Brain Drain and Financial Literacy: Can Financial Literacy be Considered a Brain Drain Determinant?

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Abstract

Globalization has played a major role in the increase of the migration of highly skilled population. In an increasingly competitive world, knowing where the talent is moving and why can constitute an important competitive advantage. While many theories focus on the consequences of emigration, there is a lack of research when it comes to its nature and causes. To complement and build a bridge between the existing literature, improving the comprehension of migration processes, this thesis attempts to understand the functioning of the push and pull factors affecting general migration adding one variable to the analysis: financial literacy. Through a survey-based research, I collected data reflecting the relation of financial literacy with brain drain in three ways: through assessing the impact of financial-literacy related push and pull factors on brain drain, through asking participants if they thought financial literacy had an impact in their emigration decision, and through relating the origin's country level of financial literacy with brain drain amount. The results showed that both general and financial-literacy related factors behave in a similar way and that the brain drain and non-brain drain populations perceive both types of factors as having a similar impact. Moreover, the origin's country financial literacy level was not considered and both brain drain and non-brain drain samples reported financial literacy to portray a similar low level of impact on their emigration decision. I trust this research is going to pave the way for future studies to focus on an undeveloped part of the literature.

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Keywords: Financial Literacy; Brain Drain; Emigration; Immigration; Push and Pull Factors.

Resumo

A globalização tem desempenhado um papel importante no aumento da migração da população altamente qualificada. Num mundo cada vez mais competitivo, saber para onde o talento vai e porquê pode constituir uma importante vantagem competitiva. Embora muitas teorias se concentrem nas consequências da emigração, poucas focam a sua natureza e causas. Para complementar e construir uma ponte entre a literatura existente, melhorando a compreensão dos processos migratórios, esta tese tenta compreender o funcionamento dos fatores *push* e *pull* que afetam a migração geral, adicionando uma variável à análise: a literacia financeira. Recorrendo a um survey, reuni dados que refletiam a relação da literacia financeira com *brain drain* de três maneiras: avaliando o impacto dos fatores *push* e *pull* relacionados com literacia financeira no *brain drain*, perguntando aos participantes se eles achavam que a literacia financeira tinha impacto na sua decisão de emigração, e relacionando o nível de literacia financeira do país de origem e a quantidade de *brain drain*. Os resultados mostraram que os fatores *push* e *pull* gerais e os relacionados à literacia financeira se comportam de maneira semelhante e que os grupos *brain drain* e não *brain drain* atribuem um impacto semelhante a ambos os tipos de fatores. O nível de literacia financeira do país de origem não foi considerado pelo grupo *brain drain* nem pelo grupo não *brain drain*. Acredito que esta pesquisa abrirá o caminho para que estudos futuros foquem esta parte não desenvolvida da literatura relacionada com emigração.

Título: Brain Drain e Literacia Financeira: Pode a Literacia Financeira ser um Determinante de Brain Drain ?

Autora: Ana Margarida Matos

Palavras-chave: Literacia Financeira; Brain Drain; Emigração; Imigração; Fatores Push e Pull.

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Glossary

α	The probability of making Type I error; Cronbach's index of reliability
b	Estimated value of unstandardized regression coefficient
β	Estimated value of standardized regression coefficient
CI	Confidence Interval
df	Degrees of Freedom
GDP	Gross Domestic Product
INFE	International Network on Financial Education
M	Sample mean
OECD	The Organization for Economic Cooperation and Development
OR	Odds Ratio
p	p-value
RQ	Research Question
SD	Standard Deviation

1. Introduction

Portugal is a country of emigration (Pires, 2019). It is, in fact, one of the European Union countries with the biggest proportion of emigrants in relation to its resident population, with about 20% of Portugal's total population living outside of its home country (Carrilho & Perista, 2016). As a country that has the word "emigration" as its core, are the Portuguese natives really aware of the causes and consequences of this issue? As a 23-year-old, I never expected I would be leaving my country so early to look for a better opportunity in life. While still a student, I saw myself in a new country, and when I thought I would be missing home and be alone, I found myself surrounded by other Portuguese student emigrants. This started to change my perspective on emigration, inciting my curiosity.

An Organisation for Economic Co-operation and Development (OECD) education study from 2017 noted an exponential increase in the number of university students abroad as this number increased from 0.8 million university students abroad in the 1970s to 4.6 million in 2015 (OECD, 2017). Furthermore, another OECD study revealed that the highly skilled population of OECD countries increased by almost 8 million in the years between 1990 and 2000 (Katseli et al., 2006). In line with what common sense tells us, in the past, the high rates of emigration belonged to less educated people (Castelli, 2018; Peixoto, 2004), however, this paradigm has changed, and a growing trend of highly skilled emigrants is being witnessed (Castelli, 2018).

From this idea the term *brain drain* was born. Brain drain translates into the highly trained or qualified population that decides to leave its origin country to follow work or education opportunities (Docquier & Rapoport, 2006; Iravani, 2011). While this constitutes a novel topic, it is also a very controversial one due to the potential economic and political issues involved (Robertson, 2006). In a world driven by competition, attracting the most talented and qualified personnel became a race (Robertson, 2006), evidencing how important it is to know where the talent is and why.

A large extent of research focuses on the why part of the problem, trying to understand what are the factors that make people migrate. One of these theories is the push and pull factors theory developed by Lee in 1966. In his paper, the author states that a variety of factors associated with the origin and destination countries act as attractive, unattractive or indifferent in the prospective migrants' decision-making process (Lee, 1966). Furthermore, the push and pull factors theory also considers the weight of personal factors, such as intelligence.

A set of different consequences can also be derived from brain drain. Highly educated people normally bring more productivity to the economic sector, meaning that a lack of talent can lead countries to a more fragile economic state (Elveren, 2018). Moreover, brain drain can, for example, increase the poverty incidence, create political instability and income inequality (Elveren, 2018). In fact, an Elveren (2018) study found a strong correlation between the existence of a highly skilled population and a well-functioning society.

Despite the consequences and inherent characteristics of a country with high or low levels of brain drain, the status of the sending or receiving country does not remain static, presenting a dynamic component (Busetti et al., 2018). A study from Busetti and collaborators (2018) on the employment dynamics in Europe illustrates this concept when concluding that, between 2004 and 2014, 28 regions out of the 352 European regions studied went from being a sending to a receiving country, while other 60 switched from receiving to sending (Busetti et al., 2018). As such, having a deeper understanding of what the push and pull factors of highly skilled emigration are can constitute a great step towards mitigating the consequences from the sending country's perspective, helping to make the switch from a sending to a receiving country.

Besides being a country of emigration, Portugal also presents another defining characteristic that, in 2020, made the news headlines with the following title: "*Portugal in the last place in the eurozone financial literacy ranking*" (based on the European Central Bank's Economic Bulletin; Gardt et al., 2022). Similarly to the brain drain topic, financial literacy has also been subject of considerable research and development, witnessing an increase in importance in recent years. A certain relationship between both matters can be established. While financial literacy can be translated into the ability to make successful financial decisions and having the required knowledge to make informed financial decisions (Remund, 2010), highly skilled emigration can be the consequence of a person's willingness to obtain a better financial position.

Being aware of these two problems in my own country, high brain drain and low financial literacy, I started wondering if they could be connected. Consequently, it is the goal of this thesis to determine whether the push and pull theory can be enhanced by integrating other potential factors, such as a country's financial literacy level, to improve our understanding about brain drain and preventing issues related to brain drain from persisting. Thus, does a country's level of financial literacy increase the highly skilled population that emigrates? This is the question this thesis aims to answer.

1.1. Problem Statement

This thesis seeks to understand if the emigration willingness of highly skilled emigration is influenced by push factors, pull factors and also by the origin country's level of financial literacy. The expectation is that, for countries with lower levels of financial literacy, the brain drain will be higher. This study was conducted using a survey-based approach, where the first step was to collect information about the participants' emigration status, level of education, and type of job, dividing them into brain drain and non-brain drain. I collected data regarding the financial literacy level of a set of countries, and these scores were used in the analysis to assess the impact of financial literacy on both brain drain and non-brain drain groups. This impact was assessed with different perspectives, starting with an indirect approach that compared the impacts of different push and pull factors. The survey also assessed the impact of financial literacy on the different groups by directly asking participants if their country's financial literacy level was a factor considered in the emigration decision. Demographic information was also collected and used as control variables in the relationship between a country's financial literacy level and the level of brain drain.

Therefore, this thesis aims to answer the following main question: Does a origin country's level of financial literacy impacts the amount of highly skilled population that emigrates? This problem statement was divided into the following research questions:

- RQ1: Is the origin country's level of financial literacy considered as a push or a pull factor in terms of emigration decision?
- RQ2: Does financial literacy have more impact on the brain drain than on the non-brain drain?
- RQ3: Does the impact of the origin country's level of financial literacy on highly skilled person change if the person is also highly financial literate?

1.2. Relevance

A dissimilarity is noticed regarding the amount of research focusing on the impacts of migration on sending and receiving countries and the research on the nature and causes of migration. Whilst the former presents an abundance of studies, the latter does not receive the same attention (de Haas, 2011). In terms of causes of migration, most studies only focus on the economic push factor of earning more money, and the non-economic migration drivers are often ignored (de Haas, 2011).

Furthermore, the research that merges the topics of financial literacy and brain drain only focus on financial literacy's potential impact on people that already took the decision and the action to emigrate. For example, there are studies regarding the impact of financial literacy training on the migrants' integration in a new country (Gibson et al., 2012), but there are no studies regarding the impact of financial literacy levels on emigration willingness.

Studies show that nowadays more countries are generating emigration, but that emigrants are focusing more on the same set of destinations (Czaika & de Haas, 2014). This phenomenon can have a myriad of economic consequences for the origin country that loses talent at a fast pace. It, then, becomes important to understand the underlying factors that impact emigrants' decision to migrate and what leads to that decision. The creation of knowledge around the topic will enable countries with a high brain drain to improve the retainment of highly skilled people and perhaps to turn the tables and transform this outflow of talent into an inflow.

Focusing more on a corporate perspective, the out-turn of a reversed brain drain translates into larger pools of highly skilled employees available. In an increasingly competitive world, attracting the most talented and qualified personnel becomes fundamental (Robertson, 2006), and thus knowing where the talent is moving and why can constitute an important competitive advantage.

1.3. Structure

After the introductory chapter, I will perform a more in-depth analysis of each of the variables being studied, to expand the readers' understanding on the topic. Therefore, in Chapter 2, I present a literature review of a) emigration, b) brain drain, c) push and pull factors, d) financial literacy, and e) financial literacy and brain drain connection. In Chapter 3, the methodology used to accomplish this thesis' objectives is described. Afterwards, Chapter 4 serves to present my study's results, detailing the characteristics of the sample and the analysis of the study's main hypotheses. Chapter 5 elucidates the main conclusions, elaborates on the main contributions for both the corporate and academic worlds, and enumerates the study's limitations and possible future research regarding financial literacy and brain drain.

2. Literature Review

2.1. Emigration

Migration is a widely studied topic across a variety of disciplines (Brettell & Hollifield, 2014; King, 2012), which has been witnessing an increase in both volume of research (Bommes & Morawska, 2005; Massey et al., 1998; Scholten et al., 2015) and diversity of methods of study used (Vargas-Silva, 2012; Zapata-Barrero & Yalaz, 2018). In the broad umbrella of migration-related terms, emigration is defined by the International Organization of Migration (Sironi et al., 2019, p. 63) as: "from the perspective of the country of departure, the act of moving from one's country of nationality or usual residence to another country, so that the country of destination effectively becomes his or her new country of usual residence". Regardless of the distance and difficulty, the emigration concept comprises a destination, an origin, and a set of obstacles (Lee, 1966).

Emergent globalization trends have expanded the migration phenomenon around the World (Bălan, 2017), consequently increasing the complexity of studies and research concerning the topic (Pisarevskaya et al., 2020). The theories focusing on migration are divided into two main categories: the functionalists and the historical-structural (de Haas, 2021). From the functionalist theories' perspective, migration is seen as an optimization strategy, where the individual deciding to migrate weighs all the benefits and costs to reach a decision (de Haas, 2021). The neo-classical equilibrium models and the push and pull models are a few examples of theories that belong to the functionalist category (de Haas, 2021). In contrast, theories that interpret migration as a result of power inequalities, oppression and extortion belong to the historical-structural paradigm (de Haas, 2021). Some examples of historical-structural models are the dependency theory, the world systems theory, and the dual-labour market theory (de Haas, 2021).

Both the functionalists and the historical-structural theories present limitations. On the one hand, the functionalist theories are based on the assumption that individuals can make rational decisions to maximize income (de Haas, 2021). Factors such as social and geographic nature of migration processes are not easily explained by the functionalist theories (de Haas, 2021). On the other hand, the historical-structural models fail to consider human-agency, characterizing migrants as people influenced by macro factors, victims of a system that does not give them any other choice than to emigrate (de Haas, 2021). The goal of migration studies nowadays is to mitigate some of the limitations presented by previous models by combining and complementing different theories.

Complementing different theories' perspectives, enables a better understanding of the migration phenomenon and consequences, helping to adjust to a variety of scenarios.

Furthermore, changes in the focus of the migration studies are being noticed. While the first studies on the subject focused on demographics, statistics, and governance, recent studies are now more attentive to migration related diversity, gender, and health, providing more nuance to the understanding of its complexity and consequences (Pisarevskaya et al., 2020). With this change of paradigm there are emerging concepts that one cannot escape while studying migration, for example, the idea that it is only the poor population that migrates to find better financial opportunities is not true anymore (van Hear et al., 2017). Nowadays, talking about the benefits and costs of migration will certainly bring one important topic to the table: brain drain (Clemens, 2011).

2.2. Brain Drain

Brain drain can be defined as the migration of individuals that demonstrate technical skills or that are highly educated, and this transfer of human capital normally occurs from developing to developed countries (Docquier & Rapoport, 2006; Iravani, 2011). More specifically, several studies define highly skilled migrants as someone holding an academic or professional degree beyond high school (Carrington & Detragiache, 1998; Docquier et al., 2012; Docquier & Rapoport, 2012). Furthermore, the higher the education level and the skills obtained by a person, the higher the susceptibility for that person to migrate (Iravani, 2011). Early research considered brain drain as the migration of doctors, nurses, and teachers only, however, recently, a diversification in the sectors affected by brain drain has been noted (Commander et al., 2004). In contrast, there is less diversification in terms of migrant characteristics as nowadays the education level is more standardized being more common for people to have a tertiary education (Commander et al., 2004).

Globalization has played a major role in the increase of the migration of highly skilled migrants, which now represents a third of total immigration to OECD member countries (Docquier & Rapoport, 2006). With the fast-paced increase of brain drain (Commander et al., 2004), a variety of studies have been written on the subject. The existing studies are divided into three waves: the first concluded that the impact exerted by the brain drain was neutral for both sending and receiving countries, because the migrants also contribute to the economy of the sending country through sending remittances (Docquier & Rapoport, 2012). The second wave initiated the discussion on the downfalls of brain drain. Highly skilled emigration was described as contributing to the increase

of inequality, with rich countries becoming progressively more rich at the expense of poor countries (Docquier & Rapoport, 2012). Lastly, the third wave focused on brain drain as a potential beneficial aspect for both sending and receiving countries (Docquier & Rapoport, 2012).

Focusing more on the third and more recent wave of studies, certain theories started to defend that the increase of brain drain might encourage an increase of skill creation by the sending country's population. The idea is that the prospects of new opportunities abroad increase the incentives to invest in human capital, increasing also the average skill level of the sending country's population (Commander et al., 2004; Docquier & Rapoport, 2006). However, despite seeming a positive consequence of brain drain, what is important is not to focus on how many more people engaged in higher education but rather how many of those people stayed at their home country after achieving that degree of education (Docquier & Rapoport, 2006).

In the consequences brought by brain drain, the sending countries are the ones who suffer the most. The receiving countries started to understand that they could have skilled labor without having to invest on it in the first place, and the highly skilled emigration started to be seen as free intellectual capital (Commander et al., 2004). This is one of the reasons why it is so important to understand the causes of this trend. While several theories try to explain the phenomenon of brain drain, some of them fit better than others. The push and pull factors theory is seen by some authors as the one that may explain better the reasons behind highly skilled emigration (de Haas, 2011).

2.3. Push and Pull Factors

A question very often put forward by migration researchers in the field is: Why? Why do people decide to migrate? Castelli (2018) divided the migration drivers into three categories: the macro-factors, meso-factors, and micro-factors. The factors are ordered according to the level of control a person can exercise over them. Macro-factors are factors that an individual cannot control so easily, for instance, political, demographic, and socio-economic factors (Castelli, 2018). Meso-factors represent a more intermediate approach, defining factors not totally under individuals' control, such as communication technology (Castelli, 2018). Finally, micro-factors portray the factors totally in control by the individual, including, for example, education, religion, and marital status (Catelli, 2018).

Different theories apply to the different categories of factors (Faist, 2000; Hagen-Zanker, 2008). Lee's (1966) push and pull factors theory is one of the most prominent theories that focus on the

micro level factors (Hagen-Zanker, 2008). Lee (1966) explains that one's decision to migrate is influenced by positive and negative factors regarding the origin and destination countries, which consequently push and or pull the migrants, resulting in the final decision to leave or stay in the home country. To illustrate, a person can be pushed from their own country due to poor financial conditions and is pulled to a certain destination country by better economic prospects.

Several push and pull factors are considered in the literature. Normally these factors are related with living conditions, public services, environment, employment opportunities and politics (Kazlauskienė & Rinkevičius, 2006; Thet, 2014; Simpson, 2017). Although being one of the first attempts to explain the motives of migration, some critics point out the fact that the push and pull theory is only composed of a static list of factors, displaying the migrants as passive pawns with no agency (de Haas, 2011).

Docquier and collaborators (2012) contributed to the literature by differentiating the impacts that push and pull factor could have on the highly skilled population depending on gender. Highly skilled women were found to be much more migratory than highly skilled men and to be affected in a different way by the push factors (Docquier et al., 2012).

The objective of this thesis is to complement the push and pull factors theory by introducing another variable in the analysis: financial literacy.

2.4. Financial Literacy

Until this day, researchers show some difficulty in defining financial literacy. While several studies provide different definitions for financial literacy (Huston, 2010), others are not even able to conceptually define the term (Hung et al., 2009; Santini et al., 2019). However, a consensus definition was provided by the Presidents' Advisory Council on Financial Literacy (2008, p.4) stating that financial literacy is "the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being". The conceptualization of financial literacy can be divided into two dimensions: the understanding dimension (knowledge) and the use dimension (application; Huston, 2009).

Studies on financial literacy have focused on a variety of subjects, some receiving more attention than others. Measuring financial literacy is one of the areas where researchers focus the most. A major variation in the measurement of financial literacy still exists and there is no systematic method of evaluation (Hung et al., 2009). Nonetheless, the different measurement methods can be

organized in four strands of literature (Aren et al., 2014). The first strand, and the one that is used the most, poses a set of basic and advanced financial questions, aiming to identify the respondent's amount of knowledge regarding financial matters (Aren et al., 2014). The second strand measures financial literacy by assessing the perceptions respondents have about their financial knowledge (Aren et al., 2014). The third strand mixes the first and second strands, identifying the financial literacy level by testing the participants and by assessing their self-evaluation (Aren et al., 2014). Finally, the fourth strand of literature measures financial literacy indirectly by using factors that present strong correlations with financial literacy (Aren et al., 2014). For example, assessing the participants' level of income to understand if the financial literacy level is higher or lower (Aren et al., 2014).

More recently, an effort is being made to develop a more uniform measurement method. One of the proposed approaches states that, first, a clear definition of financial literacy must be presented (Huston, 2010). Secondly, to correctly measure financial literacy, both knowledge-and application-related items must be included and these items should focus on the four personal finance content areas: personal finance basics, borrowing, saving or investing and protection (Huston, 2010).

Another area of substantive focus by financial literacy researchers is the role of demographics. Low levels of financial literacy have been found more often amongst women, individuals with lower income and educational levels, ethnic minorities older people and the population living in rural areas (Aren et al., 2014; Klapper et al., 2013; Lusardi & Mitchell, 2011; Santini et al., 2019). In a broader level, Lusardi and Mitchell (2011), when analyzing the levels of financial literacy across a few developed countries, got to the worrying conclusion that, generally speaking, financial literacy is low around the World.

Besides focusing on demographics and measurement tools, another large portion of literature has studied the consequences that low levels of financial literacy can have in someone's life. Correlations were found between the lack of financial literacy and less planning for retirement (Aren et al., 2014; Lusardi & Mitchel, 2011; Ricci & Caratelli, 2015), poor investment decisions and stock participation (Aren et al., 2014; Klapper et al., 2013; Nicolini et al., 2013; Santini et al., 2019), less entrepreneurial motivation (Munyuki et al., 2021), and less adoption of financial innovations (Yang et al., 2020). Generally speaking, financial illiteracy is a major enabler of financial dissatisfaction, contributing to a large inability to make proper and informed financial decisions (Aren et al., 2014).

2.5. Financial Literacy and Brain Drain Connection

The literature directly focusing on both brain drain and financial literacy is very scarce, not to say null. Both terms are still being heavily researched as they represent modern aspects of our society. There are, however, some studies involving financial literacy and general migration, most of them focusing on the importance of remittances. A variety of research evidenced how important it is for migrants from less developed countries to receive proper financial literacy education to increase remittances, as these can have a major impact on the sending countries' economy (Atkinson et al., 2015; Gibson et al., 2012; OECD, 2019). Other research confirms how important it is for migrants' welfare to learn financial literacy (Durodola, 2017).

The theories that were made on migration focus on different analytical dimensions, different geographies, different social groups, different points in time, and different thematic or disciplinary perspectives (de Haas, 2021). As already mentioned on the emigration literature review section, the goal of this thesis is to find a way to complement and build a bridge between the existing literature, improving the comprehension of migration processes across different levels of analysis (de Haas, 2021). To build upon the existing literature on brain drain, this thesis will attempt to understand the functioning of the push and pull factors affecting general migration and add one variable to the analysis: financial literacy. The purpose of this is to analyze if financial literacy can have a similar or even greater impact on highly skilled migration than the factors already included and analyzed in the push and pull factors theory. My expectation is that financial literacy will have a higher impact on the brain drain population than on the non-brain drain population.

3. Research Methodology

With this research I aim to study the impact of a country's financial literacy level on the migration of highly skilled population. Thus, to achieve the goal proposed for this thesis, a very straightforward survey was designed and applied.

As concluded in the literature review, there are not many studies correlating this thesis' two variables of interest: brain drain and financial literacy. As such, this research will combine different questionnaire approaches originating from distinct sources. These different approaches are extensively explained in this section.

To relate brain drain to financial literacy, participants' emigration willingness was assessed in a survey. This allowed me to categorize my sample between the ones who are experiencing or have

already experienced migration and the ones who have never migrated. By combining information about education and job experience with emigration willingness and status, I could discover my brain drain population (the highly skilled population who wants to leave or already left the country). Distinguishing between the participants that fit into the brain drain category and those that do not allowed me to compare the relation of financial literacy with brain drain three ways: through relating emigration willingness with financial literacy as push and pull factors, through explicitly asking participants if they thought financial literacy had an impact in their emigration decision, and through relating the origin's country level of financial literacy with brain drain amount.

To complement the previous analysis, the financial literacy level of the participants was added as a variable to evaluate if it influences brain drain. This enabled me to assess if the impact of a country's financial literacy on the emigration of highly skilled population changes depending also on the individual financial literacy level.

3.1. Participants

This study was distributed mainly across social media groups dedicated to expats and emigration, and in social media groups dedicated to sharing surveys. The goal was to gather information from participants belonging to a variety of different origin countries. All participants answered to the survey voluntarily. From the 180 responses gathered for the survey, only 134 participants fully completed the questionnaire. The data cleaning process consisted of two phases. First it was necessary to check whether the participants correctly answered the attention question. It was also necessary to check if the origin country mentioned by the participant in the survey was part of the database constructed for this survey (see Table 1 in the Appendix) which contains the country's financial literacy scores from OECD studies. If the answers did not fit one of the two criteria, they were excluded from the sample. From the 134 participants, three of them failed both criteria. Another 15 participants failed to answer correctly to the attention question although having indicated a valid origin country. Finally, 13 more participants indicated a country that was not included in the dataset but answered correctly to the attention question. This totals 31 answers deleted from the sample, meaning that the final data consisted of 103 valid participants.

In terms of gender, the sample was characterized by being uniformly divided between females (53.4%) and males (46.6%). The sample was rather young, with most of the individuals being between 18 to 24 years old (34%) and 25 to 34 years old (32%). The participants reported to be

coming from a total of 29 countries situated in Europe, America, and Asia, reflecting the diversity that was needed in terms of origin countries. The countries from where most participants came from were Portugal (16.5%) and the United Kingdom (13.6%). The other countries had a frequency percentage between 5.8% and 1% (for frequencies of all countries see Table 2 in the Appendix). Moreover, as reflected in Table 3 in the Appendix, the sample had high levels of education, with 85.4% attaining a university degree and 14.6% finishing high school. Other important characteristic of the population reflected that 71.8% had already experienced at least six months of migration throughout their life.

3.2. Procedure

The survey, elaborated using the Qualtrics online platform, begun with a consent form including a brief introduction and presentation, and was divided into six sections. The demographics was the first section and ensured the population could be sorted into different categories. For example, one pivotal characteristic of this study consisted of the participant's level of education, as brain drain is described as a highly educated emigrant (Docquier & Rapoport, 2006; Iravani, 2011). The person's origin country, gender, age, level of education, job performed, and years of job experience were all included in the demographics section.

In the second section, the participants' emigration status was explored by asking if the respondent was or ever ever had been migrated. Different assessments of emigration status led the participants to different sections of the form. For the ones who had already experienced or were experiencing emigration, the third block of the survey explored the type of emigration in question. In contrast, the ones that never migrated were asked about their willingness in doing so in the next five years.

Furthermore, in the fourth block, the participants were asked to rate the impact of certain origin and destination country characteristics on their will to leave their homes. Two lists of factors taken from the Kazlauskienė and Rinkevičius's (2006) research were first presented. This research was based in the push and pull factors theory developed by Lee (1966). Two more lists of factors related to financial literacy were also subsequently presented. This section intended to determine the influence that these factors had and understand if the respondents behaved in a similar way regarding financial literacy as they did for the push and pull factors, meaning, if financial literacy level can also be a factor influencing the decision-making process regarding emigration.

In the fifth block, the survey ascertained participants' awareness regarding the weight a country's financial literacy has on their decision to leave the country. This section was preceded by a brief explanation of the financial literacy topic, so all the participants could have the same background information. To finalize, the sixth block of the survey consisted of a group of questions assessing participants' level of financial literacy.

3.3. Materials

3.3.1. Outcome Variables - Brain Drain

In this thesis I intend to understand the impact of a country's financial literacy on the willingness of highly educated people to leave their country and migrate. Brain drain is the term given to highly educated people that decide to emigrate and constitutes the outcome variable for this survey. This variable will be represented by a combination of two separate variables, emigration willingness and level of education or years of work and type of job.

3.3.1.1. Emigration Status

The emigration status variable was used in the data analysis to distinguish participants that were currently emigrated or that had been emigrated in the past from participants that had never been migrated. The question made to the participants is the following "Have you ever lived for more than 6 months in a country other than the one you were born in?" and three answer options were presented: "No", "Yes, I currently am living for more than 6 months in a country other than the one I was born in ", and "Yes, in the past I have lived for more than 6 months in a country other than the one I was born in". The distinction of 6 months was made to account with people who lived outside their origin country for a short period of time, for example, to do Erasmus.

3.3.1.2. Emigration Willingness

For participants that indicated they had never been emigrated, the survey assessed their emigration willingness. To give more credibility to the results obtained, it was pivotal to correctly capture the emigration willingness demonstrated by the respondent and it was proven by different researchers in the field that emigration intentions are in fact a good predictor of future emigration actions (de Jong, 2000; Ivlevs & King, 2012a; van Dalen & Henkens, 2008).

I made some adaptations to the question applied in Ivlevs and King's (2012b) survey, as the original question mentioned a specific origin country, Kosovo, which was not relevant for this research. Taking this into account, I applied the following question: "How high is the probability that you will be living outside your origin country in the next 5 years?". The correspondent response scale consisted of a five-point Linkert scale, with the anchors: "Very unlikely", "Unlikely", "About as likely as not", "Likely", and "Very likely".

Continuing to follow the approach taken by Ivlevs and King (2012b), a follow-up question was made. To increase the likelihood of capturing the true emigration intentions, the respondents were asked, using an open question, if they have already taken a concrete step into their emigration decision, and, if yes, they were asked to describe it.

3.3.1.3. Level of Studies, Type of Job and Years of Job Experience

As the study targeted qualified emigration, the level of studies, the number of years of experience and the type of work performed constitute essential variables to be analyzed. As such, in the demographics section, respondents were asked to indicate what was their maximum level of education attained, the maximum number of years in a job, and the type of job performed.

Regarding the level of studies, the answer options presented were an adaptation of the emigration intentions study by van Dalen and Henkens (2007). The referred options were divided by these authors into different vocational training levels, starting with the non-existing vocational level (*no studies*), followed by the low vocational level (*primary school*), then the medium vocational level (*high school*), and lastly, the high vocational level (*university degree*). Focusing on the type of job performed and years of job experience, the information was collected through the following open questions: "Please indicate what is your current job" and "Please indicate how many years of job experience you have", respectively.

3.3.1.4. Assessing Brain Drain Population

For data analysis, I combined the information collected from the previous question regarding emigration status, emigration willingness, level of study and years of job experience to categorize the participants into two groups: brain drain and non-brain brain. Therefore, the characteristics of these two groups are the following:

- Brain drain: Participants that were currently experiencing emigration, had already emigrated for more than six months or demonstrated a “Likely” or “Very Likely” probability to emigrate in the next five years presenting at least one concrete step taken. Furthermore, participants included in this category had a high vocational level (university degree) or a skillful profession.
- Non-brain drain: Participants that had never been migrated and that demonstrated a “Very unlikely”, “Unlikely” or “About as likely as not” probability to emigrate in the next five years. In what regards level of education, participants in the non-brain drain group did not have a university degree or neither a skillful profession.

Considering the stratification explained above, it was possible to build the outcome variable (brain drain), and to understand if the financial literacy level of the origin country impacted differently the brain drain and non brain groups.

3.3.2. Predictor Variables

The level of financial literacy of the origin country constitutes the main predictor variable of this study. In the literature review, it was mentioned that the amount of existing literature on a country’s level of financial literacy is not particularly vast. Most of the existing studies focus on individual financial literacy levels and consequent characteristics, rather than focusing on a collective point of view. To address this gap and facilitate the acquisition of diverse and corroborating information, the survey gathers three different types of information: origin country financial literacy scores, general push and pull factors and financial-literacy related push and pull factors, and participants’ awareness and consideration of financial literacy.

3.3.2.1. Origin country financial literacy score analysis

Using the information regarding the origin countries, collected in the demographics section of the survey, an assessment of the respective country’s financial literacy levels can be added to the analysis using a combination of studies from a collaboration between OECD and International Network on Financial Education (INFE). Over the years, the OECD has collaborated with INFE to conduct numerous studies concerning the financial literacy levels of various countries. Although the four studies being used were applied to different countries, all of them explored the same three

components: financial knowledge, financial behavior, and financial attitude. As such, these four studies were use to gather a final database of country-level financial literacy. I will provide details about each study next.

The first study was executed in 2012 providing data from 14 different countries that volunteered to participate. Around 19,000 people integrated the study, all of them above 18 years old. The INFE's core questionnaire was used for the survey. The scores for each one of the three financial literacy components were attributed in percentage and later summed and converted to get an overall indicator of financial literacy which takes values from 0 to 21 (Atkinson & Messy, 2012).

The second study was implemented in 2016, and a total of 30 countries from five continents, including 17 OECD countries, took part in this international survey that gathered a total of 51,650 participants aged from 18 to 79. The OECD/INFE toolkit questionnaire on financial literacy was used, thus the financial literacy score for each country was calculated by summing the individual scores for each financial literacy component. The overall financial literacy score scale was from 0 to 21 (Organisation for Economic and Co-operation and Development, 2016).

The third study took place in 2017. In this case, there were 21 participating countries, 19 of them belonging to the G20 and the other two being guest countries (the Netherlands and Norway). About 101,596 people aged from 18 to 79 answered this survey. The Financial Literacy/Financial Inclusion Measurement Toolkit developed by OECD/INFE was used to collect the data for this study. The individual scores for each of the three financial literacy components were calculated and then combined into an overall score that goes from 0 to 22 (Organisation for Economic Co-operation and Development, 2017).

Lastly, the third survey occurred in 2020 and involved 26 countries, 12 of them OECD member countries, and counted a total of 125,787 participants aged 18 or above. In this case, the updated version of the 2018 OECD/INFE Financial Literacy Measurement Toolkit was used, which also had an overall score ranging from 0 to 22 (Organisation for Economic Co-operation and Development, 2020).

I combined the studies by converting the scale of the first and second tests from 0-21 to 0-22 so it could match the other two studies. The final score for a country that presented scores in more than one paper was their most recent score. Merging the different studies allowed me to gather data for a total of 46 countries (for the full detail on the overall and final scores for each country see Table 1 in the Appendix).

3.3.2.2. Country Characteristics – Push and Pull Factors

According to Lee (1966) in *A Theory of Migration*, there are certain push and pull factors inherent to the emigration decision. Push factors are related to the home country and translate the points of pressure that justify an emigration consideration, for example, poor living conditions can be considered a push factor (Lee, 1966). In contrast, the pull factors describe the attractive destination country's characteristics that will have a positive influence on the emigrant or future emigrant (Lee, 1966).

Two lists of questions were included in the survey to incorporate the impact caused by push and pull factors. For both types of factors, I decided to adopt the questions made in Kazlauskienė and Rinkevičius' (2006) research. This research investigates the causes of Lithuanian brain drain by assessing the manifestation and consequence of the push and pull factors between different migration groups. In the paper, a list of different factors was presented, these can take the form of pull or push factors according to the participants' answers. If a certain characteristic weighs more on the decision to leave the country than on the decision to choose a certain destination country, then the factor is considered a push factor. If it is the other way around, the factor is considered a pull factor. The respondents graded each of the 10 factors from 1 (*very low influence*), to 5 (*very high influence*) in terms of the influence the factors have on their decision to leave the home country or choose a new destination country. The score given in the pull side was considered as a negative score from -1 to -5, whilst the score given to the push side was considered as a positive score from 1 to 5. In the end, both scores were summed. If the final score for the factor was positive, it was considered more as a push factor. In contrast, if the final score was negative, it means that the factor was considered more as a pull factor. If it was the case that the final score was 0 it means that the factor was considered as both push and pull. These sets of questions allowed me to compare the impact that normal push and pull factors have on migration decisions with the impact that the levels of financial literacy might have.

3.3.2.3. Country Characteristics – Financial Literacy

To compare the impact that push and pull factors have on migration decisions with the impact that low levels of financial literacy might have, I aimed to understand if country characteristics related to low financial literacy levels are considered by the individuals when deciding to emigrate. Similar to what was done for the general push and pull factors, I decided to directly ask the

participants if certain country characteristics related to low financial literacy levels could impact their emigration willingness. The participants rated each factor from 1 (*not at all important*) to 5 (*extremely important*) depending on the importance given. Based on existing literature, a total of four country-level financial characteristics were chosen:

Country's entrepreneurial level: Throughout the years, several authors have established that the level of financial literacy is correlated with entrepreneurial performance. Financial literacy is considered a resource that enables entrepreneurs' capabilities to execute better financial decisions (Munyuki et al., 2021). It was found that entrepreneurs with higher levels of financial literacy are able to originate higher sales revenue and higher business performance (Bruhn et al., 2011; Munyuki et al., 2021; Ngek, 2016).

Country's importance given to savings and pension schemes: There are many studies relating financial literacy levels with retirement planning, thus demonstrating the importance of the topic. For example, Ricci and Caratelli (2015) concluded that, besides impacting retirement planning (something already well-established in the literature), the level of financial literacy also impacts people's propensity to trust private pension schemes. From a country's perspective, low levels of financial literacy may translate into lower importance given by private and public institutions to savings and pension schemes.

Country's importance given to investments and participation in the market: It has been proven that strong financial knowledge contributes positively to the usage of diverse financial services (Grimes et al., 2010). Furthermore, Nicolini and collaborators' (2013) study demonstrated that a low financial literacy level can have a negative impact on both financial market development and consumers' use of that market, exposing the tendency for financial institutions to participate less in countries with a low overall financial knowledge.

Country's digital finance adoption and usage: The fast-pacing development of digital technologies is enabling the offer of improved and innovative financial services, contributing to expanding access to these services worldwide, and improving the economy (Manyika et al., 2016). A positive effect between financial literacy and the usage of digital finance services can indeed be evidenced (Yang et al., 2020).

The same approach of measurement applied to the general push and pull factors was also applied to these financial-literacy related push and pull factors. The score given in the push side was considered as positive and the score given in the pull side was considered as negative. The sum of

both scores gave the final assessment of whether each factor is considered as a push or a pull factor, depending if the final score was positive or negative, respectively. If the score was 0, then the factor was considered as both a push and a pull factor.

3.3.2.4. Awareness and Consideration of Country-level Financial Literacy

A country's level of financial literacy may have an unconscious effect on the emigration decisions. This has been the focus of the questions made until this point. However, it can also happen that emigrants know that their country is poor in terms of financial literacy (and thus, consider this factor deliberately), impacting their choice. As such, it is important to understand if financial literacy is or is not a factor intentionally considered by emigrants or future emigrants.

Before asking about the awareness and consideration of a country-level financial literacy, the questionnaire explained the concept of financial literacy and described some characteristics of a poor financially-literate country. This was done to follow the recommendations found during the literature review regarding financial literacy that all individuals must be in the same knowledge stage regarding this subject. The participants were asked the following: "In your opinion, to what extent can your origin country's level of financial literacy impact your decision to emigrate?" The answer options ranged from 1 (*No impact*) to 5 (*Very high impact*). Additionally, participants that were or had already experienced migration, were asked "When emigrating, did you take into consideration your home country's financial literacy level and its consequences?" with answer options from 1 (*I have not considered it*) to 5 (*I have extensively considered it*).

3.3.2.5. Demographics and Financial Literacy Score

The questions for the following variables were taken from separate studies and consisted mainly of demographic and academic and occupational related factors.

Country of origin: The origin country is a pivotal piece of information so the correct financial literacy score from Table 1 in the Appendix can be applied to participants' origin countries. I expected to get answers from a wide range of origin countries. In the survey, participants indicated their origin country by selecting it from a drop-down list that contained a total of 190 countries.

Gender: Men and women present differences in their decision-making process when considering emigration and different emigration determinants affect both genders in different ways (de Jong, 2000). To answer to this question, participants could choose between "Male", "Female",

"Non-binary/Third gender", "Prefer to self-describe" (in which case they could write down their gender identity) and "Prefer not to say".

Age: A certain number of years are required to achieve a high-level education or high job skills. In addition, age can portrait an important factor when it comes to emigration decisions, as different generations apply a dissimilar importance to different push factors such as wage or job stability (Hunt, 2006). To answer to the question "Please indicate your age", participants could select one of the following age brackets: "18 – 24 years old", "25 – 34 years old", 35 – 44 years old", 45 – 54 years old", "55 – 64 years old", and "65+ years old".

Types of emigration: There are different types of emigrants. Depending on the main motivating factors, emigration can be forced (e.g., refugees) or voluntary (e.g., when related to academic or working purposes). In this thesis, the focus is on the study of voluntary emigration, as forced emigration implies a lack of agency and free will where other factors influence the choice of destination. Furthermore, Kazlauskienė and collaborators (2006) concluded from their study that the choice to emigrate can differ accordingly to the aim of the action. This thesis' questionnaire asked participants "What is/was the main goal for your emigration decision?" to which they could answer with "To acquire more studies", "To have an international experience", "To have a new challenge" and "Other" (in which case they could write down their motive for emigration).

Participants' level of financial literacy: An important goal of the proposed research consists of finding if the results change when accounting with the level of financial literacy of participants. In other words, I aim to understand if a country's financial literacy has impact on the highly skilled population that also presents high personal levels of financial literacy. Researchers have already assessed and measured financial literacy levels in several studies (Hastings, Madrian, & Skimmyhorn, 2012). For this particular study, I decided to apply the financial literacy survey implemented by van Rooij and collaborators (2011), as it was designed to collect financial literacy level scores by using a short set of questions.

In their research, van Rooij and collaborators (2011) designed two sets of questions, one with only basic financial literacy questions and another contemplating more advanced questions. To adapt to this research, only the advanced questions will be used, as the focus is on highly skilled migration.

4. Results

4.1. Summary Statistics

It was pivotal to understand how many participants could be categorized under highly skilled emigration (brain drain), and which ones did not fit into this category. To do this I checked for two conditions: first, they needed to present a high level of education (university degree) or have a skillful profession; second, they should either be emigrated at the moment, have already experienced emigration for more than six months or demonstrate a high willingness to emigrate in the next five years (indicating a "Likely" or "Very Likely" probability of emigration and stating at least one step taken towards the execution of this decision). A total of 88 participants had a higher education, and 87 participants said they were migrated or had already been emigrated for more than six months or showed a high willingness to emigrate in the next five years. However, only 76 participants checked both requirements. As such, from all sample, 76 were considered brain drain (73.8%) and 27 were considered non-brain drain (26.2%).

The sub-population considered as brain drain was evenly split between females and males (see Figure 1 in the Appendix). Furthermore, 65 participants included in the brain drain sample had already experienced emigration for at least six months, whilst the other 11 showed a very high willingness to emigrate in the next five years (see Figure 2 in the Appendix).

From the population that already experienced or that was currently experiencing emigration, 30% of the brain drain population and 55% of the non-brain drain population referred that the main reason to emigrate was to find a job (see Figure 3 in the Appendix).

All the push and pull variables demonstrate to have a normal distribution (see Table 4 in the Appendix). From the correlation matrix performed (see Table 5 in the Appendix), one can conclude that financial literacy's perceived impact decreases with age ($p < .05$), males are more susceptible to present higher levels of financial literacy score ($p < .05$), and that participants with higher financial literacy scores come from countries that also have higher financial literacy scores ($p < .05$). Furthermore, there was no multicollinearity found between the predictor variables (see Table 5 in the Appendix).

4.2. Scale Reliability

The reliability of some questions made throughout this survey was not assessed in other studies, especially the ones related to the push and pull variables. To address this issue, I calculated the Cronbach's α for each set of questions. The Cronbach's α is used to measure the internal consistency of a scale (Tavakol & Dennick, 2011) and helps identifying if the participants answered to the different questions in a congruous and consistent way.

As explicit in Table 6 in the Appendix, for both the general questions of push and pull variables, the α result is 0.88. For the push questions related only with financial literacy the α is 0.86, and for the pull questions related only with financial literacy the α value increases to 0.90. According to Gliem and Gliem (2003) an α value above 0.80 for Linkert scales is considered as good in terms of internal consistency.

Moreover, the general push variables were grouped with the financial literacy related variables and the Cronbach's α was calculated for that set of questions, the result was an α of 0.89. The same method was applied for the pull variables, which resulted in an α of 0.92. In this case the α for the pull variables is considered as excellent (Gliem & Gliem, 2003). These results suggest that the participants answered consistently to the push and pull variables questions and that the general push and pull variables present a similar behavior as the financial literacy-related push and pull variables.

4.3. Analysis of the general and financial literacy related push and pull factors

The first step in this analysis was to understand if the financial literacy factors were considered as having either a stronger push or pull influence on the emigration decision. Based on the means obtained for each factor and as seen on Table 1, it was possible to understand which factors were considered by the participants as having a more push or pull effect. For the general factors, the only one presenting a positive mean was country governance (M = 0.22, SD = 1.28). For the financial literacy related factors, the ones with a positive mean were country's importance given to savings and pension schemes (M = 0.16, SD = 1.21) and country's importance given to investments and participation in the market (M = 0.14, SD = 1.09). These results demonstrate that only three factors were considered as push. All the other factors presented a negative mean, being considered as having a more pull effect on the emigration decision.

For all the factors, the means ranged between -0.81 and 0.22, as the results could range from -4 until +4, thus these means demonstrate that there was no extreme result, and that none of the factors was strongly considered to have a merely push or a merely pull influence.

Table 1

Analysis of Push and Pull Effect Using the Mean (N =103)

Push / Pull Factors	Mean Statistic	Std. Deviation Statistic	Push or Pull Factor
Economic Conditions	-0.54	1.36	Pull
Labor Conditions	-0.38	1.24	Pull
Social Conditions	-0.81	1.42	Pull
Professional Realization	-0.74	1.24	Pull
Job Opportunity	-0.61	1.25	Pull
Governance	0.22	1.28	Push
Political System	-0.02	1.32	Pull
Health Care System	-0.05	1.29	Pull
Taxation System	-0.26	1.38	Pull
Climate Conditions	-0.36	1.25	Pull
Entrepreneurship FL	-0.08	1.29	Pull
Savings and Pensions FL	0.16	1.21	Push
Investments FL	0.14	1.09	Push
Digital Finance FL	-0.24	1.15	Pull

To confirm the results obtained using the means, and to determine which factors were significantly considered as either push or pull, a one-sample *t*-test was used. Table 2 shows the output of this test. The conclusions were drawn by combining the information received by the mean values stated previously and the significance value for each factor. Thus, on average, economic conditions (M = -0.54, $p < .05$), labor conditions (M = -0.38, $p < .05$), social conditions (M = -0.81, $p < 0.05$), professional realization (M = -0.74, $p < .05$), job opportunities (M = -0.61, $p < .05$), country's taxation system (M = -0.26, $p < .05$), and climate conditions (M = -0.36, $p < .05$) were statistically significant and considered as a pull factor and the country's governance (M = 0.22, $p < .05$) was statistically significant and considered as a push factor.

Table 2

One-sample t-test - General Push and Pull Variables (Test Value = 0)

Push / Pull Factors	*t*	*df*	*p*
Economic Conditions	-4.07	102	<.001
Labor Conditions	-3.10	102	.002
Social Conditions	-5.75	102	<.001
Professional Realization	-6.06	102	<.001
Job Opportunity	-4.98	102	<.001
Governance	1.78	102	.079
Political System	-0.15	102	.882
Taxation System	-1.93	102	.056
Climate Conditions	-2.91	102	.004
Health Care System	-0.38	102	.703

The one sample *t*-test ouput for financial literacy related factors is shown in Table 3. By using the same analysis method as the one used for the general factors, it can be concluded that a country's digital finance adoption and usage (M = -0.24, p < .05) was significantly considered as a pull factor, being the only variable that has a significant result.

Table 3

One-Sample t-test – Financial Literacy Related Push and Pull Variables (Test Value = 0)

Push / Pull Factors	*t*	*df*	*p*
Investments FL	1.26	102	.210
Savings and Pensions FL	1.30	102	.196
Entrepreneurship FL	-0.61	102	.542
Digital Finance FL	-2.14	102	.035

4.4. How are the factors considered by brain drain or no brain drain population?

After gaining knowledge regarding which factors were considered as push or pull by the sample, the next step in the analysis was to understand if there was a difference in how the brain drain sample and the non-brain drain sample perceived these factors.

An independent sample *t*-test was used, and the results are shown on Table 4 for the general factors and on Table 5 for financial literacy related factors. In what regards the general factors, only the country's health care and taxation systems and the political status presented means with different signs. As such, if for brain drain population the factor was considered as push, then for the non-brain drain population the factor was considered as pull. However, only the result for the

country's taxation system presented a statistically significant difference ($p < .05$), demonstrating that, on average, brain drain group considers this factor as a pull factor (M = -0.43, SD = 1.33), whilst non-brain drain group considers it as a push factor (M = 0.22, SD = 1.42).

Table 4

Independent Sample t-*test – General Push and Pull Variables*

Push / Pull Factors	Group				Differences		
	Brain drain (n = 76)		No brain drain (n = 27)				
	M	*SD*	*M*	*SD*	*t*	*df*	*p*
Economic Conditions	-0.62	1.33	-0.33	1.44	0.94	101	.175
Labor Conditions	-0.38	1.17	-0.37	1.45	0.04	101	.484
Social Conditions	-0.40	1.30	-0.56	1.72	0.94	101	.178
Professional Realization	-0.72	1.22	-0.78	1.31	-0.19	101	.423
Job Opportunity	-0.59	1.35	-0.67	0.92	-0.32	101	.376
Governance	0.28	1.30	0.07	1.21	-0.71	101	.241
Political System	0.01	1.39	-0.11	1.12	-0.42	101	.338
Taxation System	-0.43	1.33	0.22	1.42	2.16	101	.016
Climate Conditions	-0.40	1.05	-0.26	1.72	0.38	101	.352
Health Care System	-0.07	1.28	0.00	1.33	0.23	101	.410

Following the same trend noted for the general factors, the financial literacy related factors also do not seem to be perceived differently by the different groups. As such, when a factor is perceived as pull by the brain drain group it is also considered as pull by the non-brain drain group. However, on average, the country's importance given to savings and pension schemes is more intensively considered as a push factor for the non-brain drain group (M = 0.52, SD = 1.45) than for the brain drain group (M = 0.03, SD = 1.08). This represents the only statistically significant result obtained for the financial literacy related factors ($p < .05$).

Table 5

Independent Sample t-*test – Financial Literacy Related Push and Pull Variables*

Push / Pull Factors	Group				Differences		
	Brain drain (n = 76)		No brain drain (n = 27)				
	M	*SD*	*M*	*SD*	*t*	*df*	*p*
Investments FL	0.18	0.95	0.00	1.44	-0.75	101	.228
Savings and Pensions FL	0.03	1.08	0.52	1.48	1.59	101	.061
Entrepreneurship FL	-0.08	1.25	-0.07	1.41	0.02	101	.493
Digital Finance FL	-0.18	1.03	-0.41	1.45	-0.74	101	.233

4.5. Financial literacy impact on brain drain

The next step in understanding the impact of financial literacy in brain drain is to use the countries financial literacy scores (found on Table 1 of the Appendix) and to elaborate a regression analysis between those scores and the amount of brain drain in each country. Three binary logistic regression models were run. The results of the models are posted on Table 6.

Table 6

Binary Logistic Regressions to Assess the Impact of Financial Literacy on Brain Drain

	Model 1	Model 2	Model 3
Origin country FL score	*Exp(B)* = 0.25 (p = .18)	*Exp(B)* = 0.24 (p = .21)	*Exp(B)* = 0.09 (p = .65)
Gender	-	*Exp(B)* = 0.49 (p = .30)	*Exp(B)* = 0.13 (p = .80)
Age	-	*Exp(B)* = 0.02 (p = .91)	*Exp(B)* = 0.03 (p = .86)
Individual's FL score	-	-	*Exp(B)* = 0.38 (p = .00)
Correct classification	73.8%	73.8%	76.7%
Cox & Snell's R^2	.02	.03	.13
Nagelkerke's R^2	.03	.04	.19
Omnibus test	χ^2 (1) = 1.83, (p = .18)	χ^2 (3) = 2.99, (p = .39)	χ^2 (4) = 14.55, (p = .01)
Hosmer & Lemeshow	χ^2 (6) = 4.26, (p = .64)	χ^2 (7) = 12.14 (p = .10)	χ^2 (8) = 5.41 (p = .71)

Model 1 included brain drain as dependent variable and financial literacy score of the origin country as the predictor variable. The output of the testing reflects that the predictor variable is not significant in terms of the determining the predictability of a participant being part of the brain drain population (p > .05). The two tests presented for the goodness of fit of the model were contradictory, the Hosmer and Lemeshow test indicated the model fits the data adequately (p > .05, Bartley, 2014). However the Omnibus tests showed a non-significant result (p > .05), as such, including the predictors is not significantly better than if it only presented the constant (IBM, 2021).

The second model adds two more predictor variables, including brain drain as dependent variable and financial literacy score of the origin country, gender, and age as predictors. When controlling for gender and age, the model shows that there is still no significance in what regards the predictability between the financial literacy level of the origin country and the integration of an individual in the brain drain population (p > .05). For the second model, both tests related to the goodness of fit failed.

The last model used maintains brain drain as the dependent variable and adds participants' financial literacy score to the group of predictor variables that were composed by financial literacy level of the country of origin, age and gender. For the third model, both the Hosmer and Lemeshow test ($p > .05$) and the Omnibus test ($p < .05$) demonstrated goodness of fit. The predictors included in the model explained 19.3% of the variation in brain drain population, and the model correctly predicts 76.7% of the cases. However, the only statistically significant result obtained was related to the participants' financial literacy score. Participants were 46% more likely to integrate the brain drain population if their financial literacy score is higher (OR = 1.46, 95% CI [1.16, 1.84]). Once again, the origin country financial literacy score, gender, and age were not associated with the predictability of brain drain, showing a non-significant result ($p > .05$).

4.6. Perceived impact of financial literacy

The survey asked participants about the impact that a financial literacy deficit in their origin countries could have in their emigration willingness. An independent sample *t*-test was used to determine if both groups, brain drain and non-brain drain, presented different levels of perceived impact. The results show that the brain drain group presented a slighter higher value for the level of perceived impact that financial literacy can portray in the participants' emigration willingness ($M = 2.84$, $SD = 1.16$) than the non-brain drain ($M = 2.81$, $SD = 1.15$). However, the means have very similar values and the difference noted is not significant ($p > .05$; see Table 7 on the Appendix).

Furthermore, for those who experienced or were experiencing emigration, the survey also explored the level of financial literacy consideration taken upon their decision to leave their home country. In this case, a bigger descriptive difference between the means was noted, with brain drain sample demonstrating a higher level of consideration ($M = 2.42$, $SD = 1.102$) when compared with the non-drain sample ($M = 1.89$, $SD = 0.93$). Nonetheless, this difference was also not significant ($p > .05$; see Table 8 of the Appendix).

5. Discussion

5.1. Main Findings

The objective of this thesis was to study the impact of a country's level of financial literacy on the emigration decision of the highly skilled population, known as brain drain. The analysis started

by characterizing the sample. Afterwards the focus was to understand how the participants viewed financial literacy related factors, assessing if they have either a stronger push or pull influence on participants' emigration decision. Later, I aimed to understand if there was a significant difference in the way how the brain drain sample and the non-brain drain sample perceived the push and pull of these financial literacy related factors. Subsequently, I intended to understand the relationship between countries' financial literacy scores and the amount of brain drain per country. Finally, I examined how differently the brain drain and non-brain drain groups stated that financial literacy had impacted their emigration willingness and how differently they had considered it as a factor when taking their emigration decision.

Some preliminary conclusions were taken from the sample characterization, namely, financially literacy scores showed to be higher for males. These results follow the expectations found on the literature that state that women tend to show lower levels of financial literacy (Aren et al., 2014; Klapper et al., 2013; Lusardi & Mitchell, 2011; Santini et al., 2019). Furthermore, it was also expected for older participants to have lower financial literacy scores (Aren et al., 2014; Klapper et al., 2013; Lusardi & Mitchell, 2011; Santini et al., 2019). Although, according to the results, age was not a significant factor in determining financial literacy scores, it was found that the perceived impact of financial literacy decreases with age, meaning that, as people get older, they perceive financial literacy to influence their emigration decisions less. This may be an indication that younger people give more importance to financial literacy.

From the push and pull factors analysis, it was possible to infer that the factors do not have the same impact on the emigration decision. Most of the general factors were considered as having a pull effect, meaning that, a higher importance is given to the attractiveness of the destination country rather than to the negative characteristics of the origin country. In what regards the financial literacy related factors, two were considered as having a pull effect: country's digital finance adoption and usage and country's entrepreneurial level. Two others were considered as having a push effect: country's importance given to savings and pension schemes and country's importance given to investments and participation in the market. Nonetheless, for both types of factors, the results show that although each factor is more considered as either pull or push, there are no extremes in this classification, as there is no factor being extremely considered as push or extremely considered as pull. From this set of results, it is inferred that both general factors and financial literacy related factors behave in a similar way.

In addition, results indicate that the perceptions of brain drain and non-brain drain populations regarding the impact of both general and financial literacy related factors are not significantly different, meaning that when a factor is perceived as pull by the brain drain population it is also considered as pull by the non-brain drain population. The extent to which the factors are considered is also generally similar for both groups. The only exception is noted for country's importance given to savings and pension schemes factor, which is more intensively considered as a push factor for the non-brain drain population than for the brain drain population.

These conclusions support the expectations proposed at the beginning of the research that financial literacy related factors have a similar impact on highly skilled migration as the factors already included and analyzed in the push and pull factors theory. However, this thesis studied the origin country's level of financial literacy as a potential push factor and originator of brain drain and, with the results presented, it is not possible to conclude that financial literacy related factors are considered as having a higher push impact.

To study the relationship between a country's financial literacy score and the amount of brain drain of that country, I elaborated three different models incorporating different sets of predictor variables. The models showed that the financial literacy level of the origin country is not significantly considered by highly skilled population when emigrating. All models presented a similar outcome, even when controlling for other variables such as age and gender. However, a conclusion to be taken from these models is that the higher the financial literacy score a person has, the more likely it is for that person to be part of the brain drain population. In fact, it is reasonable to expect a person with higher financial literacy score to have a higher educational background, and, for that reason, to have a higher probability of integrating the brain drain population. Nonetheless, this conclusion does not change the previously stated fact regarding the non-influence of the origin country's financial literacy score in the emigration decision by the brain drain population.

In the latest stage of analysis, the participants had the chance to answer regarding how much impact financial literacy would have on their decision to emigrate and if they had considered this factor when making the decision to migrate. The results were not as what was expected, as both brain drain and non-brain drain reported financial literacy to portray a similar low level of impact on their emigration decision, and to not have considered this factor much. Brain drain group did not report to be significantly more impacted by financial literacy, or to have considered it more.

5.2. Implications

This study is relevant for the academic community for a variety of reasons. First, as seen in the literature review, there is a saturation of research in what regards the economic factors of emigration decision, however, the non-economic side of it is often discarded. This research opens the doors for these factors to be considered by focusing in two niche topics and trying to translate how financial literacy, a non-economic matter, can impact the amount of highly skilled migration. Although the results were not as expected, this thesis had an important role into raising the awareness for this lack of research and serves as basis for future improved research where other non-economic factors can be linked to emigration topics.

Due to globalization trends, the decision to emigrate a few years ago was not taken as lightly as now, and a different set of elements was weighted in the decision-making scale. Many emigration theories are now outdated and do not account for this. As such, following the recommendations of de Haas (2021), this thesis attempted to build a bridge between the existing literature on emigration theory, and to improve the comprehension of migration processes. By creating the new financial literacy related factors and by finding a similar relationship between these and the general ones found on the literature, I was able to show that the emigration theories are not static and that can be improved.

5.3. Limitations and future research

Certain limitations were identified during this research. These limitations should be taken into consideration and pave the way for improved future research. The first limitation encountered is related to the use of an online survey as a data collection method. Online surveys allow for a larger access, an easily distribution throughout the population (Lefever et al., 2007) and for a faster pace of data collection (Ilieva et al., 2002). However, when using online surveys, it is difficult to accurately translate how the respondents would really behave in a real-life situation. As an example, it is difficult to accurately assess the real emigration willingness through a set of questions in a survey, as this may not truly reflect what the respondents would do when facing an emigration opportunity. Furthermore, the survey was distributed in one point in time, which prevents the capability of inferring causality between financial literacy and brain drain. Future research should examine the decision-making process of potential emigrants during the period of time they are

actively considering leaving their home country, instead of focusing on the ones that had already been or are migrated.

Secondly, the existing literature that connected both financial literacy and brain drain topics was very scarce and almost inexistent. There is a substantial amount of research that focus**es** on either brain drain or financial literacy, but the two concepts were almost never studied together. This drawback ended up by snowballing and generating further issues, namely the lack of high-quality and tested questionnaires and scales. Due to this difficulty, some questions and scales had to be written and built from scratch, a factor that might have negatively impacted the validity and reliability of the results presented. The process of developing a scale presupposes the use of complex and systematic procedures, requiring a high level of theoretical and methodological rigor (Morgado et al., 2017) that was not possible to apply in this study due to lack of resources.

Furthermore, to preserve a good responsiveness rate, I kept the study more concise by including a shorter set of questions when assessing the financial literacy level of the participants. There are many questionnaires that thoroughly measure the financial literacy level, and those are normally composed by an extensive set of questions and are not conducted online. Using a shorter version of one of the questionnaires might implicate that the results misestimate the participants' financial literacy level. However, it was preferred to shorten the questionnaire as the participants' financial literacy level did not constitute a key point for this research.

Additionally, when categorizing the people that already migrated or that were currently migrated, I did not make a distinction between the participants that migrated when they were children and those who did it later in life. The potential set of the population that migrated at a younger age did not have the chance to make that decision by themselves. This factor can lead to an overestimation of the brain drain population in case there are a large set of participants who demonstrate to be highly skilled emigrants but that migrated as children (Docquier et al., 2012). To overcome this limitation, future research must correct for age of migration, by inquiring the participants at what age they migrated and by understanding if they were the main people responsible in taking the decision to leave their home countries.

Another limitation found has to do with the data-base constructed from the OECD studies assessing the financial literacy level of a variety of countries. In this research I combined the data from four different OECD studies to obtain the overall financial literacy score of 46 countries. Nonetheless, in the data cleaning process, the answers from the participants that belonged to a

country that was not included in the data base had to be deleted, decreasing the sample size of the study. If the amount of resources allow, future research should increase as much as possible this data-base to not discard any data collected. Furthermore, the data presented in this data base was collected from four different studies that took in a time frame of eight years, between 2012 and 2020, a factor that can have also impacted the validity of the results.

The sample size for this study was composed by a total of 103 valid answers to the survey. From the total of 103, 76 were considered as brain drain sample while 27 were considered as non-brain drain sample. The difference in the sample size of both groups might impact the reliability of the results as it can induce an misestimation of the non-brain drain analysis, thus affecting the comparison between both groups. Future research should increase the overall sample size so it can contemplate a higher number of answers in case the two groups present a high discrepancy.

One of the distribution methods used for this research was to circulate the survey among friends and family, which resulted in a high portion of the population to have the same characteristics in terms of age, education, and profession. Many respondents worked in the financial services sector and had a higher education, which might have increased both the financial literacy score of the population, as they were already more familiarized and comfortable with this topic, and the brain drain population amount. To prevent this, future research should focus on different methods of data collection to make sure the final sample is diverse and representative of the population.

Finally, future research should also consider including other predictor variables that might help explaining variations in the emigration willingness of highly skilled emigrants. As an example, the GDP of the origin country can be a variable of interest. Controlling for cultural dimensions can also have a positive impact on future research as, when deciding to migrate, different cultures might give different levels of importance to different economic and non-economic factors. Also, it can be relevant to establish a division between long-term and short-term emigration and to study if different factors affect differently the emigration willingness for both scenarios. Lastly, future research can look at financial literacy from the pull factor perspective and assess if higher levels of financial literacy in the destination country will pull more highly skilled migrants from another countries.

5.4. Conclusion

To complement the existing literature on theories of emigration, financial literacy was added to the push and pull model theory in an attempt to explain how it could affect the emigration willingness of highly skilled emigration, known as brain drain. The results presented in this study were not conclusive that there is a relationship between financial literacy and brain drain. Nonetheless, I trust this research is going to pave the way for future studies to focus on an undeveloped part of the literature: the non-economic factors affecting the emigration decision making process.

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7. Appendix

Appendix A | Results' tables and figures

Table 1

Overall Financial Literacy Scores Accordingly With OECD Studies.

Country	FL Score Study (2012)	FL Score Study (2016)	FL Score Study (2017)	FL Score Study (2020)	Final FL Score
Albania	10.5	13.3	-	-	13.3
Argentina	-	-	11.4	-	11.4
Armenia	10.3	-	-	-	10.3
Austria	-	14.9	-	14.4	14.4
Belgium	-	15.0	-	-	15.0
Brazil	-	12.7	12.1	-	12.1
BVI	12.6	13.6	-	-	13.6
Bulgária	-	-	-	12.3	12.3
Canada	-	15.3	14.6	-	14.6
Colomba	-	-	-	11.2	11.2
Croatia	-	12.6	-	12.3	12.3
Czech Republic	12.1	13.2	-	13.0	13.0
Estonia	11.1	14.0	-	13.3	13.3
Finland	-	15.5	-	-	15.5
France	-	15.6	14.9	-	14.9
Georgia	-	13.0	-	12.1	12.1
Germany	12.8	-	13.8	13.9	13.9
Hong Kong	-	15.1	14.1	14.8	14.8
Hungary	12.6	13.0	-	12.3	12.3
India	-	-	11.9	-	11.9
Indonesia	-	-	13.4	13.3	13.3
Ireland	12.1	-	-	-	12.1
Italy	-	-	11.0	11.1	11.1
Korea	-	15.1	13.9	13.0	13.0
Latvia	-	13.9	-	-	13.9
Lithuania	-	14.1	-	-	14.1
Malasya	12.3	12.9	-	12.5	12.5
Malta	-	-	-	10.3	10.3
Mexico	-	-	12.1	-	12.1
Moldova	-	-	-	12.6	12.6
Montenegro	-	-	-	11.5	11.5
Netherlands	-	14.0	13.4	-	13.4
New Zealand	-	15.1	-	-	15.1
North Macedonia	-	-	-	11.8	11.8
Norway	12.0	15.3	14.6	-	14.6
Peru	11.3	-	-	12.1	12.1
Poland	10.5	12.2	-	13.1	13.1
Portugal	-	14.7	-	13.1	13.1
Romania	-	-	-	11.2	11.2
Russia	-	12.8	12.2	12.5	12.5
Saudi Arabia	-	-	9.6	-	9.6
South Africa	11.0	-	-	-	11.0

Slovenia	-	-	-	14.7	14.7
Thailand	-	13.4	-	-	13.4
Turkey	-	13.1	12.5	-	12.5
United Kingdom	11.8	13.7	13.1	-	13.1

Table 2

Frequencies - Origin Country Variable

	N	%
Albania	2	1.9%
Argentina	2	1.9%
Armenia	3	2.9%
Austria	1	1.0%
Belgium	6	5.8%
Brazil	2	1.9%
Bulgaria	1	1.0%
Colombia	2	1.9%
Croatia	3	2.9%
Czech Republic	3	2.9%
Estonia	3	2.9%
France	4	3.9%
Germany	6	5.8%
Hong Kong (S.A.R.)	2	1.9%
Hungary	4	3.9%
India	4	3.9%
Italy	4	3.9%
Lithuania	2	1.9%
New Zealand	1	1.0%
Norway	2	1.9%
Peru	1	1.0%
Poland	1	1.0%
Portugal	17	16.5%
Romania	4	3.9%
Russian Federation	2	1.9%
Slovenia	1	1.0%
South Africa	4	3.9%
Turkey	2	1.9%
United Kingdom	14	13.6%

Table 3

Demographic Frequencies

	N	%
Gender		
Female	55	53.4%
Male	48	46.6%
Age		
Under 18	1	1.0%
18-24 years old	35	34.0%
25-34 years old	33	32.0%
35-44 years old	15	14.6%
45-54 years old	10	9.7%
55-64 years old	5	4.9%
65+ years old	4	3.9%
Education		
Lower Education	15	14.6%
Higher Education	88	85.4%
Emigration Status		
Migrated	74	71.8%
Never Migrated	29	28.2%

Figure 1

Brain Drain Sample Split by Gender

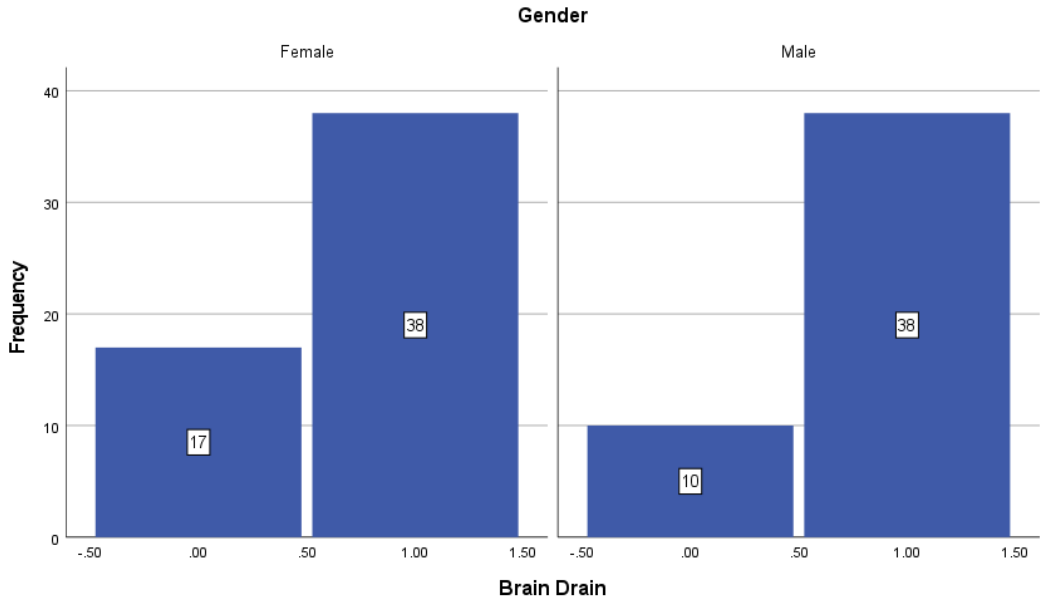

Figure 2

Brain Drain Sample Split by Emigration Status

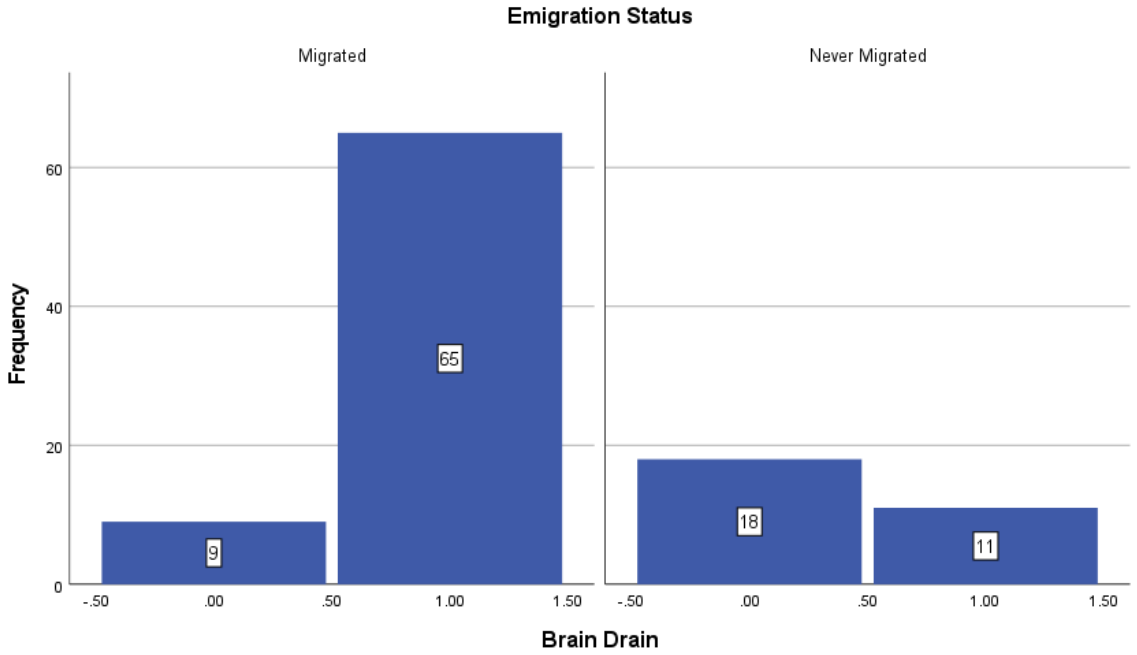

Figure 3

Brain Drain Sample Split by Emigration Goal

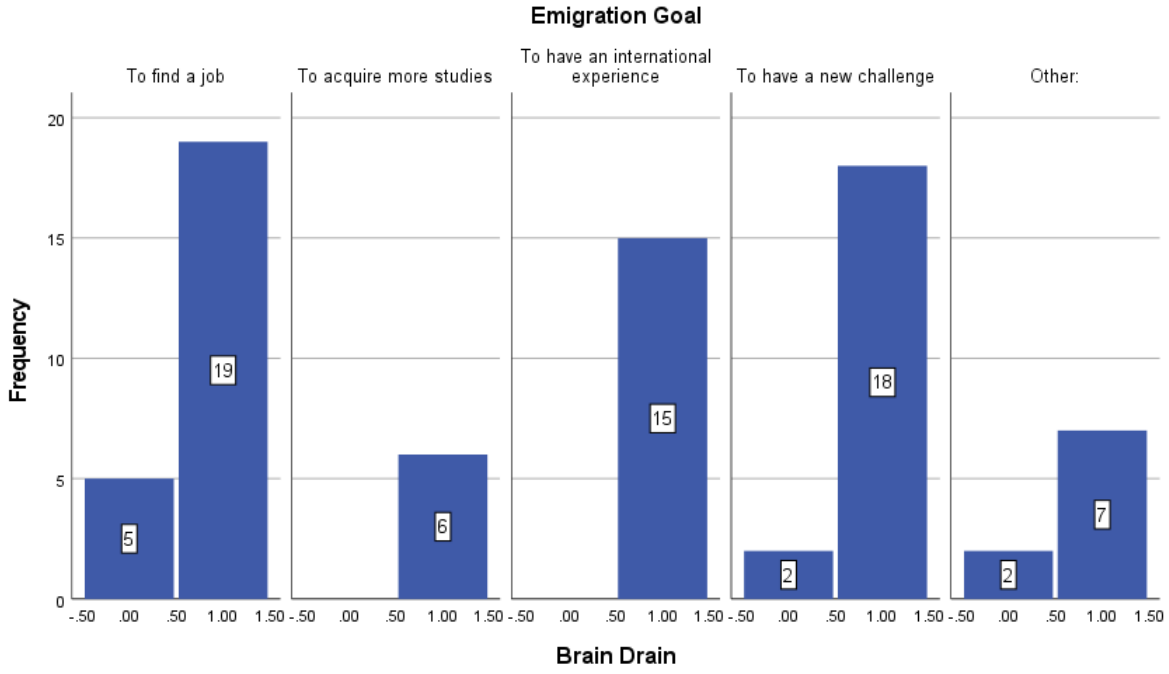

Table 4

Normality Distribution Assessment for Push and Pull Variables

	Skewness		Kurtosis	
Push and Pull Variables	Statistic	Std. Error	Statistic	Std. Error
Economic Conditions	-.327	.238	.191	.472
Labor Conditions	-.696	.238	.325	.472
Social Conditions	.004	.238	-.691	.472
Professional Realization	-.230	.238	-.154	.472
Job Opportunity	.090	.238	-.293	.472
Governance	.032	.238	1.326	.472
Political System	-.042	.238	-.232	.472
Health Care System	-.049	.238	.863	.472
Taxation System	.417	.238	1.349	.472
Climate Conditions	-.633	.238	1.241	.472
Entrepreneurship FL	-.666	.238	.392	.472
Savings and Pensions FL	.304	.238	.398	.472
Investments FL	-.092	.238	2.113	.472
Digital Finance FL	-.298	.238	1.194	.472

Table 5

Correlation Matrix – Predictor Variables

	Age	Gender	Financial Literacy impact	Financial literacy consideration	FL Overall Score	Origin Country FL Score
Age	1					
Gender	0.134	1				
Financial Literacy Impact	-0.447**	0.101	1			
Financial literacy consideration	-0.204	0.165	0.567**	1		
FL Overall Score	-0.006	0.266**	0.092	0.067	1	
Origin Country FL Score	0.005	0.082	0.041	-0.036	0.268**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6

Values of Cronbach's α for Push and Pull Set of Questions

	Cronbach's α	N of Items
Push Variables – General	0.88	10
Pull Variables – General	0.88	10
Push Variables – FL Related	0.86	4
Pull Variables – FL Related	0.90	4
All Push Variables – General and FL Related	0.89	14
All Pull Variables – General and FL Related	0.92	14

Table 7

Independent Sample t-test – Financial Literacy Perceived Impact

	Group				Differences		
	Brain drain (n = 76)		No brain drain (n = 27)				
	M	*SD*	*M*	*SD*	*t*	*df*	*p*
Financial Literacy Perceived Impact	2.84	1.16	2.81	1.15	-0.11	101	.458

Table 8

Independent Sample t-test – Financial Literacy Consideration

	Group				Differences		
	Brain drain (n = 65)		No brain drain (n = 9)				
	M	*SD*	*M*	*SD*	*t*	*df*	*p*
Financial Literacy Consideration	2.42	1.10	1.89	0.93	-1.37	72	.09

Appendix B | Full Survey

Let me start by thanking you for your participation in this study, your availability is much appreciated. This survey will contribute for my master dissertation, which is integrated into the Optimal Decision-Making research seminar of Católica Lisbon School of Business and Economics.

Very briefly, this questionnaire aims to study the impact of a country's financial literacy level on the emigration willingness of highly skilled population.

All data will be collected anonymously, and your participation is voluntary. You may stop the survey at any time after it has started without any consequence.

Please expect to invest approximately 10 minutes to complete the study. In case you have any questions or comments, please contact me to my email: s-ammvmatos@ucp.pt

Thank you!

End of Block: Introduction

Start of Block: Demographics

Please indicate your origin country:

▼ Afghanistan (1) ... Zimbabwe (1357)

Please indicate your age:

- ○ Under 18 (1)
- ○ 18 - 24 year old (2)
- ○ 25 - 34 years old (3)
- ○ 35 - 44 years old (4)
- ○ 45 - 54 years old (5)
- ○ 55 - 64 years old (6)
- ○ 65+ years old (7)

Please indicate your currently higher completed level of education:

- ○ No studies obtained (1)
- ○ Primary school (2)
- ○ High school (3)
- ○ University degree (4)

How do you describe yourself?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary / third gender (3)
- ○ Prefer to self-describe (4) _____
- ○ Prefer not to say (5)

Please indicate what is your current job:

_____

Please indicate how many years of job experience you have:

_____

End of Block: Demographics

Start of Block: Emigration Status Assessment

Have you ever lived for more than 6 months in a country other than the one you were born in?

- ○ No (1)
- ○ Yes, I currently am living for more than 6 months in a country other than the one I was born in (2)
- ○ Yes, in the past I have lived for more than 6 months in a country other than the one I was born in (3)

End of Block: Emigration Status Assessment

Start of Block: Emigration Willingness Assessment

Display This Question:
If "Have you ever lived for more than 6 months in a country other than the one you were born in?" = No

How high is the probability that you will be living outside your origin country in the next 5 years?

- ○ Very unlikely (1)
- ○ Unlikely (2)
- ○ About as likely as not (3)
- ○ Likely (4)
- ○ Very likely (5)

Display This Question:
If "Have you ever lived for more than 6 months in a country other than the one you were born in?" = No

Have you already taken concrete actions regarding your emigration aspiration? For example searching for information online or looking for job positions abroad? If yes, please briefly describe the actions taken.

_____

End of Block: Emigration Willingness Assessment

Start of Block: Reasons for emigration decision

Display This Question:

If "Have you ever lived for more than 6 months in a country other than the one you were born in?" = Yes, I currently am living for more than 6 months in a country other than the one I was born in

Or If "Have you ever lived for more than 6 months in a country other than the one you were born in?" = Yes, in the past I have lived for more than 6 months in a country other than the one I was born in

What is/was the main goal for your emigration decision?

- ○ To find a job (1)
- ○ To acquire more studies (2)
- ○ To have an international experience (3)
- ○ To have a new challenge (4)
- ○ Other: (5) _____

End of Block: Reasons for emigration decision

Start of Block: Country Characteristics: Why to leave and where to go?

From the list of factors presented below, please rate each one of them by the level of influence that they play/played in your decision of **leaving your home country**:

	1 - Very low influence (1)	2 - Low influence (2)	3 - Moderate influence (3)	4 - High influence (4)	5 - Very high influence (5)
Poor economic conditions (1)	○	○	○	○	○
Poor labor conditions (2)	○	○	○	○	○
Poor living and social conditions (3)	○	○	○	○	○
Low professional / academic realization (4)	○	○	○	○	○
Poor job opportunities for profession acquired (5)	○	○	○	○	○
Country's poor governance (6)	○	○	○	○	○
Country's poor political-juridical system (7)	○	○	○	○	○
Country's poor taxation system (8)	○	○	○	○	○
Poor health-care system (9)	○	○	○	○	○
Poor climate and ecological conditions (10)	○	○	○	○	○

From the list of factors presented below, please rate each one of them by the level of influence that they play/played in your decision of **choosing a certain destination country**:

	1 - Very low influence (1)	2 - Low influence (2)	3 - Moderate influence (3)	4 - High Influence (4)	5 - Very high influence (5)
Better economic conditions (1)	○	○	○	○	○
Better labor conditions (2)	○	○	○	○	○
Better living and social conditions (3)	○	○	○	○	○
Better professional / academic realization (4)	○	○	○	○	○
Better opportunities for profession acquired (5)	○	○	○	○	○
Better country's governance (6)	○	○	○	○	○
Better country's political-juridical system (7)	○	○	○	○	○
Better country's taxation system (8)	○	○	○	○	○
Better health-care system (9)	○	○	○	○	○
Better climate and ecological conditions (10)	○	○	○	○	○

End of Block: Country Characteristics: Why to leave and where to go?

Start of Block: Financial Literacy Characteristics impact

From the list of factors presented below, please rate each one of them by the level of importante that they have/had in your decision of **leaving your home country**:

	1 - Not at all important (1)	2 - Slightly important (2)	3 - Moderately important (3)	4 - Very important (4)	5 - Extremely important (5)
My country has a poor entrepreneurial environment (1)	○	○	○	○	○
My country gives low importance to savings and pension schemes (2)	○	○	○	○	○
My country gives low importance to the population's investments and participation in the market (3)	○	○	○	○	○
My country presents low digital financial innovativeness (4)	○	○	○	○	○
Please select the option: 1 - Not at all important (5)	○	○	○	○	○

From the list of factors presented below, please rate each one of them by the level of importance that they have/had in your decision of **choosing a certain destination country**:

	1 - Not at all important (1)	2 - Slightly important (2)	3 - Moderately important (3)	4 - Very important (4)	5 - Extremely important (5)
Destination country has a good entrepreneurial environment (1)	○	○	○	○	○
Destination country gives high importance to savings and pension schemes (2)	○	○	○	○	○
Destination country gives high importance to the population's investments and participation in the market (3)	○	○	○	○	○
Destination country presents high digital financial innovativeness (4)	○	○	○	○	○

End of Block: Financial Literacy Characteristics impact

Start of Block: Definition of Financial Literacy

The term "Financial Literacy", describes a specific form of knowledge that together with the ability and the skills to apply that knowledge, produces good financial behavior and better financial decisions (Presidents Advisory Council on Financial Literacy, 2008).
A handful of negative consequences can derive from low scores in financial literacy. Countries portraying this problem are normally more propense to plan less for retirement, be less active in the financial markets and present a lower level of financial inclusion and innovativeness.

End of Block: Definition of Financial Literacy

Start of Block: Financial Literacy Impact Awareness

In your opinion, to what extent can your origin country's level of financial literacy impact your decision to emigrate?

- ○ Very low impact (1)
- ○ Low impact (2)
- ○ Moderate impact (3)
- ○ High impact (4)
- ○ Very high impact (5)

Display This Question:

If "Have you ever lived for more than 6 months in a country other than the one you were born in?" = Yes, I currently am living for more than 6 months in a country other than the one I was born in.

Or if "Have you ever lived for more than 6 months in a country other than the one you were born in?" = Yes, in the past I have lived for more than 6 months in a country other than the one I was born in.

When emigrating, did you take into consideration your home country's financial literacy level and its consequences?

- ○ I have not considered it (1)
- ○ I have barely considered it (2)
- ○ I have somewhat considered it (3)
- ○ I have considered it (4)
- ○ I have extensively considered it (5)

In your opinion, how high does your origin country score in financial literacy?

- ○ Very low (1)
- ○ Low (2)
- ○ Medium (3)
- ○ High (4)
- ○ Very high (5)

End of Block: Financial Literacy Impact Awareness

Start of Block: Personal Financial Literacy Level Assessment

Please answer to the next questions without consulting any additional information or using a calculator.

Which of the following statements describes the main function of the stock market?

- ○ The stock market helps to predict stock earnings (1)
- ○ The stock market results in an increase in the price of stocks (2)
- ○ The stock market brings people who want to buy stocks together with those who want to sell stocks (3)
- ○ None of the above (4)
- ○ I do not know (5)

Which of the following statements is correct?
If someone buys the stock of firm B in the stock market:

- ○ He owns a part of firm B (1)
- ○ He has lent money to firm B (2)
- ○ He is liable for firm B's debts (3)
- ○ None of the above (4)
- ○ I do not know (5)

Which of the following statements is correct?

- ○ Once one invests in a mutual fund, one cannot withdraw the money in the first year (1)
- ○ Mutual funds can invest in several assets for example invest in both stocks and bonds (2)
- ○ Mutual funds pay a guaranteed rate of return which depends on their past performance (3)
- ○ None of the above (4)
- ○ I do not know (5)

Which of the following statements is correct?
If somebody buys a bond of firm B:

- ○ He owns a part of firm B (1)
- ○ He has lent money to firm B (2)
- ○ He is liable for firm's B debts (3)
- ○ None of the above (4)
- ○ I do not know (5)

Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return?

- ○ Savings accounts (1)
- ○ Bonds (2)
- ○ Stocks (3)
- ○ I do not know (4)

When an investor spreads his money among different assets, does the risk of losing money:

- ○ Increase (1)
- ○ Decrease (2)
- ○ Stay the same (3)
- ○ I do not know (4)

If you buy a 10-year bond, it means you cannot sell it after 5 years without incurring a major penalty. True or false?

- ○ True (1)
- ○ False (2)
- ○ I do not know (3)

Buying a company stock usually provides safer return than a stock mutual fund? True or false?

- ○ True (1)
- ○ False (2)
- ○ I do not know (3)

If the interest rate falls, what should happen to bond prices?

- ○ Rise (1)
- ○ Fall (2)
- ○ Stay the same (3)
- ○ None of the above (4)
- ○ I do not know (5)

End of Block: Personal Financial Literacy Level Assessment
