currently account for 3% of Hungary's GDP, which is not a lot but the strong increase if sustained is promising for stimulating a fair amount

of the demand side of the economy for Hungary. 65% of educated emigrants have at some point sent personal remittances to Hungary, a high percentage and if sustained even as emigration rates rise then personal remittances are a promising point of educated emigration for Hungary.

The main negatives of Hungary's brain drain are found in labor market shortages, scientific brain drain, and lowering education levels. The high and rising labor market shortages have hit a critical level. Low levels of employment in major areas such as healthcare, natural sciences, and ICT show poor market conditions in Hungary for those educated in science fields. The main reason for them emigrating is financial gain. Wages are rising in Hungary though in both educated and uneducated fields. The GINI Index for Hungary is slowly declining showing that wages for all are becoming more equal. While this may appear to be a positive, less people are pursuing higher education. This is likely the result of rising wages in fields requiring little to no education. More Hungarians are not seeing a need for spending on higher education, which may also explain the lowering levels of education expenditure by the government. The Hungarian populace is becoming less educated in connection with rising wages from educated emigration.

While there are benefits that Hungary is experiencing from this brain drain currently, they are outweighed by the negatives. Hungary's brain drain overall hurts its economy due to major educated labor shortages, declining enrollment in higher education, declining education expenditure, and no real wage raises for educated labor compared to uneducated labor. Hungary's brain drain effects and government response has not created an environment that improves the lives of the educated labor and makes them want to stay in Hungary. There is a cycle of educated emigrants leaving for financial gain, then average wages rise in all sectors, so less people become educated, and the ones who do become educated leave since there is no real increase in wages so there is good financial gain abroad. This cycle causes increasing labor market shortages. Unless there becomes a stronger financial incentive to stay, helping end the labor market shortages and education level rise then Hungary's brain drain will continue.

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