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The Role of Migrant Integration in the Migratory Process

Migrant Networks and Economic Benefits

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Abstract

Since the implementation of the Schengen Agreement in 1985, migratory movements of citizens of the European Union have increased significantly. Fast migrant networks have been established between regions. Although such migrant networks have proven to benefit economic growth through a multiplier effect, many authors have argued that such migratory movements are partly the reason for a growing discontent in Europe. However, this discontent diminishes when migrants are able to integrate into the host society successfully, underlining the notion that migrant integration is key in the migratory process.

Therefore, this research aims to explore what role the integration of migrants plays in migratory movements of EU citizens within the European union and their affiliated economic benefits. This research takes a regional approach and is structured in threefold. First, the presence of migrant networks is analysed through a linear regression model based on the relationship between the stock of international migrants and the flow of international migrants over the years after. Simultaneously, the presence of the multiplier effect is analysed through a linear regression based on the relationship between the flow of international migrants and the growth in GDP per Capita over the years after. Second, the degree of migrant integration per region, based on the Zaragoza Indicators of Migrant Integration is computed using a suitability analysis in ArcGIS Pro. Lastly, through a mediation analysis, the role of the degree of migrant integration in both the migrant network theory and the multiplier effect Is analysed.

The results confirmed the migrant network theory; namely that it is likely that regions attract more prospect migrants when more migrants are present. However, the mediation analysis showed that the degree of migrant integration plays no noteworthy role in this relation. Furthermore, the results reject the multiplier effect: when more migrants migrate to a region, their annual average economic growth declines. However, the mediation analysis showed that the degree of migrant integration plays an important role for the multiplier effect; namely that when migrants are able to integrate successfully, the effect of migrants entering the region is likely to have a positive effect on the annual average economic growth. This finding is further underlined by a positive correlation between the stock of international migrants and the annual average economic growth.

Further research should further explore the role of migrant integration in the migratory process. As it is likely that the Zaragoza Indicators are no accurate representation for migrant integration, it is recommended to conduct more specific research on what indicators affect migrant integration through research based on micro data, or qualitative research methods. These new indicators can be used to expand on this study by adopting different analytical approaches on the role of migrant integration in the migratory process, such as a moderation analysis.

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Chapter 1: Introduction

1.1. Intensification of Migration

Although migration has been part of human history for millennia, in the last two decades of the twentieth century and the start of the 21th century, the total number of migrants increased significantly for both internal as external migration. Especially in the European Union, migration is an important topic, underlined by its new legal migration policy of April 2022, with the focus on attracting skills and talent to the EU (European Commission, 2022). Such skilled migrant populations can acts as a supplement for the ageing population in the EU, making them a valuable source for the labour market. This trend has been continuing for some years, and therefore, migrant populations have become increasingly important in the EU. Figure 1 underlines this trend, by showing the share of international migrants on the population of the EU27 in the time-period between 1960 and 2015.

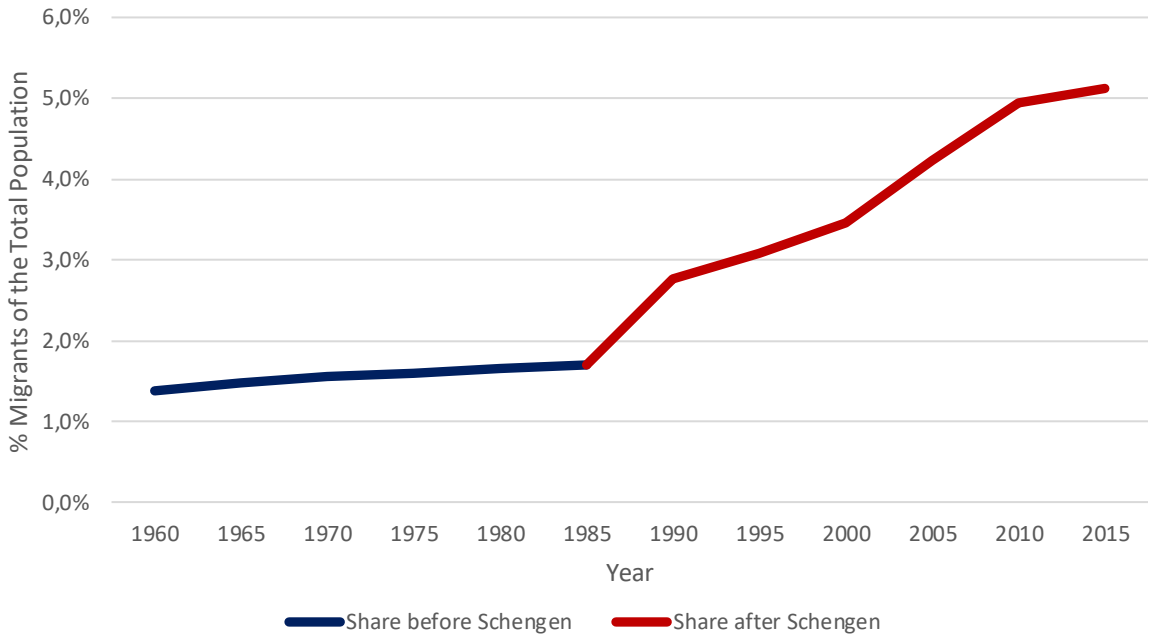

Figure 1: Time Series of the share of the International Migrant Stock on the Total Population of the EU27 countries (Source: Eurostat, 2022).

The Figure shows that, in the late Twentieth Century, migration between European countries intensified significantly, especially after 1985. This intensification of international migration in Europe can be explained by multiple factors, from which new technologies regarding communication, transport and travel, and political opportunities and restrictions are most important (Mavroudi & Nagel, 2016). An example of such political opportunities and restrictions coincides with the steep increase visible after 1985. In this year, the Schengen Agreement was implemented, indicated in the Figure by the change of colour of the line. The idea of this agreement was to create a Europe without internal borders and with strong external borders (European Commission, 2020). Within the borders of the EU, the "four freedoms" (goods, capital, services, and people) are sought to be guaranteed. This entailed

that the importance of national borders diminished between countries taking part in this agreement. Over the years, this agreement expanded to almost all EU Member States and Iceland, Norway and Switzerland. After the implementation of the Schengen Agreement, migration of EU citizens to other EU countries experienced a large increase. Many people took advantage of this opportunity, resulting in about 46 million EU citizens living in another EU member state in 2017 (United Nations, 2017).

1.2. Consequences in Sending and Receiving Regions

Thus, as the political restrictions on migration loosened, more and more people migrated within the EU, as their mobility increased significantly. Notably, many young, highly educated people migrated from relatively less wealthy regions in Eastern Europe towards more wealthy regions in Western Europe (UN, 2019). This movement is often referred to as brain drain. In the process of brain drain, the already present regional inequalities between countries in the EU increases. The more wealthy Western regions appeared to benefit from the flow of young, highly educated migrants (Thaut, 2009). Among other reasons, these unequal gains come from the fact that this type of migration drives down unemployment and decreases the demographic pressure in destination regions, as young people move in. The less wealthy sending regions, on the other hand, experienced rather negative consequences. For example, Lithuania has experienced rapid population decline after entering the free market of the EU, as many young, high-educated Lithuanians migrated to high-paying countries (Thaut, 2009). As an aged and low-educated population was left behind, this resulted in significant labour market shortages and put a large demographic pressure on the country. Similar consequences were found in Bulgaria, were the population declined from 9 to 7 million inhabitants in 30 years (Cipin, 2017), and in Croatia and Poland (Banski & Wesolowska, 2020).

Furthermore, international migration occurs mostly towards larger cities, as these are economically the strongest, have a large variety of services, and act as cultural and political hub (Arbour et al., 2017). In cities such as Brussels and London, the migrant population is about a third of the total population. Migration flows towards urban areas put a pressure on cities, as the population density increases. Besides, although having a diverse population has its benefits in terms of innovation and creative endeavours, it brings a significant network of complexities as well, regarding race, religion and culture. Large differences can lead to a declining social cohesion and an increasing tension between different cultural groups, possibly resulting in cultural clashes.

1.3. Integration as the Missing Key

Although migration brings along problems such as brain drain in the region of origin, and increasing pressure and tension in the regions of destination, migrants act as an important factor in the regional economy by working in specific sectors and by the transfer of remittances (Brakman et al., 2020). However, key to this beneficial effect is the degree in which migrants are able to integrate in their region of destination. Important in this challenge

are the migrant integration policies adopted by the national governments. Tatarko and Jurcik (2020) distinguish two broad types on the spectrum of integration policies.

First, restrictive migration policies are focused on limiting the total number of migrants by imposing quotas and restricting migrants' opportunities inside the country. The "us versus them" rhetoric is dominant in these policies, as migrants are seen as a threat for the native population; a threat in economic terms, as migrants compete for the scarce jobs in the country and are likely to receive some sort of payment (Charitopoulou & García-Manglano, 2017), as well as in cultural terms, as the multicultural society is seen as an attack on the norms and values of the native population (Barbulescu, 2019).

Secondly, pro-integrative migration policies are focused on enhancing the opportunities of migrants in the country of destination, so that these migrants are able to integrate more easily. As migrants are assisted in their integration process in these pro-integrative migration policies, multiple studies have shown that such policies are beneficial for the regional economy (Schain, 2012; Goodman, 2014; Schinkel, 2017). Moreover, helping migrants getting accustomed to cultural norms and social practices in the country of destination, - in other words, the way of life -, prevents a cultural clash between migrant groups and the native population (Scholten & van Breugel, 2018).

These two broad policy approaches may lead to different outcomes. To get a good understanding of the degree of migrant integration, the European Commission has created the "Zaragoza" Integration Indicators (European Commission, 2010). These indicators contain a series of variables that can be used as evaluation mechanisms for, for example, creating policies on integration. Four broad categories of indicators are used: Employment, Education, Social Inclusion, and Active Citizenship. Actively incorporating these indicators into integration policy ought to help the region to benefit from said migratory movements.

1.4. Research Aim

Many European countries adopt different attitudes towards migration and the results from their integration policies are diverse. Therefore, it is key to understand the role of integration in the process of migratory movements and their economic benefits. This study will take a regional perspective on migration and migrant integration in Europe, although integration policies are often nation-wide, or very specific per municipality (Barbulescu, 2019). This regional perspective is adopted, because, as stated by Mavroudi & Nagel (2016), Europe contains an uneven landscape of integration, which results in large differences between regions. Many authors have argued that these migratory movements are one of the main reasons why there is a growing discontent present in the EU; a discontent that is very regionally heterogeneous (Ballas, 2013; Rodriquez-Pose, 2018; Dijkstra et al., 2019). However, it is also argued that this discontent is likely to decrease when migrants integrate well into society. Therefore, it is very important to understand what role migrant integration plays in the process migratory movements and their affiliated economic benefits

Therefore, the aim of this research is on what role the degree of migrant integration plays in two aspects on the regional level: (1) migratory movement patterns that appertain to the chain migration theory (MacDonald & MacDonald, 1964) and its expansion to the migrant network theory (Massey, 1988), and (2) the affiliated economic growth migrants bring about. To answer these problems, the following research question has been formulated:

How does the degree of international migrant integration in NUTS 2 areas in Europe contribute to migratory flows to, and economic growth in, the receiving region?

This research attempts to understand the effects of migratory movements within the European Union. Therefore, the impact of the Schengen Agreement in 1985 is central, as this agreement has had such an intensifying impact on migratory movements. The migratory flows mentioned in this research include citizens of EU and Schengen countries residing in an EU country other than their country of birth. Admitting that it would have been an interesting addition, migratory movements crossing the borders of the EU as a whole (third-country nationals) are left aside. This is partly due the notion that the Schengen Agreement restricts such migratory movements, while strongly enabling within EU movements, but also due to the lack of data availability on migratory movements of non-EU citizens on a regional level. Moreover, this also prevents bias in the results, as irregular migratory flows, such as during the 2015 migration crisis, do not require to be accounted for.

1.5. Structure of the thesis

As becomes apparent, the research question focuses on two different, but connected, problems. First, migratory movements are entangled with the help of the migrant network theory. Specifically, the role of migrant integration in this theory is tested. Second, the economic benefits through a multiplier effect resulting from such migratory movements are studied, and again, what role migrant integration plays in this relationship. Therefore, the research question can be divided into five sub questions.

1. *To what extend does the stock of migrants in the receiving region influence migration flows?*
2. *To what extend does the migration flows to receiving regions result in economic growth?*
3. *How is the integration of migrants spatially distributed across Europe?*
4. *To what extend does the degree of migrant integration mediate the relationship between the stock of migrants and the flow of migrants?*
5. *To what extend does the degree of migrant integration mediate the relationship between the flow of migrants and economic growth?*

Question 1 and 2 attempt to establish the existence of the migrant network theory and the multiplier effect. These question act as baseline for the research and are aimed at understanding how the theories are translated to a regional scale, without including migrant integration yet. Question 3 is focused on creating this score. With this score the multiple

aspects of the degree of migrant integration are summarized into a single score, which is key to this research in order to make comparisons between regions. The first three questions act as the base for question 4 and 5. These questions attempt to assess the role the degree of migrant integration plays in the above-mentioned theories. Especially these questions are relevant for this research, as it attempts to entangle the importance of migrant integration on migratory movements and their economic benefits.

Chapter 2: Theoretical Framework

Europe knows a large variety of migratory patterns. Many different types of people, in different life stages and of different human capital levels, move to, from and within Europe. This variety of migratory movements is often explained by the theory of push and pull factors (Kanayo, et al., 2019). The idea is that the decision of migration is based on certain factors pushing people away from their current location and pulling them towards another location. Examples could be regional differences in health care, the quality of education, or job opportunities. However, many scholars have argued that the decision of making a migratory movement is more complex, as the distinction between which push or pull factors are determinant in the decision and what factors are merely side issues is blurred and that the theory has no eye for possible consequences for both regions (Skeldon, 2008). It is indeed likely that such a large and various flow of international migrants has a long list of positive and negative consequences for the country or region of destination and for the country or region of origin, and that these consequences may differ based on the possibilities of the migrants. Thus, to understand its effects and the role of migrant integration, it is important to understand these consequences and the processes behind these consequences first.

2.1. Chain Migration, Migrant Networks and Cultural Clash

In order to explain migration patterns, and its consequences, Haug (2008) emphasizes that the decision-making process contains an economic parameter and a sociological parameter. On the one hand the migratory movement is determined by economic possibilities being larger in the country of destination than in the country of origin. On the other hand, Haug argues that the migratory movement also contains the presence or establishment of a migration network. Such a network consists of interpersonal relations between the migrant itself and family and friends. From these social networks, both sides achieve information, assistance or patronage, reducing the costs and risks of a migratory movement. When the migration network is established, it grows larger as it connects multiple people who have something in common: namely the migratory movement to the specific country. By this way, it becomes easier for new migrants to finance their travel, find work or housing. Thus, such a migration networks sets chain migration in motion.

2.1.1 Chain Migration

The theory of chain migration entails an increasing flow of migrants towards a specific region based on the established migration network (MacDonald & MacDonald, 1964). This theory has been well-known in migration research for years (Eurenius, 2020). It is based on the interaction between a prospective migrants and a previously migrated person that the prospective migrant is familiar with through the migration network. By an exchange of contact, the prospective migrant learns of the opportunities in the country of destination. Moreover, the previously migrated person has constructed a network of opportunities, social relationships and social safety. The prospective migrants can make use of this network in order to ensure a successful migration.

Previous studies on chain migration have predominantly focused on the macro level, in which the relationship between the migrant stock in the receiving countries and the total number of migrants (flow) migrating to said countries (MacDonald and MacDonald, 1964; Hatton & Williamson, 2005; Carr & Tienda, 2012). Thus, this relationship entails that the inflow of migrants is higher when there is already a large group of migrant present in the receiving country.

2.1.2. Migrant Network Theory

Expanding on the chain migration theory by MacDonald & MacDonald (1964), and congruent with the sociologic parameter of the argument of Haug (2008) is the migration network theory, as theorized by, among others, Massey (1988). It explains migratory movements as a cumulative causation of different factors. Besides the economic factors and social and emotional factors, it also focuses on the historical connection between the origin and destination of the migrant. To be more specific, Massey (1988) defines such a migration network as a combination of interpersonal ties, connecting migrants, previously migrated individuals and non-migrants in both the country of origin as well as the country of destination through bonds of social capital.

Similar to the chain migration theory, these shared bonds ensure a smaller threshold for making a migratory movement, as familiar aspects of life are already present in the country of destination, as well as already settled migrants, who can provide support with the migratory movement of prospect migrants (Shia, 2021). However, what makes the migrant network theory different from the chain migration theory is independence from the macro socio-economic conditions that produced the migratory movements. At the base, migratory movements are driven by said socio-economic conditions. But when the migrant network that is established through those movements grows larger, it becomes an independent social structure. Such a social structure may act as an incentive itself for prospect migrants to move and may provide the necessary support in order to make said move. As this support is present, the structure of the migrant network may ensure that some people migrate who would have remained home otherwise.

The creation and presence of migrant network is therefore a form of location-specific social capital, which migrants are able to utilize during their movement. In the case of migrant networks, social capital entails a set of resources which are available to a migrant, which can be used during the migration, based on mutual trust and obligations, defined by social norms and expectations (Coleman, 1988). In other words, migrants are able to use the social capital established by their migrant network to facilitate a smooth transition from their country of origin to their country of destination. This can be in the form of a place of residence, a starting job, or the belonging to social group to which the migrant can fall back on.

2.1.3. Cultural Clash

As established in the above, migrant networks and their affiliated social capital act as an independent social structure defining migratory movements and its intensity. As mentioned already in the introduction, the existence and intensity of these movements are highly correlated to the growing discontent within the European Union (Ballas, 2013; Rodriquez-Pose, 2018; Dijkstra et al., 2019). This discontent finds its base at the cultural clash between

the native culture and the immigrants, their own poor socio-economic circumstances, and the possible governmental interventions that seem to benefit the "outsiders", rather than the native population.

Such cultural clashes are often characterized by the "us versus them" rhetoric adopted by populist right wing parties (Likic-Brboric et al., 2013). Multiple studies have shown that this rhetoric has led to an increasing anti-foreigner sentiment (Semyonov et al., 2006; de Vries et al., 2019). However, there appears to be a relation between the stock of migrants in an area and this anti-foreigner sentiment (Charitopoulou et al., 2018). The notion of a "pure" nation is important in this theory, as the native population ought to strive for a nation consisting out of merely native people. When a small number of migrants enters this population, the purity of the nation is in danger, thus racial prejudice increases. However, when the migrant population grows, this idea of a pure nation fades, as it is not achievable anymore, decreasing the racial prejudice. This theory suggests a combination of two main theories about anti-foreigner sentiment. First, the group threat theory entails positive linear relation between anti-foreigner sentiment and the stock of migrants (Charitopoulou et al., 2018). Thus, a higher number of migrants equals more anti-foreigner sentiment. Second, the intergroup contact theory suggests a negative linear relation between the stock of migrants and the anti-foreigner sentiment, as the likelihood of interaction increases when there are more migrants, decreasing the racial prejudices. Charitopoulou et al. (2018) combine both elements, creating a non-linear relationship between the stock of migrants and anti-foreigner sentiment. Here, the tension between cultural groups is largest when the minority group is small, but this tension decreases exponentially when the minority group grows.

Thus, combining both the migrant network theory, as well as the arguments about cultural clash, it can be established that due to the existence of migratory movements, migrant networks are formed that are independent from the primary socio-economic reasons of migration, and acts as a social structure defining migratory movements. The social capital of said network can be utilized in order to facilitate a smooth migration, simplifying the decision to migrate. Therefore, regions with higher shares of migrant populations are likely to attract more new migrants. Furthermore, as more and more migrants utilize said network, the cultural clash with the native population declines, as intergroup contact declines tensions between both populations.

2.2. Economic Impact of Migrants

Once the migrants have arrived in the country of destination through their migrant network, their entrance can have positive effects for the economy of the region (Brakman et al., 2020). First of all, migrants can act as a valuable source in order to fill the gap in the labour force that the native population leaves due to a falling fertility and an ageing population (OECD, 2019). As these gaps cannot be filled with the native population, immigrants can be used to fill these gaps in order to ensure economic growth. Second, there is a large pay gap between migrant populations and natives (Amo-Agyei, 2020). Due to this migrant pay gap, it is less expensive to hire migrants compared to natives, decreasing the labour costs for companies. However, the downside of this trend is that more and more often migrants are

the victim of precarious working conditions; conditions in which they are poorly paid, unprotected and working hours are highly irregular (See Benach et al., 2014). Nevertheless, both the filling of a gap in the labour force and lower labour costs lead to an increase in an economic injection in the region. How such an injection may lead to economic growth can be explained by the Keynesian multiplier effect.

2.2.1. Multiplier effect

The Keynesian multiplier effect, originally based on regional investments, entails that every form of external economic activity put into a regional economy works in an accumulative way based on input and output relations of different actors in the economy (Pike, 2017). Relating this to the subject of migration, the external economic activity equals the entrance of migrants, thus their capital, into the regional economy, and the financial benefits for the companies as discussed above.

The Keynesian multiplier effect can be grouped into four categories in terms of the directness of the effect (Kahn et al., 1995). First, there is a direct effect, which is caused by the entrance of the migrants into the regional economy. The wage earnings of these migrants are spent for consumption at regional firms, increasing their revenues. Furthermore, the firms that have hired the migrants also increase their spending. This effect, thus, entails the direct consumption by migrants and firms in the regional economy. This increased spending results in an indirect effect. As the demand for goods and services in the regional economy increased due to the entrance of migrants, regional firms use their excess revenue to increase their outputs in order to sustain the increased consumption. In other words, as demand shifts up, regional entrepreneurs are able to expand. Next, there is an induced effect, which entails that the further income and employment increases due to the primary economic injection. A higher amount of consumption leads to more production, which results in a second wave of consumption. Basically, every unit of increase in consumption leads to a higher amount of economic growth due to the induced effect. Lastly there is a catalytic effect, which can be related to the chain migration theory and the migrant network theory. This effect entails that the previously migrated people attract more migrants (and visitors), increasing consumption and revenue for firms in the regional economy, resulting in economic growth.

Figure 2 depicts this Keynesian multiplier effect for migration. It is visible that this effect is circular, meaning that every extra amount of money spent has a recurring, but diminishing, effect on the regional economy. Here, it can be seen that the entrance of migrations in the circle of the regional economy increases spending and consumption: the direct effect. As established in the above, the direct effect has an indirect effect which entails that the demand in the region increases and that the revenue for regional firms increases as well. To sustain the demand, the regional firms expand by hiring more people, which leads to an increased spending power in the region. This sets the process in motion again, but in diminishing returns, which entails the induced effect. Furthermore, the expansion of regional firms has an catalytic effect on external actors, as the region becomes more attractive for other migrants; the catalytic effect. Thus, Figure 2 depicts how a flow of migrants into a region has a positive effect on economic growth in the region.

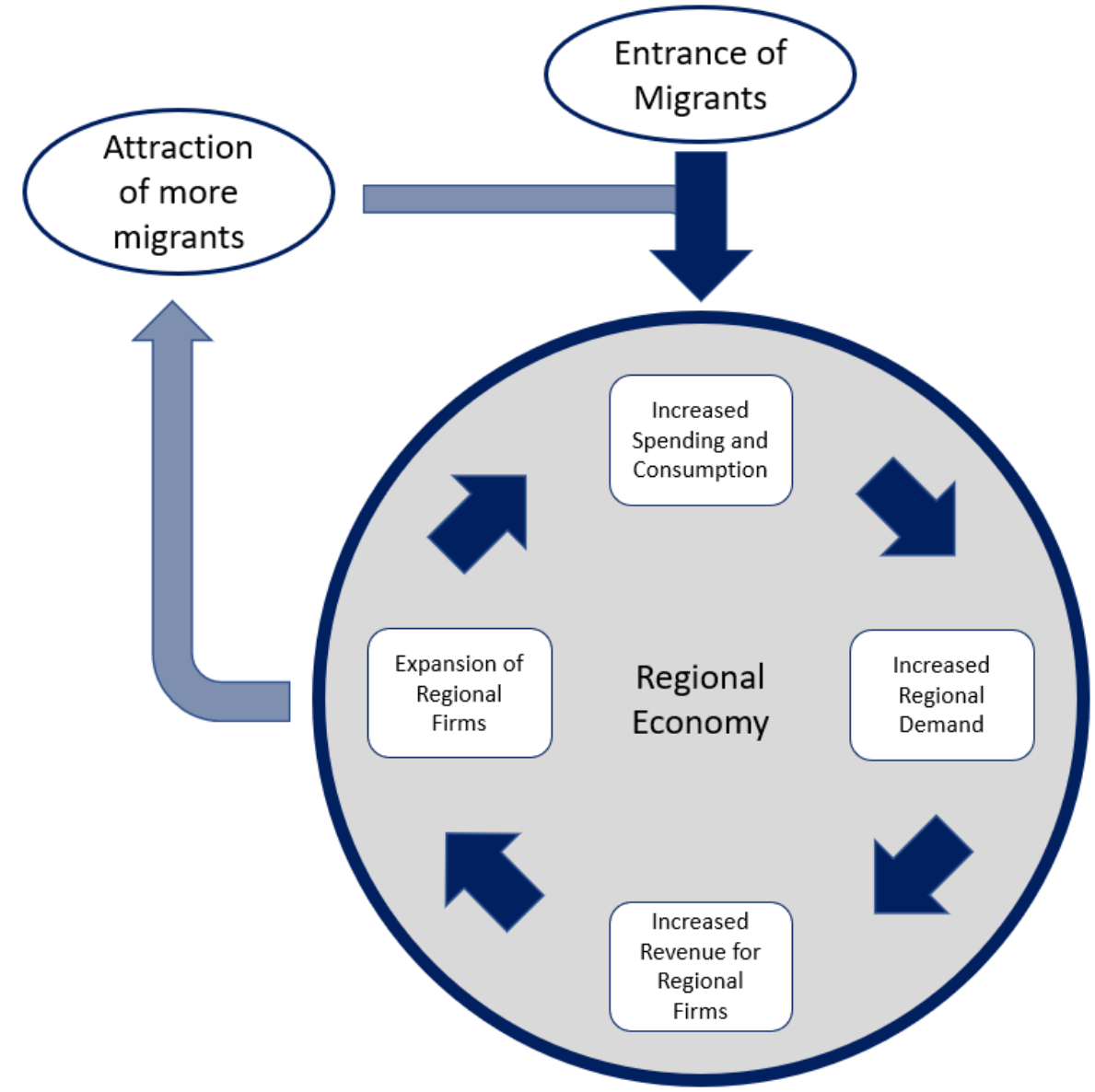

Figure 2: the Keynesian Multiplier Effect with migrants as economic injection.

Concluding this technical approach on how migratory movements benefit economic growth in a region, it shows that the entrance of migrants in a region increases the economic out put through participation in the labour force on the one hand, and personal consumption on the other hand. Multiple studies have been conducted focusing on this relationship and conclude that high shares of migrants increases not only the GDP of the region, but also the GDP per capita, and decreases the unemployment rate (González Gómez & Otero Giráldez, 2017; OECD, 2018; Serban et al., 2019). Through this, the standard of living of the general population in a region increases. However, simultaneously, it is very likely that migrants withhold part of their earnings, and thus consumption, in order to send remittances to their family and friends in the country of origin. Therefore, it can be assumed that the economic growth related to migration is not as optimal as it potentially could be (Borja, 2013).

2.2.2. Migrants and Entrepreneurship

Leaving the technical approach of the Keynesian Multiplier effect aside, migrants can also have more practical impact on economic growth. The OECD (2019) established that a large share of migrants becomes entrepreneur. Especially compared to the native population, the migrant population is more likely to become entrepreneur. Although this varies greatly across countries in the OECD due to the business environment in place and country-specific constraints regarding immigrants, it is important to notice the intent of becoming entrepreneur. Namely, there is a difference in intent between opportunity entrepreneurs and necessity entrepreneurs. An opportunity entrepreneur is a person actively pursuing an attractive business opportunity. Here, the entrepreneur is driven by their idea for an enterprise and aims for business growth and economic development, in order to make their living.

Contrary to the opportunity entrepreneur is the necessity entrepreneur. In this type of entrepreneurship, the individual has become entrepreneur as they are unable to find other suitable work. Although they prefer other work on payroll, in order to make a living, they decide to start an enterprise. As the OECD established, migrants are more likely to become a necessity entrepreneur, as they are more likely to experience problems on the labour market. Such problems include, but not limited to, discrimination, a mismatch in human capital, or a lack of knowledge on institutions that might prove helpful in the job seeking process (Landolt & Thieme, 2018).

No matter the intent of entrepreneurship, multiple studies have proven that a high degree of entrepreneurship in a region is beneficial for economic growth (Acs et al., 2015). These effects can be grouped into two effects. A direct effect, in which the entrepreneurship creates employment for either the migrant or possible employees, and an indirect effect. This indirect effect consists of knowledge spill-overs and an increased competition in the region. This has as a result that entrepreneurs feel the need to distinguish their enterprise from the other enterprises. This can occur in forms of new products or more efficient production techniques. Eventually, the need to outcompete the competition drives entrepreneurs to innovation, which is beneficial for economic growth.

2.3. The Process of Integration

To conclude and build further on the above, it has become apparent that migrant networks are created through migratory flows. Such a network acts as a social structure that influences migratory movements independently, rather than the effect that insinuated the movement in the first place. Migrants are able to utilize this structure in order to lighten the burden of their migration. Simultaneously, the flow of migrants into a region is beneficial for its economy, as migrant populations are a valuable source in order to fill gaps in the labour force left by an ageing native population, and the consumption of their wages increases the economic output of the regional economy. However, prerequisite of both to occur is a successful integration into the country of destination and is strongly influenced by the type of policy the country of destination has adopted regarding migration (Huddleston et al., 2013; Barbulescu et al., 2019).

Many researchers have studies what defines a successful migrant integration and were able to distinguish multiple broad dimensions.

2.3.1. Dimensions of Migrant Integration

A commonly used division of dimensions comes from Penninx & Garcés-Mascareñas (2019). In their theory, dimensions of migrant integration have been divided into the cultural dimension, the legal-political dimension, and the socio-economic dimension. The cultural-religious dimension entails the cultural perceptions and practices of the migrants, the natives, the differences between both, and how both groups react to these differences and diversity. On a spectrum of many possibilities, two extremes may occur regarding migrant integration. On the one hand, the new diversity of the migrants is rejected, leading to the requirement of migrants adapting into the mono-cultural (and often mono-religious) society of the natives. On the other hand, the new diversity is accepted into a pluralistic societal system in which all diversities are accepted on an equal level. In between, many other forms of cultural-religious integration are possible, leading to different outcomes either in public or private live.

Second, the legal-political dimension is focused on whether the status of migrants is regarded as full member of the political community (Penninx & Garcés-Mascareñas, 2019). Again, two extremes can be identified. On the one hand, there is the irregular migrant that is not part of the country of destination, but merely is there, for example for work. On the other hand, there are the migrants who have become a national citizen of the country of destination. The EU Schengen Agreement is an example of an in between situation. Although EU citizens residing in another EU country than their country of birth are migrants, they have more legal rights than for example migrants from outside of the EU.

Lastly, the socio-economic dimension focuses on the social and economic position of the migrants. This dimension is most commonly used, as it provides useful and measurable inputs for politics (Penninx & Garcés-Mascareñas, 2019). In this dimension, a comparison between migrant groups and the native population is made regarding their socio-economic status, and their place in society. Important indicators, among others, are employment, education, health status. Factors regarding migrants' knowledge (and usage) of access to institutional facilities for education, health care, housing, and finding work are also included. However, this dimension is heavily subject to influences of the cultural-religious dimension and the legal-political dimension, as the socio-economic circumstances of migrants are strongly related to the degree of legal rights, and whether they are accepted into society.

Other researchers constructed similar dimensions regarding migrant integration. For example, Esser (2001) distinguishes four dimensions: culturation, positioning, interaction, and identification. These dimensions roughly correspond with the distinction discussed above. However, in the identification dimension, Esser also touched upon the degree to which migrants adopt an emotional connection with the country of destination. Heath & Schneider (2016) continued on this approach in a more contemporary setting, adding civic engagement as dimension for migrant integration, which they argue, is key for long-term integration, especially considering second-generation migrants.

2.3.2. Zaragoza Integration Indicators

In order to classify the intangible dimensions of migrant integration, the European Commission attempted to identify a set of key indicators. According to the EU ministers responsible of integration, the need for said indicators was high. In order to create adequate policy, clear goals and evaluation mechanism were necessary. Such indicators should be measured similarly in each country and be universal across the EU. By doing so, they would prove most useful in monitoring the situation of immigrants in EU countries and enhance the comparability between EU countries (European Commission, 2010). Therefore, in 2010, the Zaragoza Indicators on Migrant Integration were created, based on EU objectives regarding migration, or on recent research regarding the integration of migrants (Huddleston et al., 2013).

The indicators can be subdivided into four overarching themes. First, the employment indicators are key for identifying general employment targets for policy-makers on all different levels. Achieving a labour force participation rate of 75% of all people between 20 and 64 is one of the key objectives of the EU 'inclusive growth' target (European Commission, 2017). The European Union especially targets the unemployment of migrants as a huge issue within the EU, as these rates are considerably higher for first generation migrants and their offspring.

Secondly, the education indicators form an important parameter for migrant integration. There are large differences between the native population and the migrant population in educational attainment and achievements. For example, the number of early school-leavers is considerably higher among first generation migrants and their offspring, and the performance on mathematics, language and reading is considerably lower, compared to the native population (Nusche, 2009).

The third overarching theme is based on the social inclusion of the migrants. As migrants have a higher risk of poverty or social exclusion and generally have a lower income and job security, these populations are relatively more vulnerable than the native population. Studies have shown that migrants experience higher rates of poverty, lower wages, and often live in insecure and overpopulated housing (Bosswick et al., 2009).

Lastly, Huddleston et al. (2013) cover the notion of active citizenship. This notion entails parameters on the rights, willingness and intent for political participation. Important parameters for this are for example, the share of migrants acquiring permanent citizenship, or permanent or long-term residence. However, this notion consist of an interaction between both the nation-state as the migrant population. The nation-state provides a framework of equal rights. However, studies have shown that migrants lacked the willingness to pick up on those rights and use them, worsening their social, political and economic circumstances (Huddleson et al., 2013).

2.4. Conceptual Model

The theoretical framework can be conceptualized in a model (Figure 3), consisting of two processes. The first process focuses on the migrant network theory, and assumes that when a large number of migrants are present in an area, the flow of migrants towards that area is

high as well. Consistent with the migrant network theory, the already present migrants can provide help of all sorts to the prospect migrants in order to smoothen their transition. Important to this relationship, however, is the role of migrant integration. This aspect influences the strength of the migrant network and, therefore, the amount of help that can be provided for prospect migrants.

The second process of the model focuses on the economic injection in the regional economy that the flow of migrants provides. The model assumes that the flow of migrants into a region leads to an increase in GDP per capita. This is due to the fact that migrants form a vital part in labour market economies, as they can provide relatively cheaper labour and fill the gap left by an ageing population. Due to this, companies will be able to grow. This, together with the local consumption of migrants, form an economic injection which, through the multiplier effect will increase the average standard of living in a region. Again, important to this relationship is the degree in which migrants are able to integrate in society, as a successful migration enables the migrants to prosper economically.

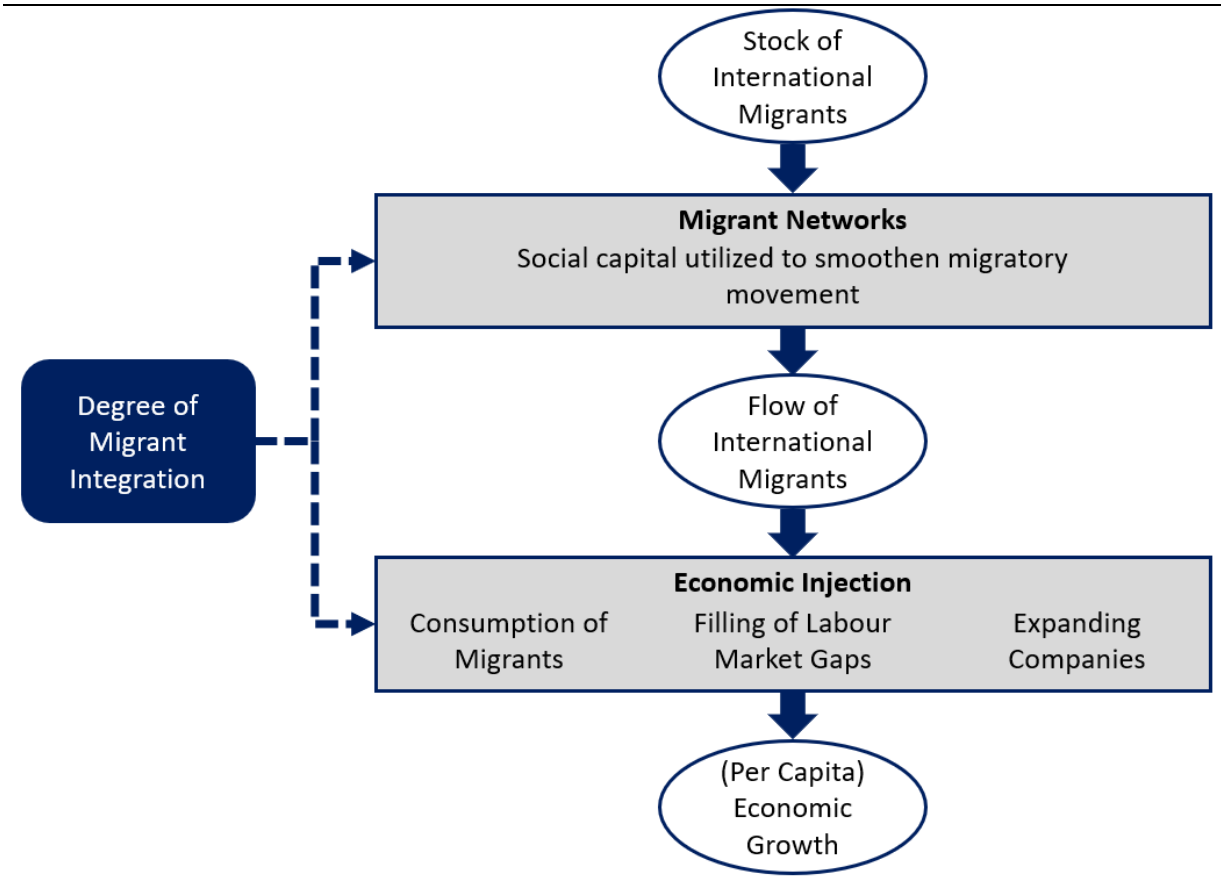

Figure 3: Conceptual model on the role of migrant integration on the functioning of the migrant network theory and the economic injection following from migratory movements.

2.5. Hypotheses

Considering the conceptual model, it is to be expected that there is a relation between the stock of migrants in a region and the flow of migrants to a region, based on the migrant

network theory, and that there is a relation between the flow of migrants to a region and the economic growth in a region, based on the multiplier effect. Furthermore, both relationships are expected to be influenced by the degree in which migrants are able to integrate into the region. This is due to the assumptions that, when previously migrated individuals integrated well, their capabilities to support prospect migrants increase, and that their capabilities to contribute to the economy of the host society increase. Therefore, two main hypotheses have been formulated based on conceptual model A and B. Hypothesis A is structured in twofold and is related to the migrant network theory and its relation with migrant integration.

- *Hypothesis A1: The stock of migrants in a region is positively related with the flow of international migrants to the region over the years that follow.*
- *Hypothesis A2: The degree of migrant integration takes a positively mediating role in the migrant network theory.*

Hypothesis B is structured in twofold and is related to the multiplier effect and its relation with migrant integration.

- *Hypothesis B1: The flow of international migrants to a region is positively related with the economic growth in the region over the years that follow.*
- *Hypothesis B2: The degree of migrant integration takes a positively mediating role in the multiplier effect.*

Chapter 3: Methodology

As is established in the previous section, the integration of migrants is a vital component of migration and its success plays an important role in the establishment of migrant networks and economic growth. To assess this importance, the impact of said integration will be analysed. This section will cover the data selection and methodology of this analysis. It is important to state that this research will take a regional approach across Europe, thus the unit of measure will be NUTS 2 regions. The methodology is structured in threefold. First, the operationalisation of the concepts will be provided. Then, the background of the dataset used will be given. Lastly, the research methods will be elaborated upon.

3.1. Operationalisation & Data Collection

In order to conduct this research, multiple concepts require to be operationalised. First of all, are the migratory movements encouraged by migrant networks across Europe. This concept is based on a previously migrated population that provides a network for prospective migrants which helps in their migratory movement. Therefore, this concept can be operationalised using the stock of international migrants in a region at a certain point in time depicting the previously migrated population and the flow of international migrants to a region within a certain time frame, who are attracted to the region due to the network created by the stock of international migrants. The second concept is the multiplier effect and its economic benefits. This concept entails an injection into a regional economy which leads to an increase in economic output. To operationalise this concept, the flow of international migrants into a region at a certain point in time is used in order to depict said economic injection. The economic output is depicted by the annual average increase of GDP per capita within a certain time frame. Here, the idea is that the flow of migrants towards a region depicts an economic injection which ensures economic growth. GDP per Capita is chosen in order to ease the comparison between regions. Lastly, this research includes the effect of the integration of migrants, which is based on the Zaragoza Indicators of Migrant Integration, and depicts how successful migrants are able to integrate in the region of destination.

Multiple datasets have to be combined to operationalise all variables. Key in this is selecting data in the same level. For this research, the NUTS 2 level of the European Union and neighbouring countries is used. The first dataset used is the "Population change - Demographic balance and crude rates at regional level (NUTS 0, 1, 2, and 3) (demo_r_gind3)" dataset from Eurostat (2020). This dataset contains population statistics covering a significant part of Europe. From this dataset the variable "International Migrant Stock" and the variable "International Migrant Flow" can be derived. If selected correctly, these variables contain the number of EU citizens living in or migrating to an other EU country than their country of birth. Both variables are available on a NUTS 2 level. Secondly, this research makes use of the "Regional Statistics" data set of Eurostat (Eurostat, 2021). This dataset accumulates regional data on a NUTS 1, 2, and 3 level, such as the GDP per capita growth required for this research. Lastly, this research utilizes the Zaragoza Indicators of Migrant Integration of Eurostat. These

indicators cover a wide variety of variables established as parameters in the Zaragoza Declaration of 2010 (European Commission, 2010). This database is primarily focused on the migrant population. In conclusion, this research uses four main variables in its analysis; the stock of international migrants, the flow of international migrants, the growth in GDP per Capita, and the degree of migrant integration. These variables are summarized in Table 1.

Table 1: Overview of the variables, its definitions and sources

VARIABLE	DEFINITION	DATA SOURCE
INTERNATIONAL MIGRANT STOCK	Number of EU citizens living in an EU country other than their country of birth per NUTS 2 region in 2015	Population change - Demographic balance and crude rates at regional level (NUTS 0, 1, 2, and 3) (demo_r_gind3) (Eurostat, 2022a)
NET INTERNATIONAL MIGRANT FLOW	(Annual average) Net number of EU citizens migrating to an EU country other than their country of birth per NUTS 2 region (between 2015 and 2019)	Population change - Demographic balance and crude rates at regional level (NUTS 0, 1, 2, and 3) (demo_r_gind3) (Eurostat, 2022a)
ECONOMIC GROWTH	Annual average growth of GDP per Capita per NUTS 2 region between 2015 and 2019	Regional Statistics (Eurostat, 2022b)
MIGRANT INTEGRATION	Indicators on the degree in which migrants are able to integrate per NUTS 2 region	"Zaragoza" Migrant Integration Indicators (Eurostat, 2022c)

Based on the data availability, these variables in total form a study area of the EU27, Norway, and Iceland on a NUTS 2 level, representing the EU and Schengen zone. Unfortunately, Schengen member state Switzerland had to be left out of the analysis, due to a lack of data availability. Furthermore, it must be noted that, although they are included in the analysis, Bulgaria, Croatia, and Romania are not member of the Schengen Agreement. However, said countries are member states of the EU, and therefore, these countries are guided by EU legislation on migration and integration. Thus, in total, this dataset provides 240 NUTS 2 regions (cases) spread over 29 countries.

3.2. Control Variables

In order to construct the most optimal models, several control variables have been included, which are selected based on academic literature. For the first model, focusing on the migrant network theory, these are the total population in the region, its GDP per Capita, its employment rate, and the dependency ratio in the region. Following the work by Arbour et al. (2017), migratory movements are mostly driven by opportunities. Therefore, migrants will migrate to regions where the opportunities are the largest. Often these regions are urban

areas. Here the population is large, and the GDP per capita is high. This has resulted in a large need for employment and many working individuals. Therefore, this selection of control variables has been chosen. It must be admitted for example that variables representing the number of vacancies could have been an interesting addition as well. However, this is not included due to a lack of data availability on the right level.

For the second model, focusing on the multiplier effect, the control variables, again, consist of the total population in the region, its GDP per Capita, its employment rate, the dependency ratio in the region, and also the average purchasing power of an individual in the region. These variables have been added following the reasoning of Brakman et al. (2020). They argue that, in general, highly populated regions with many employed individuals and few dependent people experience the largest economic growth. Such regions are represented by the variables on population, employment rate, and the dependency ratio. Furthermore, due to the distribution of European funding through the cohesion fund, social fund and the regional development fund, regions with lower GDP per capita and lower purchasing power have experienced high levels of economic growth (Pinho et al., 2015). Therefore, variables depicting these indicators have been added as well. It would have been most interesting to include fixtures of these fundings as well. However, such data was unavailable on the correct level.

3.3. Data Analysis

The analytical part of this research contains three sections. The first section acts as the base of the research and simply measures the effects of the theories posed in section 3.6; namely the migrant network theory and the multiplier effect. In order to maximize the estimation power of the regression, control variables have been added to both models. The second section uses a spatial analysis to determine in what regions migrants integrate the best. The last section assesses the mediating impact of said integration of migrants in the relationships of both theories.

3.3.1. Linear Regressions

In order to assess the impact of migrant integration on the migrant network theory and the multiplier effect, it is first key to assess the relationships between the stock of international migrants and the flow of international migrants and the relationship between the flow of international migrants and the growth in GDP per Capita. Therefore, the analysis has been divided into two linear regression models. Model A assesses the migrant network theory. Corresponding with the theoretical framework, Model A takes the annual average flow of international migrants between 2015 and 2019 as dependent variable and the stock of international migrants in 2015 as independent variable. The equation and analysis scheme (Figure 4), including several control variables, look as follows:

$$Y_{(A)} = \alpha_{(A)} + \beta X1_{(A)} + \gamma X2_{(A)} + \varepsilon_{(A)}$$

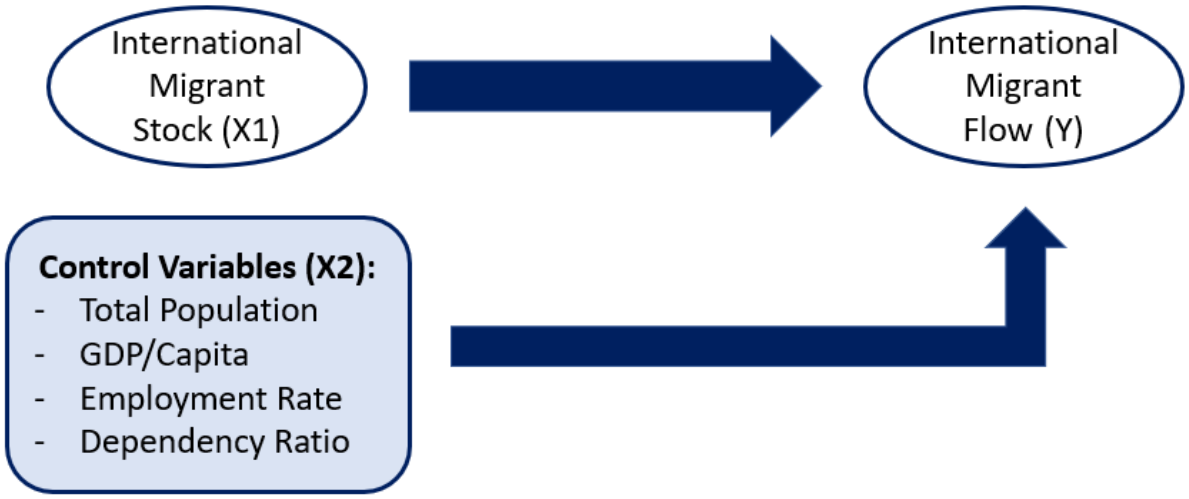

Figure 4: Data Analysis Scheme for the single linear regression of Model A: the Chain Migration Theory.

In this model, $Y_{(A)}$ depicts the annual average flow of international migrants to a NUTS 2 region between 2015 and 2019. The constant is depicted by $\alpha_{(A)}$. Independent variable $X1_{(A)}$ is a logarithm of the stock of international migrants in a NUTS 2 region in 2015. This variable is transformed in order to ensure linearity. $X2_{(A)}$ includes a matrix of control variables in order to increase goodness of fit of the model. These variables are included in the model, but held constant, as this analysis has no interest in their explanatory effects. The control variables are the total population of a NUTS 2 region in 2015, the GDP per Capita per NUTS 2 region in 2015, and the employment rate per NUTS 2 region in 2015. These variables are added, as they might increase the attractiveness of a region for international migrants. Lastly, the error term is depicted by $\varepsilon_{(A)}$.

Model B focuses on the multiplier effect of migration. Again, corresponding with the theoretical framework, Model B takes the annual average Growth in GDP per Capita per NUTS 2 region between 2015 and 2019 as dependent variable, and the flow of international migrants per NUTS 2 region in 2015 as independent variable. The equation and analysis scheme (Figure 5) look as follows:

$$Y_{(B)} = \alpha_{(B)} + \beta\, X1_{(B)} + \gamma\, X2_{(B)} + \varepsilon_{(B)}$$

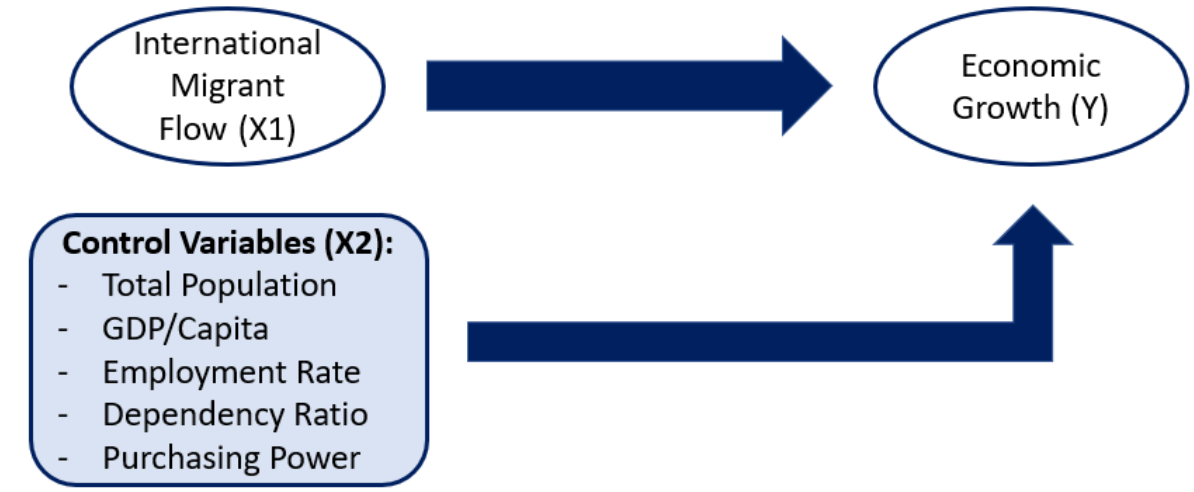

Figure 5: Data Analysis Scheme for the single linear regression of Model B: Multiplier Effect of Migration.

In Model B, $Y_{(B)}$ depicts the dependent variable Growth in GDP per Capita between 2015 and 2019. The constant is depicted by $\alpha_{(B)}$. $X1_{(B)}$ entails the independent variable: the flow of international migrants to a NUTS 2 region in 2015. Again, a matrix of control variables is added to increase the goodness of fit of the model, depicted by $X2_{(B)}$. The same variables as in Model A are used, as these variables are likely to contribute to economic growth as well. The error term of Model B is depicted by $\varepsilon_{(B)}$. Furthermore, for both Model A as well as Model B, country-fixed effects are added, as each European country acts as an autonomous entity, creating their own set of circumstances that might affect the relationship posed above differently.

3.3.2. Suitability Analysis

In order to create a score which evaluates the degree migrants are able to integrate in their society, a *suitability analysis* will be performed. In this analysis, multiple variables are used in a weighted overlay which together form this new score. By doing so, a score is created depicting the actual average situation migrants are situated in after making their migratory movement. Although other statistical methods, such as Principal Component Analysis or factor Analysis, could be used as well, this research follows the novelty of the method adopted by Bell et al. (2007). The eight different dimensions that are transformed to one singular dimension are retrieved from the Zaragoza Indicators of Migrant Integration and are summarized in Table 2. Four different components can be distinguished, focusing on the employment status of the migrant (Migrant Unemployment Rate and Migrant Employment Rate), the education of migrants (Share of Migrants with Lower Education and NEET Rate), the Social Inclusion of Migrants (At-Risk-Of-Poverty Rate and the Housing Overburden Rate) and the Active Citizenship of Migrants (Long-term Residence Rate and Share of Migrants Acquiring Citizenship. As the NEET Rate and the Housing Overburden Rate were not available on a NUTS 2 level, the country-level statistics have been used to capture these indicators.

Table 2: Summary of the variables from the Zaragoza Indicators of Migrant Integration

NAME COMPONENT	VARIABLE	PARAMETER	DESCRIPTION
EMPLOYMENT	Unemployment Rate	Unemployment by sex, age, country of birth and NUTS 2 regions	Share of migrants that are unemployed
	Employment Rate	Employment rates by sex, age, educational attainment level, country of birth and NUTS 2 regions	Share of migrants that are employed
EDUCATION	Lower Education Rate	Population by educational attainment level, sex, age, country of birth and degree of urbanisation (%)	Share of Migrants with Less than primary, primary and lower secondary education (levels 0-2)
	NEET Rate	Young people neither in employment nor in education and training by sex, age, citizenship and NUTS 2 regions (NEET rates)	Share of 15-24 year old migrants that are neither in employment nor in education and training (NEET)
SOCIAL INCLUSION	Housing Overburden Rate	Housing cost overburden rate by age, sex and broad group of citizenship (total population aged 18 and over)	Share of migrants experiencing overburden of housing costs
	Poverty Rate	People at risk of poverty or social exclusion by broad group of country of birth (population aged 18 and over)	Share of migrants at risk of poverty or social exclusion
ACTIVE CITIZENSHIP	Long-term Residence Rate	Long-term residents among all non-EU citizens holding residence permits by citizenship on 31 December (%)	Share of migrants holding a long-term residence permit
	Citizenship Rate	Residents who acquired citizenship as a share of resident non-citizens by former citizenship and sex	Share of migrants acquiring permanent citizenship

In order to start the *Suitability Analysis*, the data file containing the variables per NUTS 2 region from Table 2 are joined with the NUTS 2 map. After this join, every NUTS 2 region contains the correct value of each variable. Next, from each variable a raster layer is created using the Polygon to Raster tool. However, the type of data created from this is float data, which makes a suitability analysis impossible, as integer data is needed. This is easily solved by transforming the values to integer using the Int tool.

Thereafter, the values of the variables have to be classified correctly using the reclassify tool. This new classification should correspond with the impact they have on the integration of migrants, from a theoretical point of view. For example, when a NUTS 2 region experiences a small share of migrants being overburdened by housing costs, this is positive for their integration, while little migrants are employed in a NUTS 2 region, this is negative for their integration. Therefore, a classification of 1 to 100 is used in order to depict this effect, in which 1 entails a negative or little impact on migrant integration and 100 entails a positive or beneficial impact on migrant integration. All reclassifications are summarized in Table 3. A scale from 1 to 100 is used in order to ensure that no contingent NUTS 2 regions would end up containing similar values, which would make the reconnection of the newly created values to their corresponding NUTS 2 regions difficult. In other words, this would result in 2 or more NUTS 2 regions to merge.

Table 3: Reclassification of the variables to correspond with the impact they have on migrant integration.

PARAMETER	LOW VALUE RECLASSIFIED AS:	HIGH VALUE RECLASSIFIED AS:
MIGRANT UNEMPLOYMENT	100	1
MIGRANT EMPLOYMENT,	1	100
LOWER EDUCATION RATE AMONG MIGRANTS,	100	1
NEETS AMONG MIGRANTS,	100	1
AT-RISK-OF-POVERTY RATE AMONG MIGRANTS,	100	1
SHARE OF MIGRANTS ACQUIRING CITIZENSHIP,	1	100
SHARE OF MIGRANTS WITH LONG-TERM RESIDENCE PERMIT	1	100
SHARE OF MIGRANTS WITH OVERBURDEN ON HOUSING	100	1

The next step is conducting the suitability analysis using the weighted sum of all reclassified values. The output of this tool is a raster file showing the degree of migrant integration per region across Europe. However, to utilize this score, its values per region have to be reconnected to their corresponding NUTS 2 region. To do this, the raster file has to be transformed to integer again using the Int tool. Next, the raster is transformed to polygon areas, in which all contingent raster cells form a polygon. As a scale of 1 to 100 is used, the raster is relatively detailed, resulting in the form of the NUTS 2 areas which were used as starting point.

The newly created polygons are transformed to points, using the Feature to Point tool and are spatially joined with the same NUTS 2 file used as starting point. Each point has been given the NUTS 2 code they are located in. However, the raster to polygon has also created a polygon of every single island in the EU, resulting in a huge list of areas. Therefore, the delete identical tool is used to delete all these islands by duplicate NUTS region, resulting in one point per

NUTS 2 region. Finally, these points are spatially joined with the NUTS 2 file to connect each newly created value with the corresponding NUTS 2 region; the degree of migrant integration per NUTS 2 region. The flowchart visualizing this analysis is depicted in Figure 6.

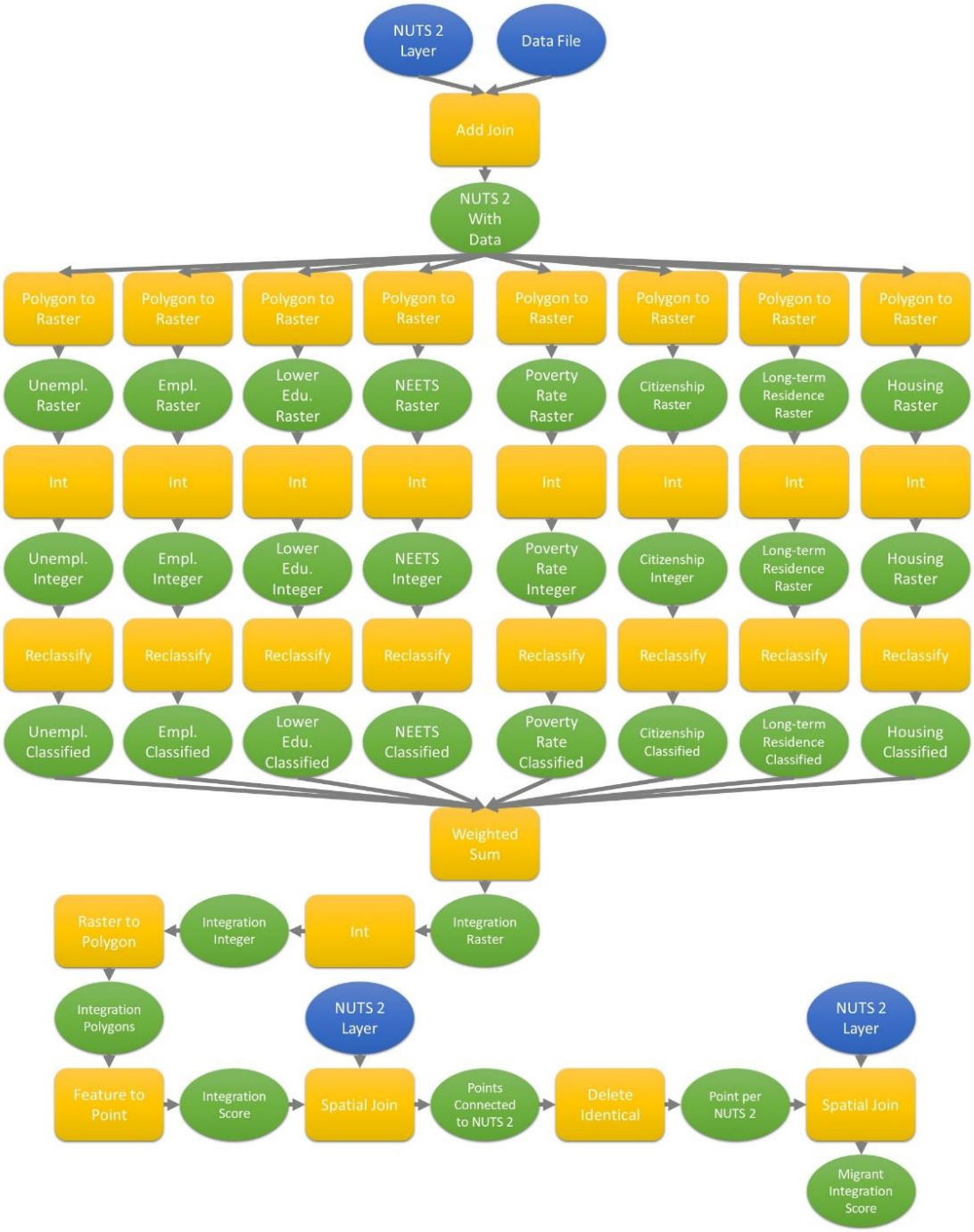

Figure 6: Flowchart visualizing the suitability analysis that is used to create the degree of migrant integration per NUTS 2 region.

3.3.3. Mediation Analysis

The third part of the analysis is a mediation analysis, again divided into two models. Model A focuses on the role that the degree of integration of international migrants plays in the

migrant network theory, while Model B focuses on the role of the integration of international migrants in the multiplier effect of migration. By doing so, one is able to gain deeper insights in whether the possibilities for international migrants impact the migratory movements within Europe, and whether these possibilities lead to economic growth. Therefore, the score created in the suitability analysis in part 2 (Section 4.3.2.) is used as mediating variable.

The idea of a mediation analysis is to find the underlying mechanism between the dependent and independent variable, indicated by the dashed arrows in Figure 7 and Figure 8. Thus, for Model A, the mediation analysis attempts to analyse the underlying mechanism of the relation between the flow and stock of international migrants, and for Model B the underlying mechanism of the relation between the growth in GDP per Capita and the flow of international migrants. In other words, does a successful migrant integration explain the mechanism behind the chain migration effect, and does a successful migrant integration explain the mechanism behind a larger economic growth caused by the multiplier effect?

In order to do so, a mediation analysis is preferred above a moderation analysis, following the reason of Baron & Kenny (1986). This is due to the problem statement of this research. It attempts to assess the role of migrant integration in the mechanism behind the relationships between (1) the stock of international migrants and the flow of international migrants, and (2) the flow of international migrants and the annual average economic growth. A mediation analysis fits better to this question as it attempts to explain how and why the relationship occurs, rather than when the relationship occurs (Baron & Kenny, 1986).

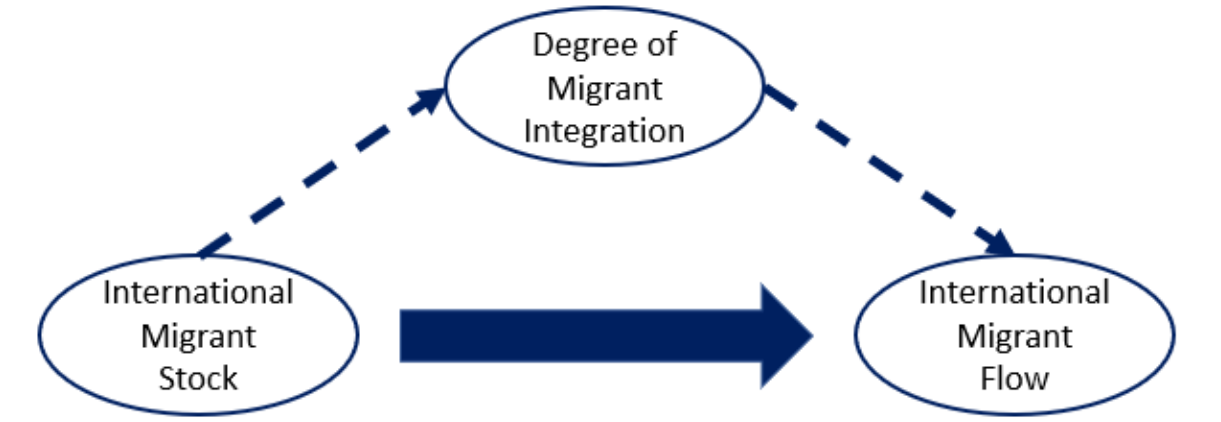

Figure 7: Data Analysis Scheme for the mediation analysis on the single linear regression of Model A: the Chain Migration Theory.

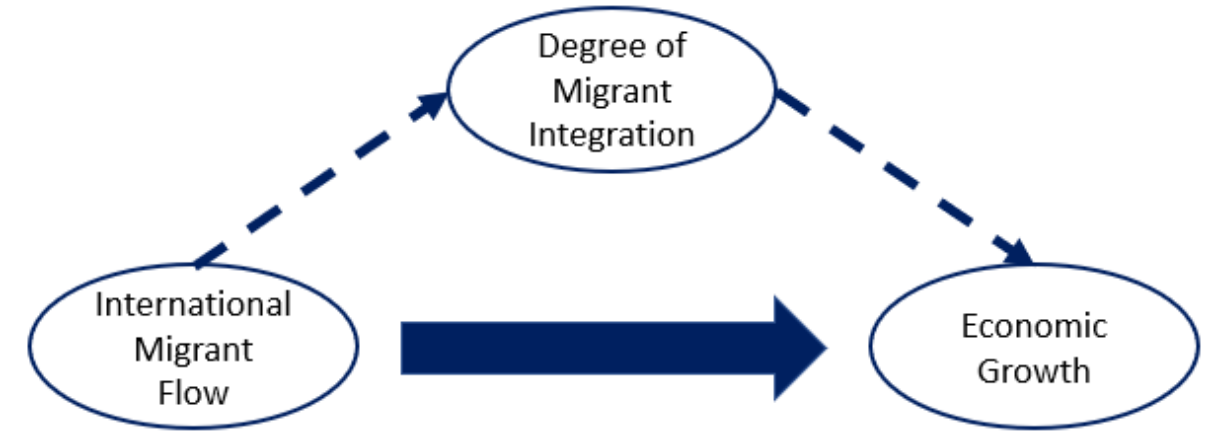

Figure 8: Data Analysis Scheme for the mediation analysis on the single linear regression of Model B: the Multiplier Effect of Migration

The Akaike Information Criterion (Akaike, 1977) and the Bayesian Information Criterion (Schwartz et al., 1978) are used to determine what model is best and thus, what variables mediate the relationship posed above. The AIC is calculated by the following equation:

$$AIC = n \times LOG\left(\frac{SSE}{n}\right) + 2(k+1)$$

The BIC is calculated by the following equation:

$$BIC = n \times LOG\left(\frac{SSE}{n}\right) + (k+1) \times LOG(n)$$

In both equations is n the total number of cases, SSE is the Sum of Squared Errors, or Sum of Squared Residuals, and k is the total number of parameters taken into account. The difference between both is that the BIC has a different penalty for the number of parameters in the model. However, the AIC and the BIC are closely related to each other and both estimate the relative quality of a statistical model. What the criteria do, is estimating how much information is lost by adding a new variable into a model. This is the model in which the AIC and the BIC are the lowest.

Chapter 4: Results

Chapter 5 will focus on the results of the three parts of the analysis, as described in the methodology in Chapter 4. First, the geographical distribution of the three main variables of both models will be discussed, namely the stock of international migrants, the flow of international migrants, and the growth in GDP per Capita. Thereafter, the results of the regressions of Model A and Model B will be presented. Then, the new variable, the degree of migrant integration will be introduced, created with a suitability analysis. Lastly, the results of the mediation analyses for Model A and Model B will be presented.

4.1. Geographical Distribution

This section focuses on the geographical distribution of the most important variables of this research; namely the stock of international migrants, the flow of international migrants and the annual average growth in GDP per capita between 2015 and 2019. Figure 9 shows the stock of international migrants of 2015 across Europe. It is visible that the distribution of this variable is uneven across Europe. The stock is higher in the countries in central and western Europe, while the northern and the eastern have fewer international migrants. Furthermore, the Figure shows that differences within countries are also large. Regions with relatively large cities, such as Cologne and Munich in Germany, Milan in Italy, Barcelona and Madrid in Spain, and Paris in France, show a relatively large stock of international migrants, while the stock is considerably lower in more rural areas.

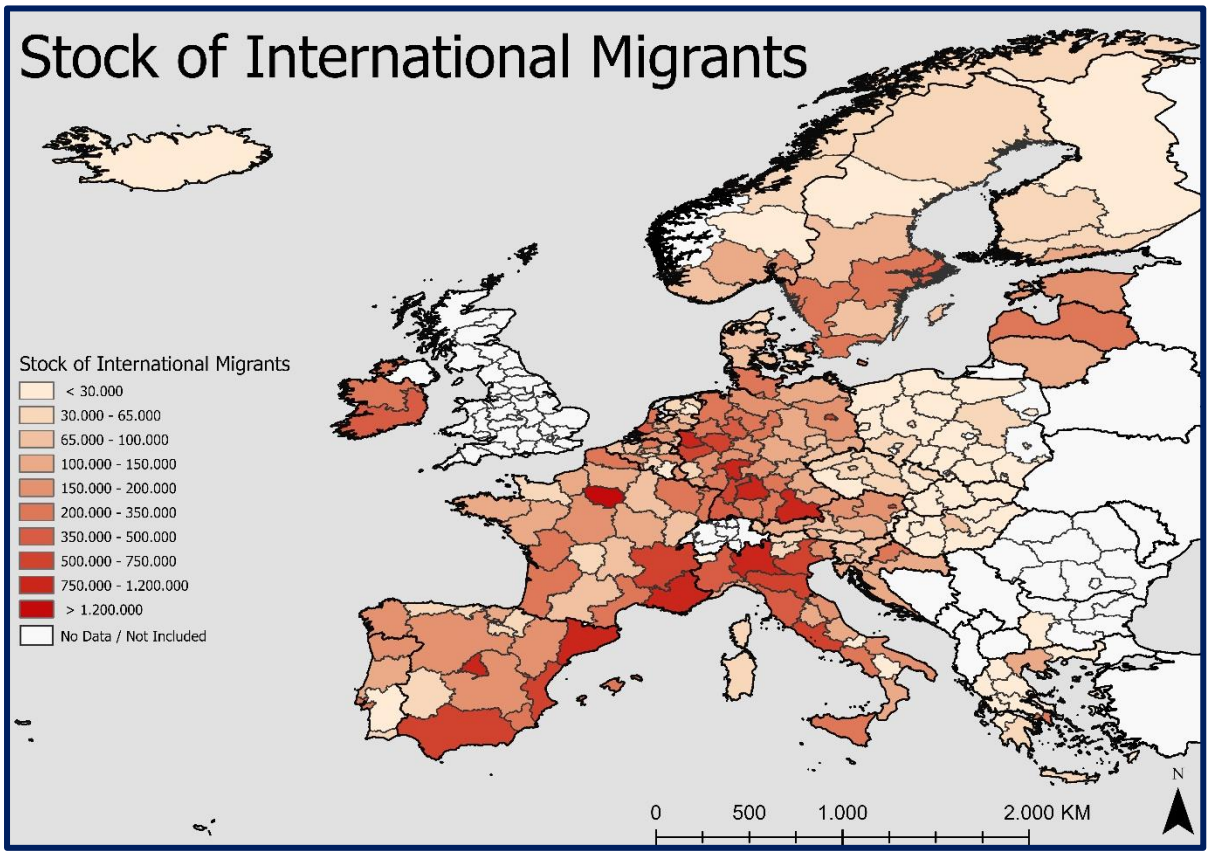

Figure 9: Stock of international migrants in Europe in 2015.

Figure 10 depicts the annual average flow of international migrants in Europe between 2015 and 2019. It shows that Germany, the Netherlands, Austria and the Scandinavian countries experience a positive flow of international migrants. Similar trends are detectable in the north of Italy and the south west of France. Contrary, Eastern European countries show a negative flow of international migrants. The same holds for large parts of Spain, Northern France and Southern Italy. However, regions containing large cities, such as Madrid, Sofia and Warsaw experience a more positive flow of international migrants.

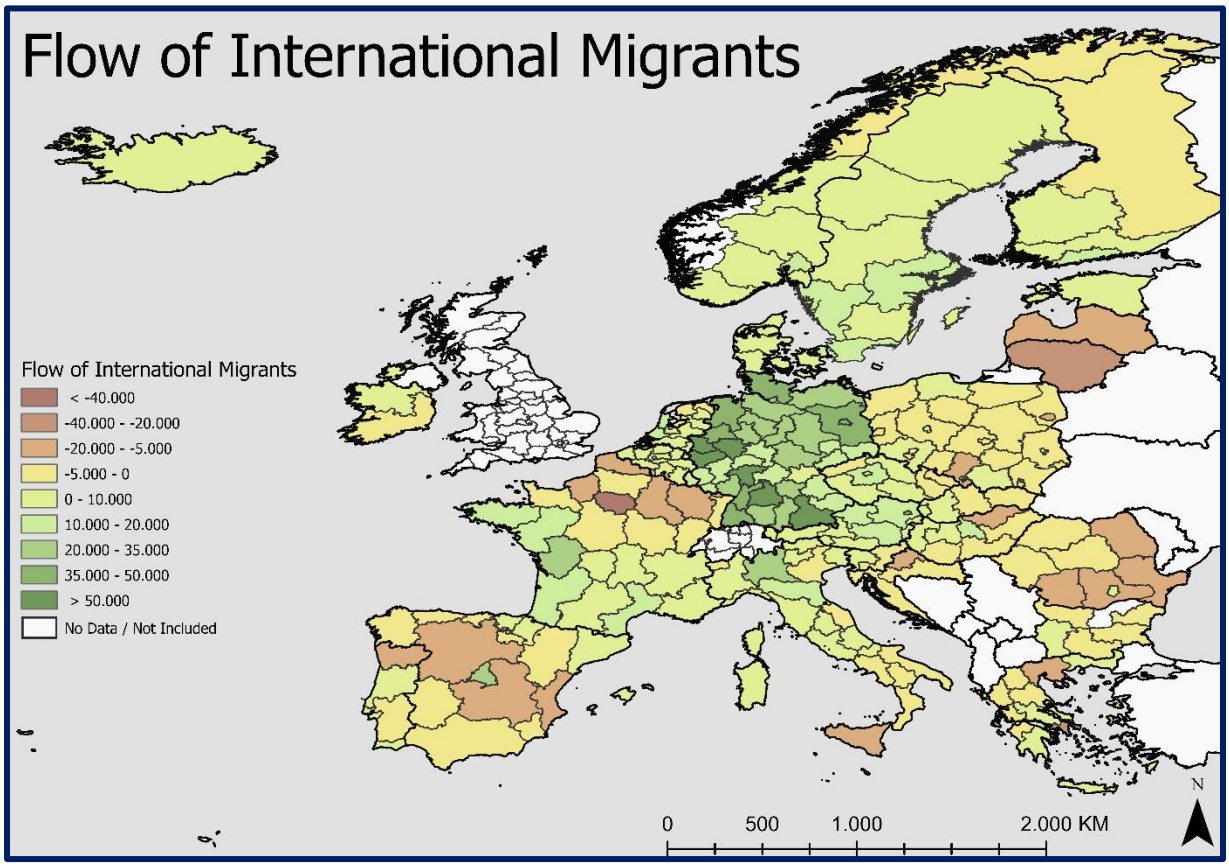

Figure 10: Flow of international migrants in Europe in 2015

Lastly, Figure 11 shows the annual average growth in GDP per Capita between 2015 and 2019. It is visible that Europe is extremely dispersed regarding economic growth. On the one hand, less wealthy regions in the east and south, such as Bulgaria, Poland, Portugal, and Spain, experienced economic growth. On the other hand, the more wealthy regions in central and northern Europe, such as Germany, the Netherlands and Sweden, experienced economic decline. This can be linked to the successfulness of the Social Cohesion Funds of the European Union, in which large disparities regarding socio-economic status between and within countries are targeted. However, Greece appears to be an outlier in this pattern.

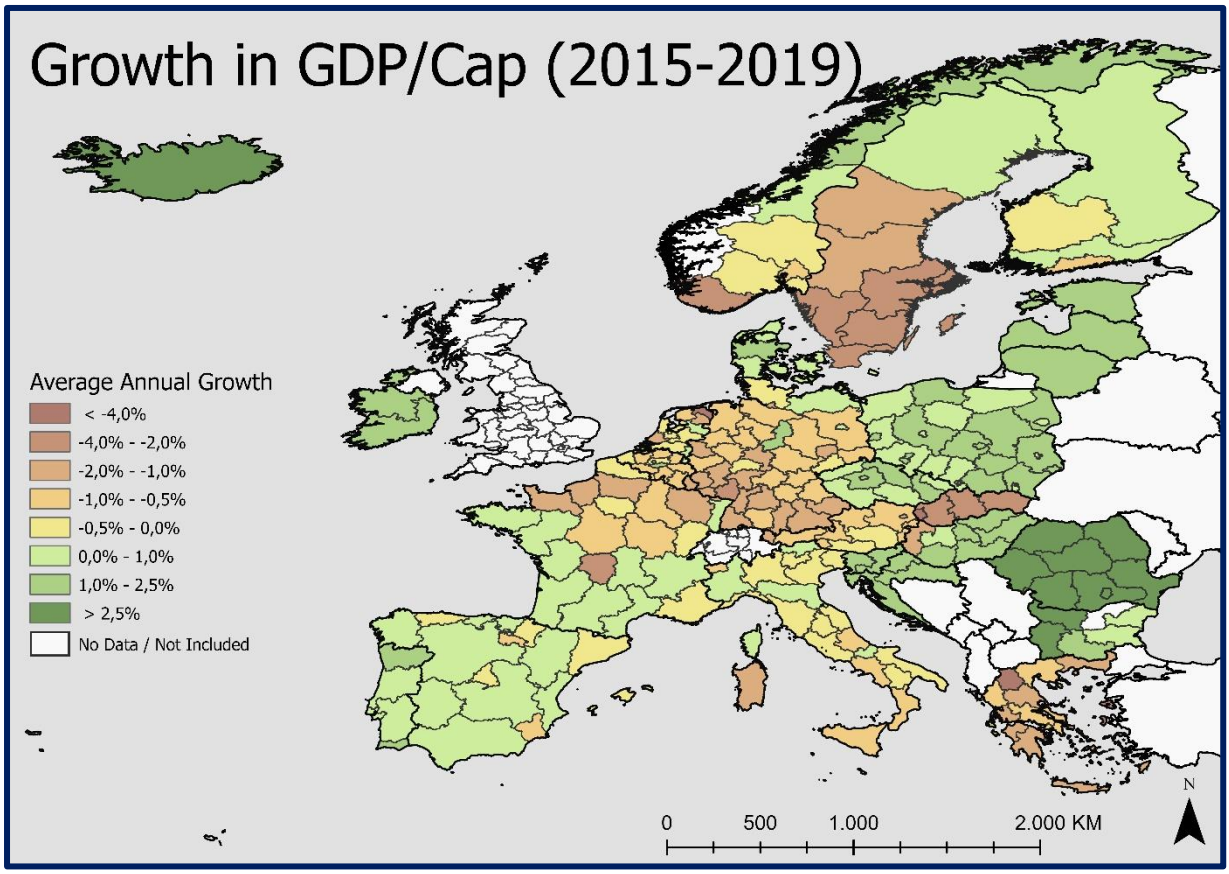

Figure 11: Annual average growth in GDP per Capita between 2015 and 2019 in Europe.

4.2. Regression Results

Section 5.2. focuses on the results of the linear regressions of Model A and Model B. Besides a standard OLS regression, a random effects model and a country-fixed effects model have also been conducted, in order to assess the impact of possible country-level underlying factors influencing this relationship.

4.2.1. Model A: Migrant Network Theory

The results of Model A, in which the relationship between the stock of international migrants in 2015 and the annual average net flow of international migrants between 2015 and 2019 is tested, are presented in Table 4. In the first column the results of the OLS regression are visible. When looking at the R^2 and the Adjusted R^2 it becomes evident that the model roughly explains between 28% and 30% of the total variance in the annual average flow of international migrants between 2015 and 2019. When considering the independent variable of interest, it shows a significant positive effect on the dependent variable. To what degree this relationship holds, is determined by the coefficient of 3666.767. As the Stock of international migrants is expressed as a logarithm, the coefficient has to be interpreted differently, in order to state anything about the effect. For this, the exponent is used. Thus, the coefficient is the expected change in the dependent variable when the independent variable is multiplied by *e*. in other words, when the stock of migrants in a region increases with e (2,72), or increased with 172%, the flow of international migrants to that region increases with about 3667. In other words, it shows that regions where many migrants have

migrated to in the past, attract many new migrants as well. Putting this in the perspective of the migrant network theory, it is likely that these new migrants are able to benefit from the ties with the previously migrated population in order to smoothen their migratory movement.

Continuing to the regression models with random effects and country-fixed effects, it shows rather comparable results, regarding the effect of the stock of international migrants on the annual average flow of international migrants. Both show a significant positive relationship, although the effect in the country-fixed effects model is with roughly 4906 migrants (if the stock of migrants would increase with 172%) relatively larger. The explained variations of each model are also comparable, ranging between 28% and 30%. When looking at the within and between variance, it shows that little is explained by differences between countries, but rather within-country differences are large. This can be linked to the fact that most migration focuses on large urban areas, while few people migrate to rural areas (Arbour et al., 2017). Despite this, the Hausman Specification Test (Hausman, 1978) favours the fixed effects model over its random counterpart.

Table 4: Results of Model A: Migrant Network Theory. Presented are the coefficient and the P-value between brackets.

Variable	OLS	Random Effects	Fixed Effects	OLS Specification
Stock of International Migrants (Logarithm)	3666.767 (0.000)	3666.767 (0.000)	4905.507 (0.003)	3704.761 (0.000)
Population (Logarithm)	566.2737 (0.574)	566.2737 (0.574)	448.2418 (0.807)	636.4171 (0.528)
GDP per Capita	-0.0299685 (0.038)	-0.0299685 (0.037)	-0.0375029 (0.016)	-0.0337778 (0.022)
Employment Rate	38390.66 (0.000)	38390.66 (0.000)	22520.08 (0.167)	44451.17 (0.000)
Dependent Population (< 16 or > 60)	-81245.51 (0.005)	-81245.51 (0.004)	-125910.2 (0.065)	-75430.12 (0.009)
Migrant Integration				-6.747474 (0.194)
R^2	0.3067			0.3120
Adjusted R^2	0.2877			0.2899
R^2 Within		0.2130	0.2245	
R^2 Between		0.0219	0.0118	
R^2 Overall		0.3067	0.2863	
Number of observations	226	226	226	226
Number of groups		28	28	
F-test / Wald Chi2	16.14	96.86	9.27	14.12
Prob F-test / Chi2	0.0000	0.0000	0.0000	0.0000
AIC	2703.23			2704.47
BIC	2705.704641			2707.299977

4.2.2. Model B: Multiplier Effect

Table 5 presents the results of the regressions of Model B, focusing on the relationship between the flow of migrant in a region and the economic growth resulting from this injection. The results of the regression show that, on a significance level of 95%, there is a negative relationship between the annual average growth in GDP per Capita on the one hand and the flow of international migrants on the other hand. The coefficient of this relationship is -0.0000271. This would entail that for every migrant that enters a NUTS 2 region, the GDP per Capita decreases with 0.0000271 percentage points on average. In other words, for every 1000 migrants entering a region, the GDP per Capita would on average decrease with 0.0271 percentage points annually. This model explains roughly 37% of the total variance in annual average growth in GDP per Capita.

Table 5: Results of Model B: Multiplier Effect. Presented are the coefficient and the P-value between brackets.

Variable	OLS	RE	FE	OLS Specification
Annual Average Flow of International Migrants	-0.0000271 (0.000)	-6.29e-06 (0.270)	-.0000736 (0.000)	0.0000163 (0.000)
Population (Logarithm)	0.7758813 (0.000)	0.3771083 (0.001)	0.3434545 (0.002)	0.7741289 (0.000)
Employment rate	4.898389 (0.002)	1.980585 (0.215)	0.777866 (0.643)	4.272699 (0.000)
Dependent Population (< 16 or > 60)	-4.945619 (0.098)	1.152703 (0.641)	1.753181 (0.482)	-5.094057 (0.089)
GDP per Capita	-7.16e-06 (0.002)	-2.05e-06 (0.224)	-1.44e-06 (0.392)	-6.89e-06 (0.003)
Purchasing Power (ref=below 3000)				
3000-6000	-0.4058314 (0.632)	-0.8689592 (0.222)	-0.7984518 (0.266)	-0.4458737 (0.599)
6000-12000	-2.16348 (0.008)	-1.181374 (0.129)	-0.8535843 (0.290)	-2.226677 (0.007)
12000-18000	-2.404989 (0.004)	-1.410086 (0.089)	-0.8598069 (0.331)	-2.44212 (0.003)
18000-24000	-2.422796 (0.003)	-1.291443 (0.131)	-0.6589853 (0.481)	-2.495673 (0.002)
24000-30000	-2.659624 (0.005)	-2.012255 (0.037)	-1.350102 (0.204)	-2.735512 (0.004)
30000 and more	-3.43665 (0.002)	-3.553183 (0.002)	-3.032666 (0.019)	-3.543967 (0.001)
Migrant Integration				0.0007165 (0.336)
R^2	0.3930			0.3955
Adjusted R^2	0.3637			0.3635
R^2 Within		0.1164	0.1248	
R^2 Between		0.1510	0.1559	

R^2 Overall		0.2041	0.2194	
Number of observations	240	240	240	240
Number of groups		29	29	
F-test / Wald Chi2	13.42	31.71	12.32	12.38
Prob F-test / Chi2	0.0000	0.0008	0.0000	0.0000
AIC	82.06			81.36
BIC	86.61811			86.2985

When looking at the models containing random effects and country-fixed effects, the explained variance drops significantly to about 21%. Considering the within and between variance, it shows that a large share is explained by between-country differences, which is also visible on the map. There is little variation between regions within a country, and much variation between countries itself. The effect of the flow of migrants on the annual average growth of GDP per Capita varies as well between the different specifications. In the random effects model, the effect is still negative, but becomes much smaller and insignificant. However, in the fixed effects model, favoured by the Hausman Specification Test, the effect becomes larger and significant. In this model, for every migrant that enters a region, the annual average growth of GDP per Capita will decrease with 0.000073; for every 1000 migrants, this entails a 0.0736%.

4.3. Migrant Integration

With a suitability analysis using ArcGIS Pro, a score of migrant integration has been formed. This score represents the average degree in which migrants are able to integrate into the host society, based on the EU Zaragoza Indicators of Migrant Integration, used to gain insight on how migrants fare in their host society. The score created from these indicators ranges from 105 to 699, witch an average of 465. As explained in the methodology, the indicators are weighted as such that a low score depicts a low degree of migrant integration and a high score depicts a high degree of migrant integration.

Figure 12 shows the geographical distribution of the computed variable. It is visible that there are differences both within and between countries. The degree of migrant integration appears to be best in the Baltic States, followed by Croatia, Czech Republic, Hungary and Ireland. Countries as Spain, Italy, Poland and Greece score significantly lower. Furthermore, countries as Italy and France also show considerable regional differences in migrant integration. In the case of France, the west appears to score higher than the east, and for Italy, the south scores worse than the north.

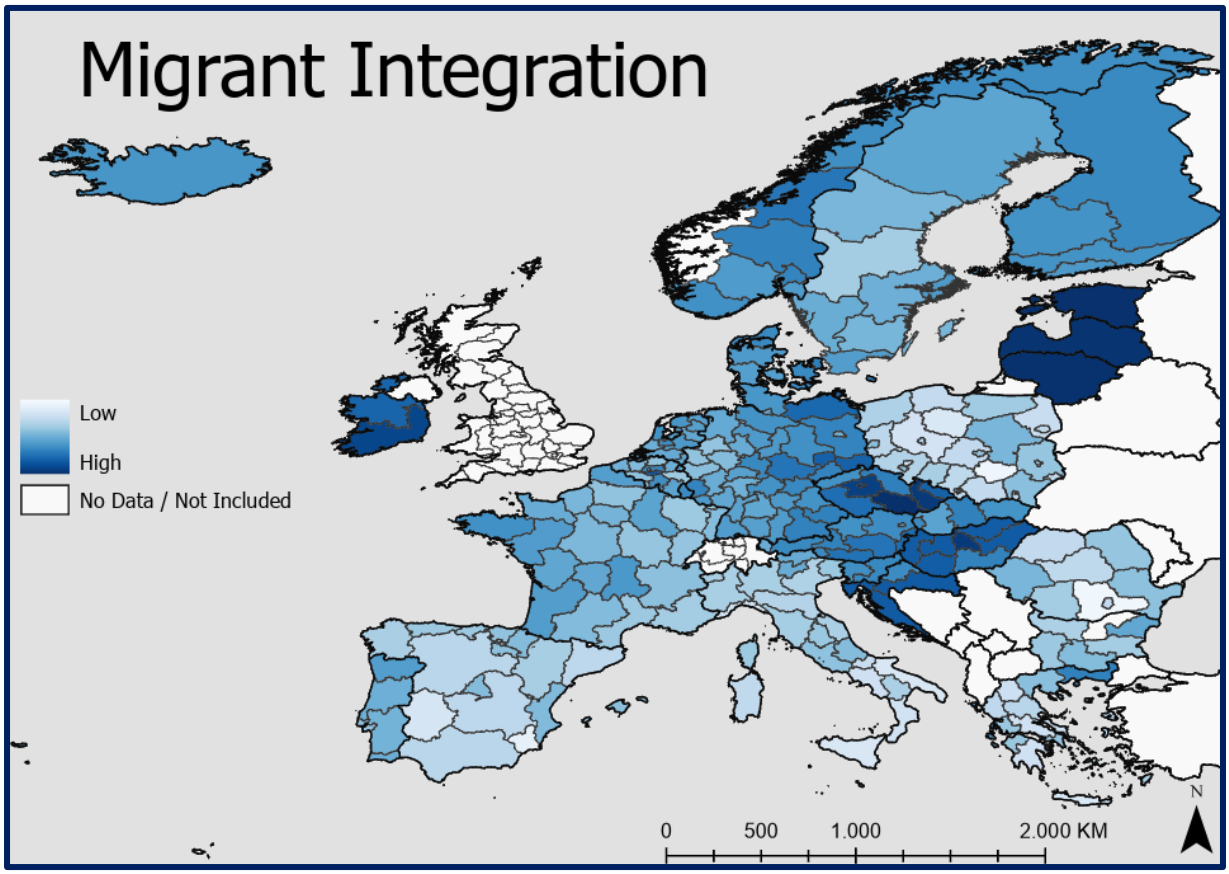

Figure 12: The degree of migrant integration per NUTS 2 region in 2015.

4.4. Mediation Analysis

Section 5.4 focuses on the results of the extension on the OLS regressions of Model A and Model B, as presented in section 5.2. In this extension the degree of migrant integration is added to the model in order to assess its mediating impact on the relationships between 1) the stock of international migrants and the annual average flow of international migrants, and 2) the flow of international migrants and the annual average growth of GDP per Capita.

4.4.1. Model A: Migrant Network Theory

In the last column of Table 4, the degree of migrant integration has been added as covariate to the OLS model in the first column. By doing so the total variance explained by this model increases only slightly. The impact of migrant integration on the annual average flow of international migrants surprisingly is negative, but insignificant. Furthermore, the impact of the stock of international migrants on the dependent variable remains rather similar as well. This limited impact is underlined when calculating the AIC and the BIC, summarized in the last two rows of the Table. Both the AIC and the BIC increase in size when adding the degree of migrant integration to the model. This entails that adding this new covariate does not increase the goodness of fit of the model sufficiently, and therefore, adding this additional complexity to the model cannot be justified. Therefore, it can be concluded that the degree of migrant integration has no mediating impact on the relationship between the stock of intern ational migrants and the annual average flow of international migrants.

4.4.2. Model B: Multiplier Effect

Similar to Model A, the degree of migrant integration has also been added as mediation factor for to the OLS regression of Model B. These results have been summarized in the last column in Table 5. The total variance explained after adding the covariate representing migrant integration remains similar. Furthermore, the effect of migrant integration on annual average growth in GDP per Capita is positive, but insignificant. However, the addition of migrant integration as covariate has a significant impact on the model. When looking at the coefficients of the flow of international migrants in both models, it becomes evident that the coefficient changes from having a negative impact on the annual average growth in GDP per Capita, to a positive impact. Where at first, a flow of 1000 migrants into a region meant a decrease in GDP per Capita, after including the degree of migrant integration, the effect becomes positive. This effect is further substantiated when looking at the AIC and BIC. For both the AIC and the BIC a decrease is visible, indicating that in de model to which the degree of migrant integration is added, less information is lost. Therefore, it can be concluded that the degree of migrant integration has a mediating effect on the relationship between the flow of international migrants and the annual average growth in GDP per Capita.

4.5. Discussion of the Results

Reflecting on the hypotheses formed based on the theoretical framework, the results provide support for two hypotheses and reject the other two. Corresponding with hypothesis A1, the results showed that there is a positive relationship between the stock of international migrants in 2015 and the annual average flow of migrants in the years after. The results suggest that regions in which the migrant population is high also attract more migrants. Relating this to the migrant network theory, it is likely that this is due to the fact that these migratory movements have created an independent social structure in which the social capital between previously migrated people and prospect migrants is used in order to ease the migration. This is also congruent with other studies focusing on this topic (Piotrowski, 2006; Vézina, 2012; Colussi, 2015), in which a direct link between previously migrated people and prospect migrants was found.

However, the mediation analysis for this model showed that the degree of migrant integration plays no role in this relationship. In other words, the results suggest that the migratory movements initiated by the structure of the migrant network occur, despite whether migrants are able to integrate into the host society. Therefore, hypothesis A2 is rejected. This is contradictory to the work of Kindler & Wójcikowska-Baniak (2018; 2020), who emphasize the importance of the integration of migrants in the process of migrant network and social capital construction. On the other hand, Gërxhani & Kosyakova (2020) emphasize integration of migrants is a challenging topic to be linked to social networks, due to their non-random distribution. As migrants often cluster in regions in which opportunities are the largest, these regions are not always the regions where migrants are able to integrate best. This has also become evident after computing the migrant integration score. When comparing this with the maps showing the stock and annual average flow of international migrants, it shows that the degree of migrant integration is relatively high in less popular destination. This

could be an explanation why the results of this research show that the degree of migrant integration plays no role in the migrant network theory.

Another possible explanation can be found when looking at the Zaragoza Indicators of Migrant Integration more critically. It can be the case that these indicators are not representative for migrants in order to establish a migrant network. Other aspects, such as the migrants' activities on grey or black markets, which are untouched in the Zaragoza Indicators, might be more important. Furthermore, it can be the case that these indicators are too much focused on aspects related to welfare, and not to wellbeing or quality of life. Most of the indicators are of socio-economic nature, while aspects such as social contacts and health are left aside.

Regarding the results from Model B, it was shown that there is a negative relationship between the flow of migrants to a region and the annual average growth in GDP per Capita. In other words, the results suggest that when more migrants migrate to a region, it is likely that the growth in GDP per Capita declines. This is contradicting with hypothesis B1. To explain these results, again the non-random distribution argument of Gërxhani & Kosyakova (2020) can be used. As migrants migrate to regions where opportunities are deemed the highest, a lot of pressure is put on these regions and competition between migrants is fierce. Therefore, it is likely that a large share of migrants will not partake in a successful migratory movement, leading to loss of the economic injection needed for the multiplier effect. Furthermore, including the stock of migrants to the story, another side of the coin becomes visible. The model shows that there is a positive correlation between economic growth and the number of migrants in a region. This would suggest the effect on economic growth is different for migrants who have arrived recently (the flow of migrants) and migrants who have settled for a longer time (the stock of migrants). This effect is further substantiated by Dustmann et al. (2006), suggesting that the short-term effect of migrants is negative on economic growth, while on the long-run, migrants contribute significantly to the economy after having settled.

Furthermore, a lack of coordination between different levels of government regarding the integration of migrants leads to higher costs for this process, especially for unsuccessfully integrated migrants (OECD, 2018). This brings us to the results of the mediation analysis for Model B. After including the degree of migrant integration into the model, the relationship between the flow of migrants to a region and the annual average growth in GDP per Capita shifted from negative to positive. In other words, when migrants are able to integrate well into their host society, they have a positive effect on economic growth. This confirms the second hypothesis of Model B.

Thus, to conclude the results, first, a positive relationship between the stock of international migrants and the flow of international migrants in a region was found, corresponding with the migrant network theory. However, no mediating impact of migrant integration was found in said relationship. Second, a negative relationship was found between the flow of international migrants and the annual average growth in GDP per Capita, conflicting with the multiplier effect of migration. However, the mediation analysis suggest that the underlying mechanism of this relationship is influenced by the degree of migrant

integration, as, after the inclusion of said variable, the relationship shifts to the flow of international migrants having a positive effect of the annual average growth in GDP per Capita.

Chapter 5: Conclusion

Since the implementation of the Schengen Agreement in 1985, migration within the European Union increased significantly, as political restrictions for EU residents loosened. This increase in migratory movements had significant impact on both sending and receiving regions. Therefore, different integration policies regarding immigrants have been adopted, focusing on the integration of migrants into the receiving region. Such integration is deemed key into the success of the migratory movements, especially regarding economic benefits.

This research attempts to explain migratory patterns within the EU, their economic impact, and the role migrant integration plays in this process. These relationships prove relevant to study, as migratory movements within Europe have been intensifying. In times of socio-economic polarisation within Europe, especially between regions, such migratory movements are often taking the blame. Therefore, in times when migration is disputed, it is relevant to gain a deeper understanding the consequences of migratory movements withing Europe and the role integration plays.

In order to understand these links, the migrant network theory and the Keynesian multiplier effect are used. The migrant network theory entails the independent social structure that emerges when migratory movements are made. The presence of such a structure enables the usage of social capital between the previously migrated population and the prospect migrants, which will ease the migratory movement. The multiplier effect entails the positive effect of an economic injection in a regional economy. Migrants fill gaps in the labour market and do their consumption in the region, forming an economic injection. This will set an economic process in motion in which the average standard of living increases.

However, for both these theories to work in practice, migrants require to be able to integrate into the host society successfully. Without, migrant network structures are less strong, and contain less of the social capital necessary to become an independent structure, and thus, fail to provide support during the migratory movement of prospect migrants. Simultaneously, instead of becoming an asset to the host society leading to economic benefits, migrants can become a burden, costing not only money, but also creating tension with the local populace.

In order to research this, this study takes a regional approach, as migratory movements have been argued to contribute to a growing discontent between regions. It is structured in threefold. First, multiple linear regression models were created, based on two relationships. Model A assessed the relationship between the stock of international migrants and the annual average flow of international migrants, while Model B focused on the relationship between the flow of international migrants and the annual average growth in GDP per Capita. Second, through a weighted overlay in a suitability analysis, a score based on the EU Zaragoza Indicators of Migrant Integration has been created representing the degree in which migrants are able to integrate into their host society. Lastly, the mediating influence of this score on the above-mentioned relationships has been assessed.

The results of the research are structured in twofold. First, a positive relationship was established between the stock of international migrants and the flow of international migrants in a region was found. In other words, the results suggest that a larger number of migrants migrate to regions in which more migrants are already present. Following the migrant network theory, this would be caused by the fact that the already present migrants act as a support network that both actuates and smoothens the transition for prospects migrants. The mediation analysis suggests that the degree of migrant integration has no mediating influence on said relationship.

Second, a negative relationship was established between the flow of international migrants and the annual average growth of GDP per Capita between 2015 and 2019. In other words, this suggests that when more migrants enter a region, the average annual growth per capita decreases, contradicting the multiplier effect. However, when adding the degree of migrant integration as mediating variable, the relationship shifts to a positive effect. This, therefore, suggests that when migrants are able to integrate well into society, they have a positive contribution to the annual average economic growth. These findings are further substantiated by the positive impact that the stock of international migrants appears to have on the growth in GDP per Capita.

Although the research question in this research was focused on the mediating effect of the degree of migrant integration on the migrant network theory and the multiplier effect, the results might suggest that the degree of migrant integration also has a moderating effect in said theories. By including an interaction term between the stock of international migrants and the degree of migrant integration, one would able to detect whether there is a moderating effect. It could be the case the relationship between the stock of international migrants and the flow of international migrants is modified by the degree of migrant integration. For example, this modifying effect of migrant integration might be different when larger or smaller migrant populations are present. Similarly, this moderating effect might also be present in the multiplier effect. For example, the effect of the degree of migrant integration on economic growth might differ when the flow of international migrants is higher or lower.

Although this research provided some insightful results regarding the role of migrant integration for migratory movements and economic growth, it is important to reflect on its limitations. First of all, this research is conducted from a regional perspective. By doing so, one is able to detect regional patterns in an ever-disperse Europe. However, the true reasonings behind migratory movements remains unknown and therefore, no true reasons can be drawn from these results. In order to do so, the findings of this research can be used as a base for micro-level, or qualitative studies, in which one is able to dive deeper into actual motives. This will also give room for more detailed information on the migrant itself. This research could not make distinctions between their (socio-economic) characteristics, although previous research has shown that this information is key in understanding migratory movements and their effects (Bossavie et al., 2022).

Second, by choice, this research utilized the Zaragoza Indicators of Migrant Integration in order to depict how successful migrants were able to integrate into their host society. However, availability of these indicators on all levels was lacking. For two indicators only the

national statistic was available, and therefore included for all NUTS 2 regions of the country. By doing so, some statistical power has been lost, as regional differences became less apparent. Furthermore, as the results of Model A: Migrant Network already suggested, the Zaragoza Indicators of Migrant Integration predominantly focuses on aspects of welfare. This might not provide a complete picture of migrant integration, as other indicators, not included in the database, may have an effect as well, such as health status, or social contacts. If more complete and overarching indicators on migrant integration were collected, creating a score using a suitability analysis would provide a more accurate depiction on how migrants are able to integrate into their host society. Alternative methods to compute said score could be principle component analysis (Jolliffe & Cadima, 2016) or factor analysis (Kim & Mueller, 1978).

Learning from these limitations, this research can be used to further study the effects of migrant integration on migratory movements and resulting economic growth. This proves more relevant in current times, as the European Union has adopted a new legal migration policy in April 2022, which focuses on attraction skills and talent from non-EU countries in order to fill labour market gaps caused by the combination of an ageing population and low fertility rates on the one hand, and the booming post-COVID economy on the other hand (European Commission, 2022). Therefore, further research is recommended to adopt a study population which includes third-country nationals and to adopt different research strategies, closer to the migrants themselves, in order to capture the true reasoning between migratory movements, their impact on the host economy, and their integration into the host society. This can be used to further develop a more elaborate framework that fully captures important indicators representing the degree of migrant integration within the European Union, and to assess such integration in practice more efficiently.

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