THE KEY DRIVERS OF THE GREEK BRAIN DRAIN

By
Alexandros Kolokas

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Supervisor: Professor Martin Kahanec

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APPENDIX VII: Sample Author's Declaration

I, the undersigned Alexandros Kolokas hereby declare that I am the sole author of this thesis.

To the best of my knowledge this thesis contains no material previously published by any other person except where due acknowledgement has been made. This thesis contains no material which has been accepted as part of the requirements of any other academic degree or non-degree program, in English or in any other language.

This is a true copy of the thesis, including final revisions.

Date: 12/6/2019

Name: Alexandros Kolokas

Signature: 

ABSTRACT

According to ILO, for 2017 more than 60% of the migrant population worldwide were workers (ILO 2017) . Globalization, climate change and fluctuations in the economic activity are few causes for the increased labor mobility. There is strong evidence to suggest that under certain circumstances human capital flight can be beneficial for all parties. However, the situation for Greece is far from ideal. Structural dynamics of the Greek labor market and recession have pushed half million of highly skilled workers abroad. Brain drain, the most serious form of labor mobility is considered now the biggest challenge for Greek policymakers. This paper explores the drivers of human capital flight for Greece and identifies high unemployment and its characteristics as the leading drivers of brain drain. In order to understand how unemployment increased emigration, two trends of labor dynamics will be examined in relation with the duration and the education level of unemployment. Furthermore, the paper explores the current strategy of the government to tackle the brain drain. The conclusion draws upon the entire thesis, tying up the various theoretical strands in order to suggest a set of recommendations that will support Greek government on reversing the brain drain into brain gain.

Acknowledgements

I would like to take this opportunity to express my gratitude to the School of Public Policy at Central European University and my Thesis Advisor, Professor Martin Kahanec, for his inspiring suggestions and support. I would also like to thank my friends Noor, Carol and Jacob for their affection and encouragement that motivated me to work hard during this intense year. And most sincerely, I am indebted to my parents, and my brothers for their inspiration and love.

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1 Introduction

"When labor migration is properly managed, it is a conduit for skills and wages to flow where they are most needed. It can, and must, be a triple-win, benefiting migrants and their families, their home country, and their destination."

(Ryder 2018)

From ancient times, trade has been playing a significant role in the Greek economy. The geostrategic position of the country in combination with its maritime tradition have qualified Greece to be considered a leading power in shipping and a major stakeholder in international trade (Info Maritime 2018). Recent fluctuations in Greek economy have had such an impact that redefined the trade dynamics and exports of the country. Now, contrary to expectations, for Greece the highest valued export is not a product like mineral fuels or aluminum but rather its human capital, generating more than €12 billion each year (Endeavor 2016).

Brain drain, brain waste, brain gain. Three terms that are increasingly being used by academia, media and policymakers the past years reflecting the substantial increase of human capital flight worldwide. Brain drain, a situation far from ideal causes inconvenience to policymakers who first struggle to understand the nature of the problem and its consequences and then to design complex strategies that will reverse it into brain gain. After 10 years of crisis, signs of economic growth provide the stimulus to Greek policymakers to implement more efficient strategies that will have an impact on the socioeconomic environment of Greece, and combat brain drain. The paper starts with a quote by Guy Ryder who ingeniously managed in few sentences, to demonstrate

an ideal form of labor migration that benefits everyone. As he notes, ultimately, under certain requirements, labor movements enchase economic growth both for countries of origin and destinations. The idea that labor migration plays a prominent role on economic growth has been supported by many studies (Noja et al. 2018). Having said that it would be rather difficult or quite impossible to identify countries that do not benefit directly or indirectly from labor migration.

However, Ryder's quote, remains an ideal version of brain drain that fails to acknowledge the risks associated with the emergence of this phenomenon. Ingeniously, labor migration creates opportunities but also risks, mainly for the country of origin where the emigration of high skilled individuals may undermine stability and economic growth. The main challenge that this paper seeks to examine is brain drain. A phenomenon that has gained considerable prominence in the literature, especially during the last decades for two reasons. First, globalization has created a very complex and challenging environment for global governance. The increased interdependence between states and regions heightens the phenomenon of fragmentation. Thus, problems starting at local or national level can now be streamed to whole regions very quickly. Second, the financial crisis of 2008 and its negative consequences created a domino effect worldwide that affected economies, societies and relations between countries at their core.

The implications of the economic crisis that affected the labor dynamics in many countries in combination with the increased interdependence and the complexity of labor migration have brought the issue of brain drain on the table. Similarly, Greece one of the most prominent victims of the economic crisis and a country where labor market is characterized by strong structural incapacities experienced one of the greatest brain drains of the modern history (Smith 2015). According to official estimates, during

the past 10 years more than 500,000 people have left the country in order to look for a better future (Elstat 2017). Most notably, a large proportion of the emigrants, representing the 5% of the total population of Greece, included highly skilled and educated workers. Thus, the question is whether this situation supports or prevents economic growth and if its implications are negative for Greece. Migration under certain circumstances is "a fundamental human right" (Hamid 2014). Strong evidence proves that human capital flight can be beneficial for the country of origin, the emigrants and their destinations (Hart 2006). Especially for countries of origin, the role of remittances, on economic growth is undeniable.

However, the Greek case reflects a situation far from a win-win game. Surprisingly, according to World Bank (2017), even though the emigration rates from Greece have increased, the remittances during the last decade reduced dramatically. Similarly, a significant loss for Greece is related with past investments. The state has funded a considerable amount of money for the education of people who had left the country.[1] Nonetheless, despite the economic losses, state budget benefited from the emigration because less money was required to be spent on unemployment benefits and to public health due to the well-known implications of unemployment to the wellbeing of individuals (Watkins 1992). Still, the biggest challenge for Greece is related with the gap that these individuals have left behind. Financial crisis uncovered certain structural problems of the Greek economy, considered also as the drivers of the recession. To that end, there is a definite need for the Greek government to redefine the business environment, enhance investments and promote the 'knowledge economy' (Unger

[1] Until 2016 it is estimated that the loss is 8 billion Euros (Endeavor 2016).

2019). These interventions will require the employment of its most valuable asset, that is the human capital. Thus, brain drain deprives a core element of future economic growth. Moreover, the complexity of the phenomenon reflects the interplay of a plethora of different dynamics and drivers that cause its emergence. Thus, it is very difficult to say that there is only one cause for the Greek brain drain. However, this thesis supports the opinion that brain drain in Greece was mainly caused by the high unemployment of the last decade and its characteristics in relation with the duration and the education level of unemployed persons. That is not to say that other problems like corruption and political instability did not influence brain drain, but it is uncertain if human flight capital would be so large without the dramatic increase of unemployment during recession.

1.1 Research Question and case selection

This research examines the case of Greek brain drain and some of its characteristics. The central question in this dissertation asks:

What are the main drivers of the Greek brain drain and how did they emerge?

As it is apparent, the research question is twofold. First it asks to identify the push factors for the increased human capital flight from Greece, and second is to explore their root causes. To answer this question, the paper examines the labor dynamics in Greece the last fourteen years in conjunction with the emigration estimates as it supports the idea that both cyclical and structural dynamics pushed hundreds of thousands of Greeks to move abroad, leading to brain drain. That is to say that the causes of brain drain for Greece go as deep as the causes of the structural and cyclical unemployment. Why is it important to recognize the nature of the problem? Because any policy aimed to address the issue of brain drain should tackle the root causes of the

increased unemployment. This paper also questions the current strategy of the government to combat the issue and consequently provides a set of recommendations that the government should consider in order to support existing programs. The case of Greece was selected for two reasons. The first reason is related with the magnitude of the phenomenon, considered as one of the biggest brain drains in modern history (Smith 2015). Second, there are efficient reasons to believe that the Greek brain drain is reversable. A window of opportunity supported by the relatively good performance of the Greek economy during the last years urges policymakers to take action.

1.2 Methodology and Limitations of the Data

This thesis examines the main drivers of the Greek brain drain and their causes. The methodological approach taken in this thesis is a mixed methodology based on both qualitative and quantitative data. By employing qualitative elements of enquiry, the study reflects the characteristics of the Greek brain drain and the causes of high unemployment rates in Greece. Thus, results from official surveys and questionaries' are being examined to gain insights into the main elements of high skilled labor emigration from Greece. Conversely a quantitative approach is employed also to provide the dynamics of high unemployment rates. Secondary quantitative data was used in this thesis and collected mainly from the Greek Statistical Authority (ELSTAT); the main governmental agency responsible for providing statistical analyses, in addition, other data is obtained from the World bank and OECD. The data and articles that this thesis examines are internet-based.

One of the biggest challenges for studies exploring brain drain is the issue of data collection. Although labor migration nowadays is more organized contrary to previous decades there are still limited data. Thus, for Greece, as well as for other countries, the exact number of people that emigrated is not provided. However, the

national authorities, like ELSTAT, provide estimates. The general gap on data about the characteristics of individuals moving abroad is 'controlled' by data collected by questionnaires and surveys. Importantly this thesis explores brain drain with a particular focus on the age group of 25-44. The main reason is that for these ages emigration is higher as a consequence also of the higher unemployment rates. The most striking fact is that this age group is considered as the most productive and that demonstrates also the necessity of the Greek government to reverse the situation.

1.3 Structure of the paper

The structure of this paper takes the form of 5 chapters, including this introductory section. Chapter two begins by laying out the relevant literature of brain drain applied also in the Greek context. The same chapter presents a brief outline of the characteristics of the Greek human capital flight. Having said, that the third chapter explores the main drivers of the Greek brain drain and its characteristics. Thus, unemployment and its dynamics in relation with its duration and the education level of jobless individuals are examined. In the same vein the chapter presents the reasons of why and how unemployment increased in the past years affecting in a great degree the dynamics of labor migration. The findings in this section are of crucial importance for the policymakers because the root causes and nature of the problem are essential to combat the issue. As for chapter four, it examines the current strategy of the government to tackle the issue. Finally, chapter five provides the conclusion that gives a brief summary of the findings, in addition, it provides a set of recommendations that the government should take into account. It is important to note that it is rather difficult in such a short paper to explore every aspect of the brain drain due to its complexity. The paper acknowledges that there are also other drivers and factors leading to the Greek brain drain, nonetheless the main focus of the paper is unemployment.

2 Literature and Background

A large and growing body of literature has examined the dynamics, causes and implications of labor migration. Similarly, during the last decades brain drain as a form of labor mobility, has attracted the attention of researchers. One might question the reasons of why brain drain has gained so much importance compared to other forms of labor mobility. Well, since the concept represents the human capital flight, or simply the emigration of the high skilled-educated individuals, their movement to other countries may undermine the growth and development of their home country in a greater degree compared to others forms of labor mobility. Hence, for developing countries or even those that slip into recession, it is very difficult to replace in a short run, highly skilled workers who had moved abroad.

That is not to say that labor mobility and in particular brain drain is something absolutely negative; since, there are also certain benefits that may support or even promote development in the home countries. We should not undermine the importance of remittances outreaching the official ODA that contribute significantly to the development of whole regions (Daramy 2016). Therefore, it should be the case that these differentiations between high and low skilled workers within labor migration have varying impacts to the country of origin. This chapter will provide a brief overview of the brain drain literature, and also provide information on the characteristics of the Greek brain drain.

2.1 Literature review

Brain drain, or human capital flight that is the movement of highly skilled workers to another country is not a new phenomenon. Indeed, early literature on the issue of human capital flight goes as back as to 1966, when Grubel and Scott (1966) on

their paper expressed their observations around the problems emerging with scientist's migration to USA. A considerable amount of literature has been published on brain drain. For researchers the phenomenon of brain drain encompasses a plethora of causes, implications, dynamics and characteristics. Most of the available literature on brain drain focuses on the potential benefits or losses surrounding the human capital flight for countries of origin/destination. Yet, brain drain remains a poorly defined concept due to the challenge of data collection, which undermines the capacity of the researchers to understand the dynamics, drivers and characteristics of the phenomenon when applied to a case study.

For many decades it was established that the phenomenon is a manifestation of the relationship between the industrialized world with the 'second world countries' or the division between North-South, East-West which was focused on its negative implications to the country of origin (Carrington, Detragiache, and Vishwanath 1996). However, during the last decades, the idea of the beneficial dynamics of brain drain for the home countries, mainly as a consequence of the increased remittance flows, was supported by many researches (Lodigiani, Marchiori, and Shen 2016). In his study about existing literature on brain drain, Pierpaolo Giannoccolo described the international dynamics evolved around the phenomenon the previous decades (Giannoccolo 2004). The author found that 70s and 80s were the decades that witnessed a considerable increase of papers about brain drain, while the following decades, he noticed the number of the studies decreased (Giannoccolo 2004). Perhaps that is due to the great technological achievements of those decades that pushed millions of workers to emigrate to industrialized countries. Of course, difficulties arise when someone questions if brain drain is something that is purely negative or not, since the answer always depends on the context. For instance, Lodigiani et al (2016), in an attempt to

determine the implications of brain drain, examined economic indicators like GDP and GINI but acknowledged that such an approach has also its limitations. In his paper about brain drain, Hillel Rapoport (2017), attempted to defend the view that human flight capital promotes education, because individuals seek to be considered high-skilled workers in order to have more changes of finding work abroad. A common hypothesis is that for some countries the labor dynamics are weak, because either the employment opportunities are few, or the benefits are extremely low. Thus, for people the only opportunity of finding a decent job that may match their expectations or even academic qualifications is by relocating abroad.

Few countries that experienced this phenomenon applied restrictions to human capital flight in order to prevent brain drain (Oberman 2013). However, these initiatives may have negative implications for the education of individuals because an investment in education is based on the existence of certain expectations or payoffs. If they have this opportunity, of supporting their training and making their CV competitive in the labor market they will try to find a job that will match their qualifications. If their country experiences structural unemployment and the possibilities of finding a decent employment are low, they may not educate themselves because the cost-benefit calculation renders the return from education low. Therefore, for Hillel Rapoport, brain drain as a process or as a fundamental human right leads to more educated people in the world. Being critical about this approach we could argue that the case is not always like this. Although human capital flight raises the expectations for individuals coming from developing countries for a better future, that may indeed undermine the economic development for the origin country or even damage its economy. That case is best reflected for countries where education is free as in Greece. States invest in the education of their citizens but in the end the benefits of their studies are collected by

countries abroad. The effects of human capital flight can be distinguished in three categories. The first category of course limits itself on the individual level, including the benefits of labor mobility for the individual. Assuming that the individual finds a job abroad, the positive effects take the form of a salary or even training. The second category encompasses the impacts of brain drain on the destination country. In the era of globalization, communities are taking part in an unofficial competition on attracting human capital.

The Tiebout Hypothesis might explain partly the phenomenon but the whole point is that labor mobility can have a huge positive impact on the economy of the destination country (Bruce W. 1991). These countries are said to enjoy the effects of brain gain as a consequence of acquiring highly skilled manpower. Third category includes the socioeconomic implications on the country of origin that have been the subject of intense debate within the scientific community. However, there is a general agreement about the existence of both negative and positive effects for the countries of origin. The implications may have a direct or indirect effect on the economy, society and even on international reputation and prestige. More recently, for Greece, the subject has grown in importance due to the emigration of half million of Greek citizens during the past decade.

Most of the studies focusing on the Greek context examine brain drain in light of the financial crisis of 2009, fail to acknowledge other structural inconsistencies of the Greek economy. For example, Sarantinos (2012) in his paper about Greek brain drain supports the idea that the main driver behind brain drain was the austerity measures proposed by IMF. However, what is interesting is that studies about brain drain and Greece existed decades before the financial crisis. Dr. Kourvetaris (1972) examined the phenomenon and its socioeconomic implications for Greece, as back as

1972 in light of increased numbers of educated Greeks on moving abroad. This is of course of particular importance for human capital flight for Greece because it demonstrates that the anomaly of brain drain, best-reflected on structural labor dynamics, existed many years before the economic crisis (Kourvetaris 1972).

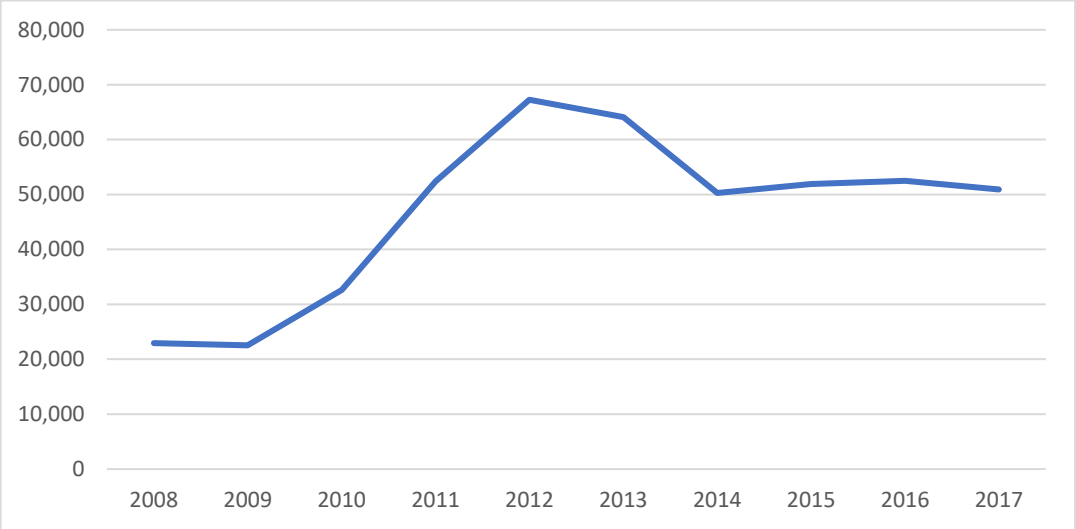
From another point of view, focusing on the human capital flight of doctors from Greece, Chatziprodromidou et al (2017) supported the idea of using motivation theories as the appropriate tool to regulate the number of doctors moving abroad. This paper intents to shed a light on the issue of brain drain by adopting a more comprehensive approach about the relationship between unemployment and human flight capital. Similarly, the thesis offers a review of the current strategy of the government to tackle the issue and provides two recommendations.

2.2 The characteristics of the Greek brain drain

Countries vary significantly in the migration roadmap and while some are considered as scientific hubs like USA, German and UK, others are considered as contributors of scientific personnel such as India, Pakistan and Mexico (Kourvetaris 1972). What determines their status as country of origin/destination is a set of different but related qualities which include the working conditions, unemployment, academia and business environment. Traditionally, the position of Greece in the migration roadmap is on the latter group of countries. This mobility of highly skilled workers and scientists is not something recent for Greece, but rather a physical continuation of a pattern that has been evolving within the Greek society since the past decades.

Many things may have contributed to this phenomenon such as the effects of structural unemployment influencing the socioeconomic model developed in Greece.

Figure 2.1 Estimation of emigration from Greece (ages 25-44) in thousands

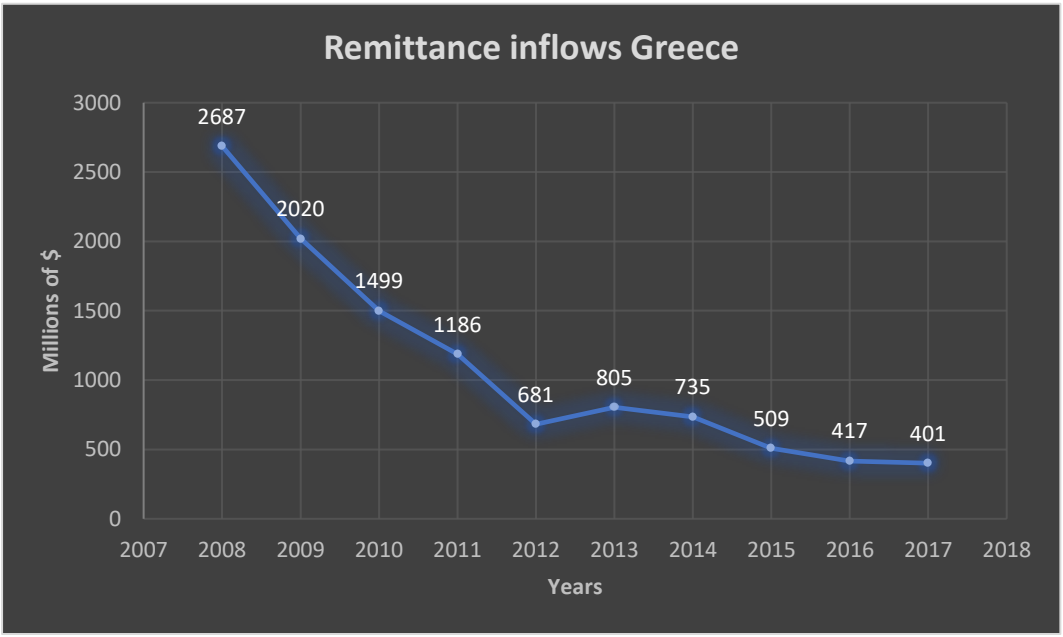


Source: Elstat 2017

As we see in **Figure 2.1**, the total number of people aged between 25-44 who left Greece since the beginning of the crisis until 2017 was estimated to be around 467,352 people. What is staggering is that the number represents nearly 5% of the total Greek population and according to the estimates 38% of the total number of emigrates age between 25-29. Moreover, according to a recent survey, the profile of the Greek emigrants demonstrates a high level of education with 53% of them holding a Master's degree and a staggering 8% holding a PhD (Zoulias 2018). It is commonly accepted that one of the most direct benefits of brain drain for the countries of origin is the value of remittances. Its impact as already noted previously is so significant that its greater even than official ODA. For Greece as it is seen in **Figure 2.2,** remittances have declined dramatically since 2008. Surprisingly more people had left Greece during those years, depicting that emigration with remittance flows has a strong negative relationship for Greece. Thus, while the number of emigrants has increased, the remittances have decreased. It is rather very difficult to offer an explanation about this

phenomenon but the fact that more and more people are taking their families abroad might explain this decline.

Figure 2.2 Remittance inflows for Greece (years 2008-2017) in $ Millions



Source: World Bank 2018

Undeniably, the causes and motivations behind human migration are very complex and hard to be defined due to the absence of reliable data. Certain indicators like unemployment, taxation and corruption might reflect collectively some of the causes of the brain drain however they fail to describe comprehensively the phenomenon. To be sure, dynamics and causes are essential for policymakers in order to design proper strategies to tackle the issue. To that end, survey results can be considered as a reliable mechanism to understand some of the characteristics of brain drain, since they are acquired directly from the people who have participated in labor migration or who are willing to move abroad. Their results are essential because they can give a hint and an evidence on the reversibility of brain drain, moreover, they provide a guideline of what should be done in order to deter potential emigrants or even to attract expats. The most recent survey on brain drain was published by ICAP group

on June 2018, for its fourth consecutive year (Zoulias 2018). Significantly the findings indicated that 2/3 of the interviewees intend to return back to Greece (under certain conditions) (Zoulias 2018). Definitely, these requirements differ between each interviewee as they are related with various themes such as the lack of future prospects, low salary, unemployment, and bureaucracy. Nonetheless, it would be realistic to say that a set of interventions could directly meet the needs of those individuals.

3 The drivers of brain drain and the role of unemployment

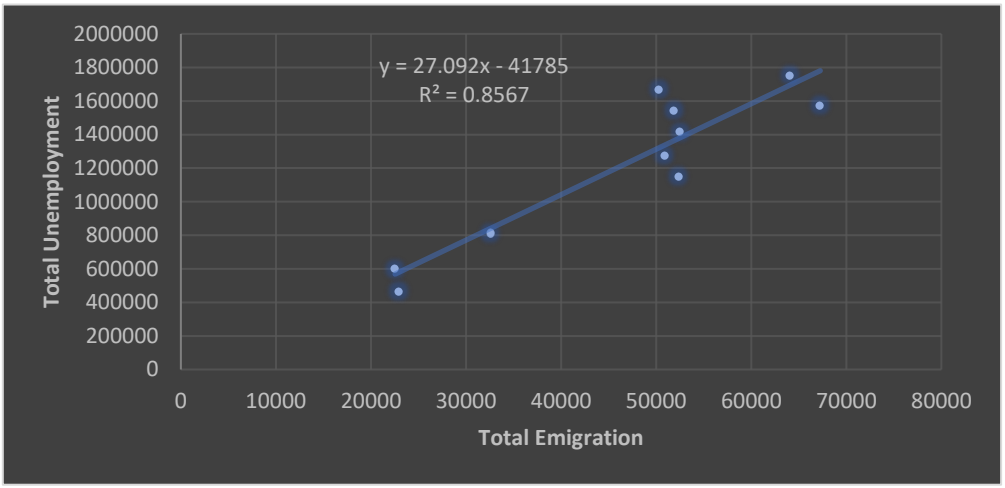
This paper explores the key drivers behind the Greek brain drain. Consequently, it recognizes that the weak labor dynamics of the last decade and their characteristics in relation with its duration and the education level of unemployed people should be considered as the leading factors for the increased human capital flight. The importance of the concept of unemployment for the entire discipline of economics is undeniable. Especially the last decades, risks accompanied with the economic crisis, climate change and the political instability have influenced the labor dynamics to their core. There are countless reasons on why states worry about the unemployment rates.

Employment is crucial for individuals as its economic consequences have direct or indirect impact for a plethora of themes, ranging from family formation and fertility rates to crime and suicidal rates. Thus, in contexts where labor market is weak and does not meet the demands of the local workforce, emigration is the only alternative. For Greece, as it happened in many countries, the years that followed the financial crisis of 2008 demonstrated a serious inability of the labor market to sustain or create jobs. Conversely students continue to pursue education and graduate putting more pressure on the economy and raising the unemployment rates higher. It might be the case that the high level of education played a significant role in increasing the number of

emigrants as their qualifications allowed them to find jobs abroad. It should be noted that labor market dynamics are directly influenced by the economy. For Greece, recession and the austerity measures established a rather unfavorable-weak labor environment because of the dramatical decrease of investments and consumption. Definitely, recession and economic crisis are considered the impetus for high unemployment rates in Greece the last years. However, those two themes fail to explain other weaknesses that are structural in nature of the Greek economy, leading to this failure. That is to say that unemployment in Greece is not absolutely the product of recession (cyclical dynamics) but that there are also other structural problems that go deeper, varying from the role of public administration, education to business ecosystem.

This section explores briefly the causes of unemployment in Greece and reviews how structural and cyclical forces had such an impact on Greek labor market. Why is it important to acknowledge the drivers of the brain drain? Policymakers need to understand the drivers of migration because any policy aimed to remedy the challenges generated by brain drain should focus on the root causes of the problem, for Greece that is unemployment. An analysis between the rates of unemployment and emigration proves that there is a strong positive correlation between those values (R=0.9256).

Figure 3.1 The relationship between unemployment and emigration (correlation analysis) for the years 2008-2017 and ages 25-44.



Source: Elstat 2018

Interestingly, according to a report by LSE and supported by the National Bank of Greece, nearly 50% of the people who left the country the last decade were jobless (P. L. Labrianidis and Pratsinakis 2014). Thus, high emigration rates go with high unemployment. This chapter explores two main issues. The first section explores the characteristics of the Greek unemployment and focuses on the themes of education level and duration of unemployment. The main reason for exploring these variables is that the duration of unemployment maybe associated with the desire of individuals to move abroad. Similarly, the education level of unemployed persons is important in order to understand the current labor dynamics of the country. The second section goes deeper and describes the drivers of high unemployment rates and consequently of brain drain for Greece by distinguishing the cyclical and structural causes associated with recession, education, administration and business environment. Both sections are essential for policymakers because any intervention seeking to minimize the effects of the phenomenon should be directed towards the root causes of the problem.

3.1 Unemployment in Greece

The scourge of unemployment, 'a problem without passport' as Kofi A. Annan would characterize it today, respects no borders and its consequences cannot be limited geographically (Annan 2009). A deeply negative concept that always has been considered as one of the biggest challenges for policymakers. A trigger of instability, insecurity, migration and poverty with regional and even global impacts. The phenomenon, defined as any person of age 15 and above, that does not work and seeks for a job (Insee 2016), has multiple negative effects both for the individual and the state. Certainly, a lot can be said about the importance of employment, however, in general, it is the economic activization of individuals that led societies to grow and develop in such a great degree. Conversely, its opposite form, that is the unemployment, has such

negative implications for states that governments stress to design and implement complex strategies to reduce unemployment. However, that is not to say that all forms of unemployment are considered negative since most of the economists share the idea that markets require a low share of unemployment to function well (Layard, Stephen, and Jackman 1991).

As already noted, the phenomenon is considered a global problem. But why? A significant rise of unemployment globally, supported by the increased interconnectedness between states as a consequence of globalization during and after the financial crisis, has created countless risks and issues. These challenges have largely affected developed and industrialized countries, especially for their young populations. Most of the times, even when the phenomenon is localized and centered to one country, it can generate regional or even global consequences. To that end, international community has recognized the high stakes associated with unemployment, and included labor as a core element of SDGs reflecting its importance for global governance and stability (United Nations 2018). As already noted for societies that experience high unemployment rates, there is a plethora of negative implications, -and for Greece, besides brain drain, unemployment is strongly correlated negatively with fertility rates, new marriages and positively with poverty, crime and suicides.(Laliotis 2016; Rodgers and Nassos 2015)

Unemployment rate is a useful indicator that reflects the socioeconomic environment of a country. Certainly, its rates besides the representation of the total number of people not participating in employment demonstrates also a pragmatic social cost for the country seeking to counterbalance its negative implications. Simply an increase in unemployment means also an increase of the social cost to tackle the problem as it would require more funds, time and political support. Stimulatingly, the

characteristics of unemployment matter because indicators such as gender gap, education level and the duration of unemployment reflect also other deeper or structural problems of the economy. For instance, a useful indicator is the duration of people being jobless, because the long-term unemployment reflects the incapacity of an economy to create employment opportunities for its citizens.

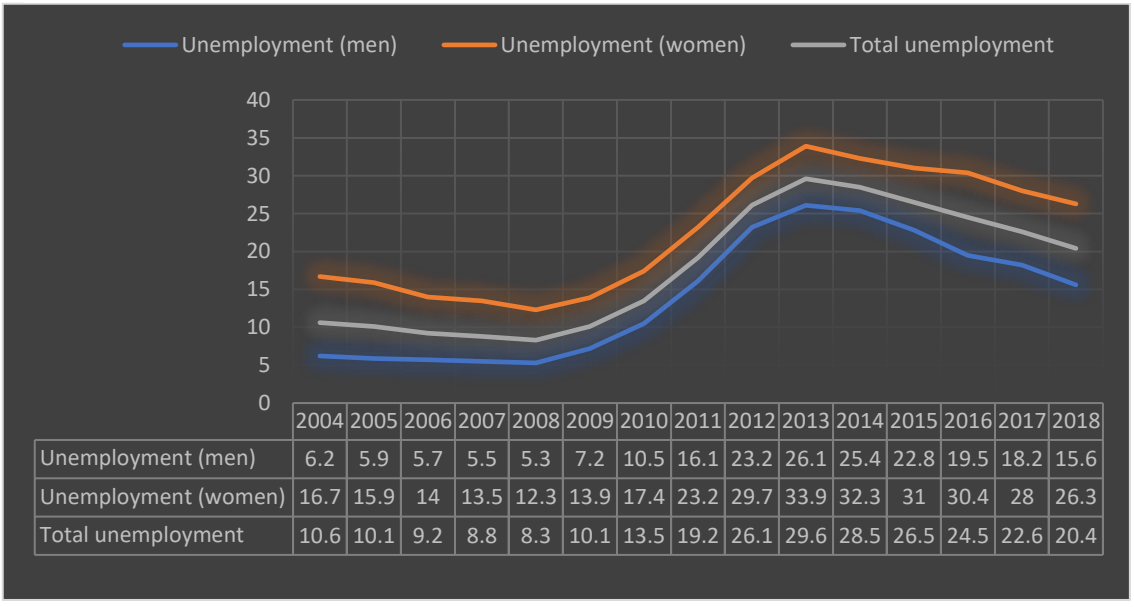
The labor dynamics in every country are influenced mostly by economic factors. For Greece, it was the economic crisis that shaped so dramatically the labor environment. In particular, during the years of recession (2008-2016) Greece lost about a quarter of its GDP (Tinios 2015). The austerity measures proposed by IMF and EU aimed to control the large deficits, had negative implications on the Greek society. The recession increased the taxes for Greek households, decreased wages and consequently reduced consumption. That resulted to the closing of around 244.000 businesses, leading to the loss of hundreds of thousands of jobs (Herald 2016). Unemployment in Greece has been the highest in Europe and among OECD countries for four years while it is second now (OECD data 2019). As already noted, it is important for policymakers to monitor the dynamics of characteristics of unemployment in order to adopt and implement appropriate policies to tackle the challenges.

Thus, this section will provide a brief overview of the labor dynamics in Greece during the last 15 years, covering the pre-crisis, crisis and post-crisis periods (2004-2019). In 2009 Greece's economy entered into recession with every sector of its economy being affected by the austerity measures imposed by IMF and EU as part of the economic adjustment programs. Unsurprisingly, the sector that was hit the hardest from recession was the labor market. It is apparent from **Figure 3.2** below that the total unemployment rates from 2008 started increasing dramatically. The worst year for the Greek labor market was 2013 when nearly 1/3 of the economically active population

was jobless. From that year, the unemployment rates started decreasing, after a series of state interventions such as the reduction of the minimum wage for youth and the promotion of more flexible types of employment such as part-time contracts. Despite the decline, unemployment remains at high rates approaching the levels of 2011.

These age groups (25-44) are considered to be the most productive, thus their unemployment reflects also a failure of the economy to benefit from them in terms of increased output that influence GDP directly. Moreover, one of the most striking issues that is also demonstrated in **Figure 3.2** is the gender gap that has been the biggest in Europe for decades (Karamessini and Koutentakis 2014). In just 9 years, unemployment rates for women nearly doubled (2013) forcing 1 out of 2 women to be without a job.

Figure 3.2 Total unemployment rates and gender gap (ages 25-44)



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Unemployment (men)	6.2	5.9	5.7	5.5	5.3	7.2	10.5	16.1	23.2	26.1	25.4	22.8	19.5	18.2	15.6
Unemployment (women)	16.7	15.9	14	13.5	12.3	13.9	17.4	23.2	29.7	33.9	32.3	31	30.4	28	26.3
Total unemployment	10.6	10.1	9.2	8.8	8.3	10.1	13.5	19.2	26.1	29.6	28.5	26.5	24.5	22.6	20.4

Source: Elstat 2018

3.2 Unemployment by education level

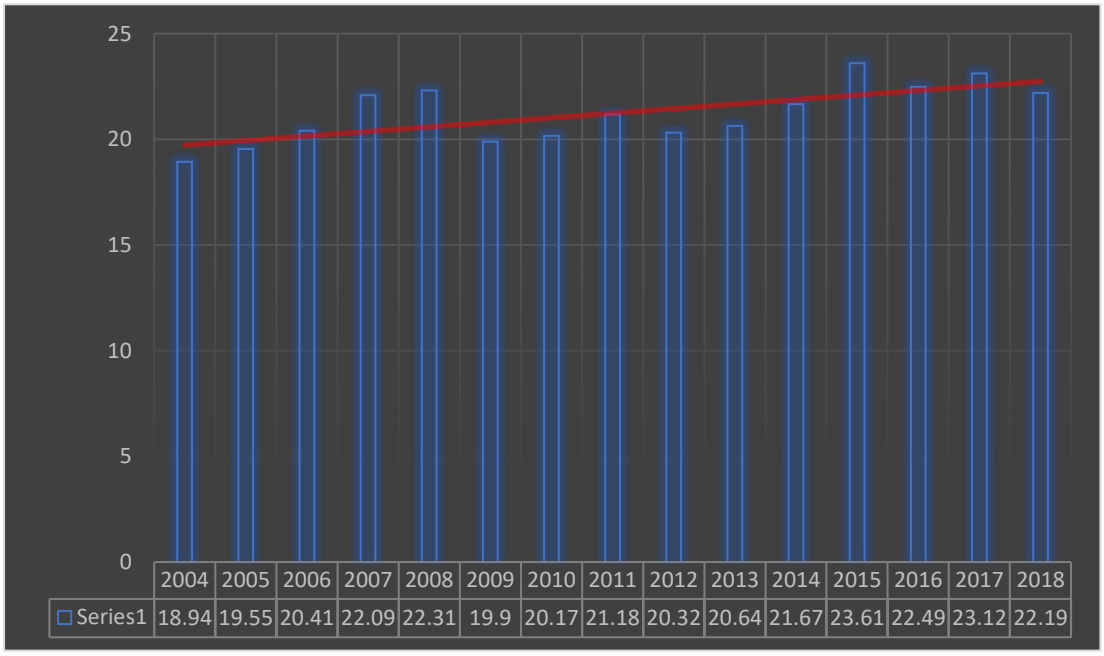
Economic growth and progress are strongly linked with the effects of education. It was the role of education during the last two centuries that lead to the rapid technological progress and consequently to economic prosperity in many countries.

Besides the socioeconomic benefits on individuals, education can be a significant driver of economic growth for the country as a whole. That is also considered the main problem of brain drain. Educated or highly skilled workers produce more and higher valued output, compared to low skilled labor, benefiting directly the economy (Eric A. Hanushek and Wößmann 2007). Thus, society has significant losses when highly skilled workers remain jobless, especially on the long run. The shift from resources-driven economies to 'knowledge economy' where human capital has prominent role on the economic growth is demonstrated by the fact that countries as small as Singapore can be highly developed. Although such an explanation might be considered as an oversimplified approach that undermines other elements of economics, it still reflects the importance of educated workers for a state. Between OECD members, Greece tops the list of the country with the largest proportion of tertiary graduates that are unemployed (OECD Data 2019).

Graduate unemployment may come in two different ways. Either by incompatibility of skills supplied by workers with skills demanded by the labor market (skills mismatch) and supported by structural dynamics, or by oversupply of graduates that does not demonstrate the real demand reflecting cyclical causes of the economy (Oppong and Sachs 2015). For Greece, as shown in **Figure 3.3**, during the past 14 years, the number of unemployed persons who are educated is increased. That of course demonstrates a failure, of the Greek labor market to benefit directly from educated workers. As already noted it might be the case that for Greece, the brain drain was increased so much all these years due to the considerably high rates of people with tertiary education (OECD Data 2017). Therefore, the establishment of a weak labor market for educated citizens in conjunction with existing structural inabilities, such as

the duration of unemployment and their relatively easier labor movement compared to low-skilled workers, have increased brain drain.

Figure 3.3 Unemployment rates by education level (tertiary education), ages 25-44



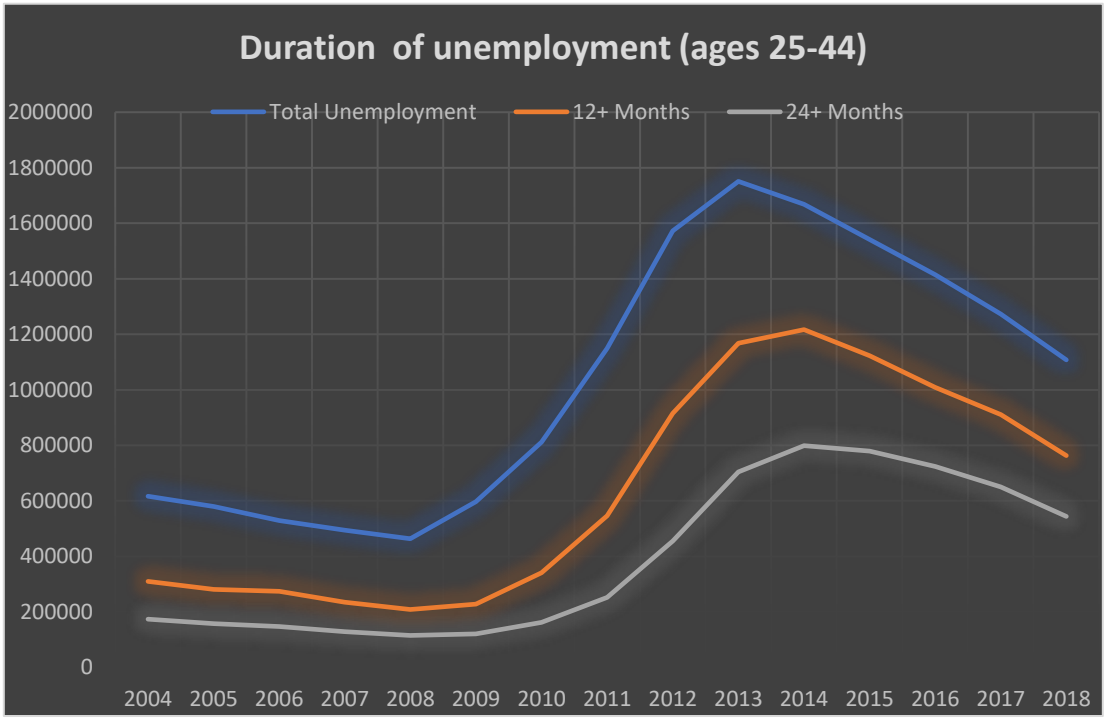
Source: Elstat 2018

3.3 Duration of Unemployment

One of the most important and elements of unemployment is its duration. It is said that the length of unemployment is strongly associated with mental health problems (Brenner 2016). What begins at an individual level has implications not only on the household of the unemployed but also on the society. Numerous studies have explored the impacts of long-term unemployment to crime, poverty and wellbeing. These 'influencers', developed in an environment of stagnation, are considered a negative factor for job search effectiveness (Layard, Stephen, and Jackman 1991). To put it in another way, the more someone is unemployed, he or she has less opportunities to find a job (Petrongolo 2013). The context urges policymakers to intervene and alter the status of long-term unemployed persons since it is negatively correlated with GDP growth and positively with the duration of a recession (P. E. Petrakis, Pantelis, and

Kafka 2014). However, most of the measures that are used to tackle the problem such as trainings, subsidies, allowances require a considerable amount of funds. For Greece that was not the case, since state budget was required to be reduced and move in accordance with the demands of the lenders. Moreover, the duration of unemployment may play an important role on the intention of people to search for a job abroad. As time passes people who do not find job in their country, may turn in other alternatives, including emigration. **Figure 3.4** reflects the characteristics of Greek unemployment in relation with its duration.

Figure 3.4 Duration of unemployment for persons being jobless 12+ and 24+ months in thousands.



Source: Elstat 2018

Definitely, one of the first things someone may notice on **Figure 3.4** is the considerable proportion of people being unemployed for more than 12 months and officially considered as long-term unemployed. In the Greek context, the most striking feature of the relationship between unemployment and duration is the number of people who are unemployed for more than two years. Since 2014 half of the unemployed

persons in Greece aged between 25-44 were more than 2 years jobless. Such a long period of unemployment for so many people demonstrates also the inability of the government to create more job opportunities. As already noted, a general trend even before the financial crisis was that a large proportion of unemployed persons were jobless for long-term, supporting the idea of structural unemployment in Greece.

3.4 Structural Unemployment

A large and growing body of literature has investigated the existence of structural weaknesses in Greek economy, raising barriers on labor participation (P. E. Petrakis, Pantelis, and Kafka 2014; Tagkalakis 2016). A study by Petrakis (2014) was focused on the structural problems of Greek labor market and identified that the rates of individuals with more than one year of unemployment was high, even before the economic crisis. Similarly, in his study about the dynamics of unemployment, Tagkalakis (2016) using the Beveridge curve, found that even for years when the number of available job vacancies was high, unemployment remained at high levels which supports the general idea of a mismatch between skills supplied and skills demanded. In the same vein, this view is supported by many other authors who link this structural inability with education (Katsanevas and Livanos 2006; Kraatz 2015).

Many reasons can explain this structural inconsistency, varying from technology and trade to education. For Greece, the structural dynamics of the labor market are directly linked with the inabilities of higher educations to adapt on the changing nature and demands of the business environment. That is to say that for Greece, a gap between the educational system with the business sector creates a mismatch of skills, between the supply of graduates from universities with the skills demanded by the domestic industries (Tubadji Annie 2012). Many reasons have led to the emergence of that phenomenon. Mainly the state-run tertiary education has raised

barriers on university's administration on various themes, ranging from the selection of the curriculum to the distribution of funds, etc. With less freedom, academia is unable to adapt itself on the evolving field of entrepreneurship and support students with modern skills and knowledge. Scholars have argued that the disparities between labor supply and demand is mainly a consequence of the employment model promoted by higher education and the governments in the last decades (Katsanevas and Livanos 2006).

The 'production' of an unregulated number of graduates that traditionally are employed by public sector such as teachers, doctors and other civil servants creates pressure for the government to create additional jobs. Alternatively, a solution to this problem could come from the operation of private educational institutions. However, the article 16 of the Greek constitution prohibits their establishment as privately-owned institutions (Hellenic Government, n.d.). Currently, in Greece, private colleges do exist; however, their rights are considerably less compared to public universities (Bromme and Britten 2017).That phenomenon is of particular importance for Greek economy, because it is considered also as one of the causes of the economic crisis. Governments for decades engaged in a hire-for-vote game, leading to the establishment of a big, slow and, - expensive public sector. Consequently, individuals adapted their job preferences and consequently their education, depending on whether they can work for the public or not (Sfakianakis 2012). However, the austerity measures of the last decade leading to job cuts forced hundreds of thousands to unemployment, with their skills being public-sector oriented making it impossible to find a job.

3.5 Cyclical Unemployment

Central to the entire discipline of economics is the concept of cyclical unemployment. This type of unemployment is associated with the impact of fluctuations in economic activity (Kenton 2019). A natural hypothesis is that during recession, output is reduced as a consequence of the lower consumption, hence businesses require less labor. Conversely, during economic growth, consumption and consequently the labor demand had increased leading to lower unemployment rates. For Greece, a remarkable economic growth with annual rates of 7% during the past decades was replaced by a severe recession nearly for one decade (Hamish 2015). For many years the Greek governments adopted a deficit-driven economic model that skyrocketed the foreign debt (CEIC Data 2017).

During the global financial crisis of 2008, it became more apparent that Greece is unable to serve its debt and the government was required to adopt austerity measures. Naturally, the cyclical dynamics have also a direct impact on the structural characteristics of the labor market because for companies, reduced revenues deter further investments. The combination of both structural and cyclical characteristics of the Greek labor markets, makes it more challenging for the policymakers to implement policies that will reduce unemployment and consequently balance brain drain. Certainly, while for cyclical unemployment the recipe is well-known and its measures vary from fiscal to monetary policies, for structural unemployment any intervention requires more time, more funds and something more complex, that is a national political consensus between all relevant stakeholders (P. E. Petrakis, Pantelis, and Kafka 2014).

3.6 Summary of the chapter

A correlation analysis between unemployment rates and emigration proves that they have a strong positive relationship. It is the case therefore that the main drivers of

Greek brain drain is the high unemployment rates. That comes also as a result of the particular characteristics or nature of unemployment in Greece. During the economic crisis the duration of unemployment and the education level of jobless people

had increased, influencing also the intention of those citizens on moving abroad. Moreover, this chapter explored briefly the emergence of this issue, and it distinguished between structural and cyclical dynamics. The causes and characteristics of unemployment are important for reversing the brain drain into brain gain because they provide an insight into the current labor dynamics in Greece. The next chapter provides an overview of the current main policies, which aim to tackle the issue.

4 Current strategy of the government to tackle brain drain

A local manifestation of the global trend of increased human capital flight takes place in Greece during the last decade. High unemployment rates as a consequence of both cyclical and structural dynamics are the main drivers of brain drain for Greece. For the past three years, both unemployment and emigration have been declining. Nevertheless, there is a considerable proportion of Greek citizens that intend to move abroad (Kapa Research 2018). Such indication proves that there is still room for improvements in relation with current policies aiming to counter brain drain (Kapa Research 2018). Undoubtedly, measures focus on brain drain have a twofold objective, first is to ensure that the numbers of citizens who emigrate will be reduced and second is to provide incentives to expats to return back, since their gap will take decades to be filled. This chapter, is policy-oriented and answers the question of:

What is the current strategy of the Greek Government to tackle the challenge of brain drain?

The impetus behind the major shift of establishing an attractive labor environment for high skilled workers, is the recent improvements in the economy. Recent developments in the economy as the primary fiscal surpluses of the last years and the successful 5-10 years bond issuance, reflect the opening of a window of opportunity for policymakers to implement more decisive and optimistic policies that deter brain drain. To date, estimates put the number of Greek citizens that emigrated the last decade to be around half a million. This movement with characteristics of brain drain due to the educational background of the participants, is said to be reducing since the last 3 years; however, the numbers remain on a high level. Undoubtedly, in such contexts the importance of strong state institutions is crucial. Public investments for scientific institutions, loan accessibility for businesses, other subsidies as wage benefits or decrease of health insurance and taxation have a positive impact on labor market. However, recession came to challenge the efficiency of governmental policies. Austerity measures demanded by IMF and EU, minimized the availability of public funds that could be allocated to support the market. Thus, during recession, the Greek government, led by the liberal-conservative political party of New Democracy was unable to implement effective policies due to the apparent financial restrictions. However, the election of a new government led by the socialist Syriza, in 2015 and a shift of the political agenda to a collective strategy focused on anti-austerity measures allowed ministries to aim more on the problem of brain drain. Now, 4 years after the emergence of the first anti-brain drain policies, it is time for the government to support this effort with supplementary interventions.

The role of the government for reversing the brain drain is undeniable. While private initiatives evolving around investments should be the impetus for growth and driven by an ‘economy of knowledge’, there are other structural problems in public

administration and education that only the government has the capacity to redefine. Here, it should be noted that the importance of the European Union in this effort has been tremendous. Its financial support and expertise have not been assisting Greece during recession but for many decades through the Structural and Cohesion Funds. Again, a set of different factors have influenced the desire of Greek citizens to move abroad besides the absence of employment opportunities that match their competences. Lack of transparency, corruption, poor education system are key issues that need to be enhanced in order to have an opportunity to reverse the brain drain.

The first signs of political commitment to tackle the issue of brain drain came in 2015 by the newly elected Greek government. Political aspirations for a more stable economy and society that promotes sustainable employment and opportunities for high added value products and services attracting highly skilled workers came during a very challenging period. The economic adjustment programs or memorandums of understanding between Greece and the EU, regulated government spending and affected the implementation of any program aimed to counterbalance the implications of the recession.

The chief officer of the General Secretariat for Strategic and Private Investments, Mr. Lois Labrianidis (2018) has noted that the Greek government for the past four years has adopted a comprehensive approach on tackling the issue of brain drain. In particular, the strategy of the government includes a combination of short-long term measures (L. Labrianidis 2018). The distinction between those policies is based on the chronological scope as well as on their objective. While some programs aim to provide a temporary relief, others have an objective to address the root causes of the problem. It is apparent that for countries that experience structural unemployment,

interventions aimed to redefine the labor dynamics require more time and a more comprehensive approach.

4.1 Measures against brain drain

Nearly ten years of recession have shaken the structure of the Greek economy and accordingly the society to its foundation. Corruption, high debt, large deficits, you name it, are considered few of the major drivers of the financial crisis for Greece. Intuitively, during the years of the crisis, these themes were also the ones that prevailed on media and public talks as the main 'provocateurs' of the recession. However, for the last two years, and during a theoretical post-crisis period for Greek economy, the signs of recovery have pushed policymakers to understand that other structural problems of the economy should also be considered as drivers of the crisis. For instance, the absence of a national strategic plan for the economy created inconsistencies and risks for many years. Therefore, the main goal for reversing brain drain and enhance economic growth is the promotion of a sustainable and competitive business model for Greece.

To that end, for the first time in history, the Greek government on July 12th of 2018, published the '*Growth strategy for the future'* adopting a comprehensive approach in addressing gaps and problems of the economy and public administration, moving in accordance with the Sustainable Development Goals of the United Nations (Hellenic Republic 2018). Certainly, this plan covers a broad spectrum of the Greek economy and does not deal in an absolute way with developments of sectors that employ only highly skilled workers, but rather it offers a holistic approach that redefines the business culture in Greece (Hellenic Republic 2018).

Thus, the main goal is to establish a business-friendly environment that is innovatively driven and moves towards an ''Economy of knowledge''(Hellenic Republic 2018, 27). It is impossible to demonstrate in such short paper the measures

and tools that have been promoted under this framework, nonetheless, what should be noted is that the plan reflects a holistic approach on a wide spectrum of economic themes. Trade relations, emphasis on exports, investments, improvements of infrastructure and less bureaucracy are some themes that the framework focuses on. Although the report reflects Greek government's intention in taking an advantage of its human capital and in constructing a more competitive industry on the international level, we can argue that some of the targets are very ambitious due to its timetable; aiming to bring results in just 6 years. Undoubtedly, due to decades of structural inconsistencies, loopholes in the legal framework and malfunction of state mechanisms is difficult to improve in such a short period. Noticeably, that is not to say that the plan is unrealistic but there are serious risks of not having the potential to implement certain goals. That is supported by the fact that the upcoming elections might lead to the formation of a new government.

Complex challenges as brain drain, require comprehensive solutions that address the issue at its core. There is, however, a definite need for other, direct interventions that aim to solve some of the problems on the short run and provide relief to the groups that were affected the most from unemployment. These interventions can take multiple forms, varying from unemployment benefits to scholarships or simply investments. Since, one of the most prominent causes of this huge emigration wave from Greece that this thesis focuses on, is the high unemployment rates of scientists, the government urgently implemented a set of different measures that had a direct impact on the labor market. Simply, the government intervened by creating more jobs. As already exemplified the introduction of measures tackling brain drain came in 2015, a period when austerity measures and capital controls hampered any effort for economic growth. Thus, the interventions did not come in a favorable period and environment

but rather during recession. That is to say that although the Ministry of Labor through different programs managed to create employment opportunities that eventually kept some Greeks home, there were also many others who left.

4.1.1 Investments

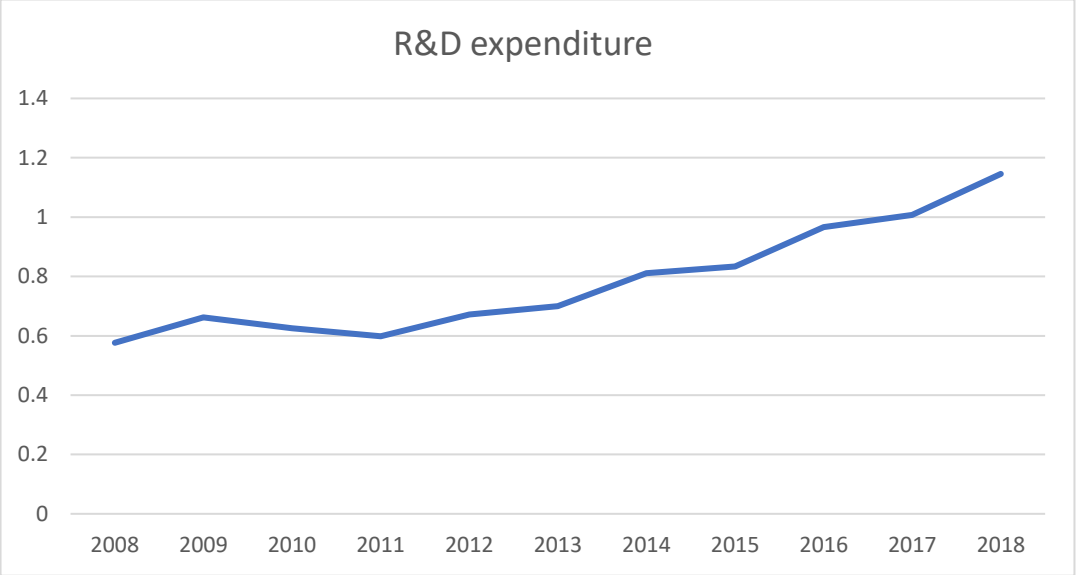
To begin with, for decades one of the main challenges for Greek economy was the absence of a business culture. Lack of regulations that can attract investments both from domestic and foreign companies had a direct impact on the economy. This inability of the state comes as a consequence of complex and bureaucratic mechanisms that rendered extremely difficult and risky for companies to start business in Greece (World Bank 2018). Thus, one of the first objectives for Syriza in 2015 was to establish an attractive environment for Foreign Direct Investments (FDI) (Enterprise Greece 2018). This was accomplished in 2018 by creating a new framework for strategic investments that ensures legislatively an easier process for investments accompanied with a fast-track law and the establishment of institutions that will support these initiatives (Agouridis 2018). Furthermore, the government provided a plethora of incentives for companies that aim to invest in Greece like secure and stable taxation for at least a decade, transparent procedures, citizenship for the investors and their families, etc. (*Energy Press* 2016; Hellenic Republic 2018) Certainly, the benefits of investments cannot be limited to the employment of highly skilled and educated workers but to the economy as a whole. However, there are good reasons to believe given the valuable human Greek capital, that many companies will try to establish their operations and to produce highly added value services and services in Greece as Tesla did the last year (Smith 2018).

4.1.2 Research & Development Expenditure

The positive impact of Research and Development (R&D) on the economy is undeniable. Modern economies rely heavily on innovation since it is the sector that can have an incredible positive impact on the GDP, by providing highly added value services and products to the market. Still, for Greece, the last years the total expenditure in R&D was one of the lowest in the Eurozone making the country as one of the least competitive and innovative markets in Europe (Eurostat 2019). Of course, that is one of the main reasons why the scientific community in Greece experienced also the so-called brain waste that is the context where market is not taking advantage of the highly skilled workers, as they are employed in positions that do not match their skills (Pires 2015).

The answer to brain waste and consequently brain drain can be the support of R&D sector as that has multiple benefits, from boosting exports and requiring highly skilled workers to attracting enterprises with global outreach. Thus, an increase of the expenditure on R&D can have a twofold impact both on the GDP as well as deterring the scientific migration. As we see in **Figure 4.1**, the last years the government has increased its funding on R&D with a goal, according to the Prime Minister, Alexis Tsipras to reach 1.2% of GDP in the next two years (Hellenic Republic 2018). As a consequence, the employment opportunities for scientists increased at scientific hubs and universities.

Figure 4.1 R&D expenditure (% of GDP)



(World Bank 2016)

With the objective of deterring the emigration of scientists or even attracting those who are already abroad, the government established the Hellenic Foundation for Research and Innovation (HFRI) in 2016. Unsurprisingly, the absence of an independent authority that supports the scientific community with scholarships and funding opportunities outside the premises of the bureaucratic structure of the Ministry of Education reaffirms the incapability of the state for so many decades to establish a favorable environment for research in Greece (Douros 2018). To that end, the HFRI with the support of the Greek government and the European Investment Bank allocated more than 250 million Euros to fund research and innovation programs (Douros 2018). On the same hand other public and private initiatives aimed to increase funding opportunities for researches had a tremendous impact on combating the brain drain (Sofokleous In 2019).

4.2 Summary of the chapter

This chapter explored the current strategy of the government to reverse the brain drain into brain gain. This process aiming to redefine the Greek business environment of course is not only limited on tackling scientists' migration but also on adding better qualities to the national economy. Investments, increase of R&D expenditure and direct interventions to bureaucracy all under the umbrella of the national plan 'Growth strategy for the future' will escalate growth and eventually stop the human capital flight to a great degree. The economic growth of the last years was the impetus for developing such initiatives, however that does not mean that there is no room for improvements. Definitely there are also risks and challenges that should not be undermined, such as the upcoming elections. However, there are good reasons to believe that also the new government will enhance policies aiming to combat brain drain. That comes, from the expressed commitment of both the government and the opposition to tackle the phenomenon.

5 Concluding remarks and recommendations

Brain drain is a big challenge for Greece. The phenomenon has affected the economy and has undermined the future prospects for the country to a great degree. Its consequences are not limited only in the economic sphere but also in the society. Issues such as the declining fertility and marriage formation rates should worry policymakers Despite the negative environment established in Greece during the recession, it is now the time for policymakers to consider brain drain as an opportunity for change. One well-established political pattern in Greece, is the practice of blaming previous governments for the economic situation of the country. Finally, now is the moment of moving forward by promoting realistic strategies to reverse brain drain. Political

consensus exists, both major political parties (Syriza and New Democracy) agree that brain drain, and the past economic system must be redefined. (Proto Thema 2018) Cooperation and a partnership between all relevant stakeholders are is the only ways for establishing a sustainable economic system.

The purpose of the current study is to determine the drivers of the Greek brain drain and to explore the reason why they have emerged. Undeniably, the phenomenon is so complex that it cannot be covered in such short paper. However, the relevance of high unemployment and its characteristics in relation with duration and education should be the push factors for the increased human capital flight. During recession, more and more educated people were becoming jobless for a longer duration. That pushed nearly half a million of Greeks to move abroad. The investigation of labor dynamics in Greece has shown that the scourge of unemployment emerged as a consequence of structural dynamics, associated with the education and public administration and cyclical dynamics that are the result of the financial crisis. This thesis provides an overview of the core elements of the Greek brain drain. While, unemployment and lack of future prospects for scientists is just one side of the story, a plethora of different causes have also led to the Greek brain drain. Corruption and political instability are few of the most important. However, due to the complexity of the phenomenon other issues cannot be covered within the premises of this paper. Finally, after 10 years of recession the Greek economy has started to grow. The Greek government has managed the last years to gain political support and trust from Eurocrats and also to achieve primary surpluses (Trading Economics 2018). These positive signs of recovery should be the incentive for structural changes in the economy and administration.

The previous section explored and analyzed the current strategy of the government to cope with the brain drain. These recent interventions work in tandem with polices recommended by the EU in establishing a more flexible and modern economy that requires highly skilled workers that produce highly valued services and products. Unfortunately, the absence of reliable available data, on the impacts of these measures prevents any quick assumptions about their effectiveness. For instance, available indicators as the increase of employment and the reduction of emigration could be the results of lower basic salaries. However, there is no doubt that the increase in funding opportunities and the introduction of reforms tackling bureaucracy are contributing positively on brain drain, as they are minimizing the numbers of people moving abroad.

The current process of establishing a better economic environment for scientists should not be treated as a panacea but rather as a strategy that requires an ongoing evaluation and revision. This thesis builds on the current strategy and identifies certain important gaps. Consequently, this section provides two additional recommendations on how to support the shift from brain drain to brain gain. Much more can be said about policy interventions that will have an impact on reversing the phenomenon but given the limitations of this paper the themes will evolve around coordination and business environment. The recommendations deal comprehensively with the challenges of brain drain and have a long-term objective in transforming Greek ecosystem as a more attractive environment for both the investors and the scientists. Thus, the first recommendation is associated with the importance of the political consensus behind any long-term reform of the economy and on the coordination-cooperation with the private sector. The second recommendation deals with the attractiveness of the Greek business environment.

5.1 Multi-stakeholder partnership

Tackling the issue of brain drain is not something easy. For the case of Greece, it is complex and difficult as it was for Spain or Portugal during the economic crisis (The Local 2014). To be fair, context matters, and each case demonstrates different dynamics, challenges and opportunities, however most of the cases have something in common and that is the lack of political consensus at a national level. That is not to say that there are cases where brain drain was supported by any political party or that measures to tackle were politically criticized or opposed. However, a main challenge for states that struggle to reverse the brain drain is the political instability (Durnev 2010). Elections or even changes of ministers, bureaucrats or high-ranking officials, lead to the adoption of different approaches to tackle unemployment, including diverse measures to support scientific community and as it is well-known in Greece, core changes in the curriculum in many levels of education. These changes move in accordance with the political program and ideological spectrum of each party; however, the consequences of these shifts affect the economic stability and most of the times investments.

Especially for the case of the Greek economy that demonstrates structural inabilities, any power fluctuations within the premises of political change creates risks for backsliding and further recession. The *'Growth strategy for the future'* designed by the government in 2018 was a great political initiative that created realistic goals accompanied with the measures that will support the achievement of the objectives. However, such a fragile and complex issue as brain drain requires the political commitment and participation of all the relevant political stakeholders. The duty and right of each government in adopting their own political strategies independently and without any cooperation with other political powers is undeniable. However,

administrative loopholes, bureaucracy and lack of cooperation between the education system with business should be addressed collectively and continuously.

Having said that, the first recommendation of this paper is the establishment of an independent advisory council that will identify gaps, risks and opportunities in the economy. Importantly, this body will take the form of a multi-stakeholder partnership that will include representatives from the:

- Government
- Opposition
- Hellenic Federation of Enterprises
- Hellenic Universities Rectors' Synod

Despite the hypothetical simplicity of this measure, it is important to note that it is the absence of coordination between those stakeholders that generates problems, risks and uncertainty for any business that intents to invest in Greek economy. A partnership between those stakeholders ensures that policy interventions will not cause further problems and current administrative anomalies as bureaucracy could be resolved effectively. Undoubtedly, the difficulties for the implementation of this project are many, as a possible veto of the government to establish this type of partnership. However, at this point, it is interesting to note that this period, few months before the Greek general elections of 2019, this plan has potential to move forward. The most recent opinion polling gauging the voter's intention demonstrated a very small difference between the leading party and the second party. Thus, as it is frequently the case, election results are uncertain. That may play a decisive role in the intention of the current government of agreeing and proposing the establishment of that multi-stakeholder partnership because that could ensure party's involvement in such an important process even after the election, even if they are not the government.

5.2 Innovation districts and Science parks

More and more, states are engaging in a global competition for the attraction of innovative organizations and businesses. This 'race to the bottom' as it is indicated also in Tiebout hypothesis- from a similar perspective, creates an antagonistic environment where even cities within the same country compete with each other to attract businesses (Bruce W. 1991). Certainly, for decisionmakers an investment plan is required to take into account a wide range of issues when it comes for choosing the preferable location for the establishment of their operations. Good governance, stable taxation, regulated bureaucracy and good infrastructure play a crucial role in their decision to invest. For Greece, most of these issues aimed to redefine the country as more business-friendly are addressed by the 'Growth strategy for the future'. However, there is still need for improvement, particularly in the field of business infrastructure.

The beginning of the century witnessed a shift from the traditional central-state decision making regarding the economic strategies that the state should follow to a more modern, flexible type where local authorities have a more prominent role. Now, more and more municipalities have the freedom on designing their economic strategies adapting to the special needs or characteristics of their communities. Thus, the phenomenon described above as a competition between countries has recently been transformed to a competition between cities. Currently, the promotion of a knowledge-based driven economy and business friendly ecosystem by municipalities is succeeded by the development of innovative districts. Within those areas networks between SMEs, startups, R&Ds, universities and in general innovative industries create opportunities for a more modern type of economic development (Katz and Wagner 2014). This model has been applied by many cities around the world, like Barcelona, a similar city to Athens, with a positive economic impact on the local community and consequently to

the country. These entrepreneurship ecosystems create a nexus between education, research and business (Katz and Wagner 2014). Consequently, for innovative companies this cooperation with other scientific hubs public or private is a huge advantage and incentive in establishing their operation near those centers. Fast-internet connection, easy-to-access transportation, modern offices and affordable housing are essential amenities that each innovative district should include (Hanna 2016). Athens and Thessaloniki under certain requirements could invest in the creation of these areas to attract companies in their vicinities.

At the same time, an older form of innovative areas that could attract scientific hubs and innovative businesses are the science and technology parks (European Commision 2013). These parks offer various advantages; however, they require a considerable amount of funds in order to establish a high-tech entrepreneurship ecosystem that is competitive on the international level. To date, there are few innovative parks in major Greek cities, however they consist mostly public research centers such as the Lefkippos Technology park in Athens; and lack private sector involvement due to the bureaucratic and slow practices by their administration.

Indisputably, the cost of these measures is high for a country that is currently in the post-crisis period. However, there are two main reasons to believe that the next government could promote the development of these areas and establish local knowledge-driven economies that can become competitive internationally. In a sense, recession is over and the Greek government has available funding opportunities; due to the recent successful issuance of 5-10 years bonds and the primary fiscal surpluses that the Greek economy has recorded in the previous years (and is committed to achieve also the next years) (Kate 2019). Nevertheless, there is also another incentive for the next government to implement such a plan. Currently as it has been noted by PWC in

its recent report the absence of investments in infrastructure projects for Greece amounts 0.7% of its GDP (PwC 2018). This gap has negative implications for an economy that struggles to move forward and exit recession. Importantly, IMF calculated that investments in public infrastructure have a welfare multiplier of 1.8 (Ganelli and Tervala 2016). Thus, it is essential for the new government to implement infrastructure projects, such as the development of innovation districts, science and technology parks.

5.3 General Conclusion

The main drivers of Greek brain drain is high unemployment and its characteristics that have emerged as a consequence of the structural and cyclical dynamics of the labor market. Despite the fact that the remittances have declined, brain drain could be considered to some extend beneficial for the Greek state since 5% of its population has managed to find work abroad. As a result, brain drain has a direct economic impact on the Greek economy because the unemployment benefits were reduced and also the wellbeing of those who have moved abroad was sustained. However, there is a definite need to reverse brain drain because one thing that is certain is that, in the long-run, brain drain has negative implications for the economy, especially for the case of Greece; an economy with great potential and valuable human capital. Measures that will transform the country's old, bureaucratic and non-competitive economy into a knowledge-driven economy will have an impact on attracting more investments and consequently reducing the unemployment of the highly skilled workers.

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