

HOW DOES QUALITY OF LIFE (QOL) AFFECT CITY
ATTRACTIVENESS AND INTERNAL MIGRATION IN
TURKEY?

A THESIS
SUBMITTED TO ABDULLAH GÜL UNIVERSITY
SOCIAL SCIENCES INSTITUTE
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE

İsmet Selçuk
Özer

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AGU
2023

By
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SCIENTIFIC ETHICS COMPLIANCE

I hereby declare that all information in this document has been obtained in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all materials and results that are not original to this work.

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REGULATORY COMPLIANCE

M.S. thesis titled “How does quality of life (QoL) affect city attractiveness and internal migration in Turkey?” has been prepared in accordance with the Graduate Thesis Preparation Guidelines of the Abdullah Gül University, Social Sciences Institute.

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ACCEPTANCE AND APPROVAL

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ABSTRACT

Current study reexamines the link between quality of life (QoL) factors, city attractiveness, and internal migration in Turkey. The management of internal flows can bring significant benefits to a country in balancing the opportunities between regions or cities. To tackle unequal access to opportunities, the factors that induce internal migration should be understood. This study examines a set of pull and push factors for internal migration by spatial econometric analysis and GIS applications. This thesis finds that when the accessibility of amenities increases, the city becomes more attractive and preferable for migrants. In addition, socioeconomic factors also play a significant role in the decision-making process of migrants. In this study, this thesis used a panel dataset that includes socioeconomic and contextual data such as distances to the amenities for each Turkish city in the years between 2012 and 2021. The results show that, in Turkey, internal migration flows from the East to the West, where opportunities are better. Finally, the human capital level of migrants can cause a variety of thoughts about factors, and it can change the order of significance of the variables for people who have a different level of human capital such as education level. Based on the findings, the paper offers several policies suggestions for ensuring a balanced migration in Turkey.

Keywords: internal migration, quality of life, attractiveness, mobility, LISA, multilevel model

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ÖZET

Bu çalışma literatürde sıkça analiz edilmiş olan yaşam kalitesinin şehirlerin çekiciliğine etkisini ve bu etkinin sonucunda da Türkiye’de iç göçün nasıl şekillendiğini incelemektedir. İç göçün dengelenmesi ülkeler adına büyük bir önem teşkil etmektedir. Bu yüzden iç göçü etkileyen sosyo ekonomik faktörler de bir o kadar önem arz etmektedir. İç göç üzerindeki etkili faktörlerin incelenmesi için 2012-2021 yılları arasındaki iç göç verileri kullanılmış ve sosyo ekonomik verilerin iç göç verileri üzerindeki etkisi incelenmiştir. Bu çalışmaya göre Türkiye’de iç göç yönelimi doğu yönünden batıya doğrudur. Bunun temel sebeplerinden bazıları ise batıda bulunan şehirlerin sosyo ekonomik yönden daha fazla fırsat barındırması ve bu fırsatlara daha kolay ulaşım sunabilmesi olarak sonuca ulaşılmıştır.

Anahtar kelimeler: iç göç, yaşam kalitesi, insan hareketliliği, LISA

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LIST OF ABBREVIATIONS

GDP

Gross Domestic Product

GIS

Geographical Information System

ML

Multilevel Model

OSM

OpenStreetMap

TURKSTAT

The Turkish Statistics Institute

QoL

Quality of Life

1. CHAPTER 1

Chapter 1: Introduction and Literature Review

1.1.1 Introduction

Internal migration which is a movement of people within a country can be seen as an indicator of the inequality of opportunities observed among regions in a country (Amara & Jemmali, 2018). The gap and inequality between the opportunities affect living standards negatively and prompt people to migrate (Lagakos, 2020). Therefore, migration is said to occur as a result of gaps in opportunities between places. Additionally, the Quality of life (QoL) standards of a city can boost its attractiveness, and access to the amenities has been identified as one of the factors that can be used as a determinant of QoL (Carlino & Saiz, 2019; Yu et al., 2019; Amin et al., 2021). In the literature, access to amenities is frequently used as a driving factor for migration (Yang et al., 2017; Yu et al., 2019). Amenities can be defined as the characteristics and opportunities that a city has and provides under two groups which are natural and man-made amenities (Partridge, 2010; Ahumada et al., 2020). In this thesis, amenities are represented by aerodrome, beach, community center, hospital, kindergarten, mall, museum, park, police station, theme park, and university. Availability of amenities in a city can be used as a determiner of willingness of people of living within a place (Ahumada et al., 2020). On the other hand, the challenges that globalization brings increase the interest of people living in urban areas in rural areas (Vorontsova et al., 2022). The study by Xing & Zhang (2017) shows that people do not just migrate for better economic reasons, but also for better QoL standards such as quality of amenities, which is shown as a pull factor for internal migration in China. Furthermore, the sequence of internal migration may also reveal human mobility patterns within a country (Rodríguez-Vignoli & Rowe, 2018). This path can also specify discrepancies between regions or cities (Yılmaz, 2019). In addition to these, there can be various types of internal migration such as work-related internal migration (Stawarz et al., 2022). The term internal migration is not well-documented in many developing countries (Skeldon, 2018). This also makes the term internal migration more interesting for a research study. Additionally, the effect of internal migration is larger

than international migration because the number of internal migrants is generally higher than international migrants from developing countries (Rodríguez-Vignoli & Rowe, 2018). In the particular case of Turkey, internal migration movements from the East to the West have led to an unbalanced distribution of wealth, opportunities, and development (Özer, 2004).

This study aims to contribute to how QoL standards affect the attractiveness of cities and the decision of individuals for internal migration among Turkish cities in the years between 2011 and 2021. Despite the significance of internal migration, the literature review below shows that there is a lack of comprehensive studies in Turkey on internal migration. In this study, the thesis aims to fulfill this lack and study internal migration dynamics in Turkey. This understanding may clarify the effect of better QoL standards on the internal migration decision of individuals (Yu et al., 2019). For any country, it is significant to reach a balanced migration strategy because unbalanced migration movements may harm the social and economic structures of a country such as an increase in unemployment and social inequality (Denko, 2020). Management of internal migration is currently the main focus of different countries such as Egypt (Hatab et al., 2022). Sustainable management of internal migration has long-term effects on the countries' development (David et al., 2019). Hence, this study may inform local governments or institutions that are responsible for migration policies to provide a better understanding of the factors that influence internal migration in Turkey. Additionally, the study can be used to see how significant reaching a balanced internal migration is and these responsible partners may update their strategies and establish alternative strategies to balance migration for local places.

For the analysis of the effect of QoL on internal migration, Turkey displays similar patterns to other countries. In general, factors that bring better QoL are significant factors for a city to increase the attractiveness of this city. Hence, a high attractiveness becomes a significant pull factor for migrants. Throughout the paper, the thesis calls eastern cities “senders” because the number of incoming migrants is lower than the number of outgoing migrants. On the other hand, cities, where the number of incoming migrants is higher than outgoing migrants, have a positive balance index. These cities

are generally located in the western part of Turkey, and the thesis calls them “recipient cities”.

In the following sections, a brief literature review is provided including a description of migration, internal migration, attractiveness for cities, and QoL in section 2. Then, the data and methodology used in the study are explained in section 3. Finally, the result of the analysis and discussion of this result is presented in section 4.

1.1.2 Literature Review

The concept of “Migration” has been analyzed from various perspectives over the years. For instance, from the perspective of Stockdale & Haartsen (2018), the term migration includes those who are mobile, and stayers or immobile individuals. They claim that it is significant to clarify which perspective you mainly focus on. For instance, it is important to examine, from a new perspective, why people do not move rather than migrate to another place (Stockdale & Haartsen, 2018). Additionally, Lagakos (2020) argues that one of the significant reasons for migration is inequality and the gap in QoL opportunities such as living standards between rural and urban areas.

Furthermore, internal migration is one of the specific types of migration (Kirchberger, 2021). Bryan & Morten (2019) claim that internal migration can have several advantages. For instance, when internal labor migration becomes less limited, their study shows that labor productivity and profit of the destination population of the place increase. Moreover, Rodríguez-Vignoli & Rowe (2018) researched that even though global migration is significant, internal migration also plays a crucial role to determine national patterns of human mobility within a country. In their study, they mainly focused on large Latin American cities, and they reached that in-and-out migration is important and out-migrants are generally young and educated which creates an advantage for the destination place whereas this affects the city of origin negatively by reducing the capacity of human capital. The loss of young people has a long-term effect (Rowe et al., 2017). Further, a country’s demographic structure is shaped by both internal and international migration (Rowe et al., 2019). For instance, awareness of the spatial impact of internal migration on cities is not well-researched

or studied in Europe yet. In some parts of Europe, population concentration is seen as the main flow of movement for urban areas whereas deconcentrating is more common in other parts of Europe. When it is compared with earlier studies, deconcentrating has become a more common type of migration in Europe (Rowe et al., 2019).

Kourtit et al. (2021) propose a model of residents' appreciation of their cities and show that this appreciation has both a physical dimension (access to amenities etc.) and also a social dimension (safety etc.). These factors are clearly related to the decision to migrate as well. Similarly, several studies connect attractiveness with access to amenities (Garretsen & Marlet, 2017; Carlino & Saiz, 2019). Hakim et al. (2022) show that people consider both economic opportunities and amenities while making a migration decision. Even though economic opportunities are not sufficient, good quality amenities can increase attractiveness and make people migrate to the place. What is meant by good quality amenities is to access to the amenities. For instance, if the amenity is easily accessible, it makes the amenity good and quality. Further, this is supported by the findings of Yu et al. (2019) who found that generally young people in China are particularly attracted to cities with a high level of attractiveness as measured by amenities and socialization opportunities. Besides having a high availability of amenities in a city, Buch et al. (2014) argue that labor migration also shapes the future path of development of a city as well. Therefore, better availability of amenities and attractiveness in a city ensures its development even further in the future as a result of migration. Therefore, it becomes clear that high accessibility amenities and improved attractiveness of a city can have a multiplier effect and boost its prospects for the future also through labor migration.

In general, cities with good quality amenities tend to be more attractive to migrants than cities with poor amenities. In addition to this, Zhao et al. (2018) studied the profile of new-generation migrants who migrate from rural to urban areas. They reached the conclusion that people generally internally migrate to places where they can work in industrial areas instead of farm-based jobs. The reason why these migrants focus on non-farm activities is that these migrants are generally more educated and skilled. During this transaction, they prefer to migrate with their families such as children and wife/husband which makes them more independent in their original place when they

are compared with previous generations. Besides, Etzkowitz & Leydesdorff (2000) showed that universities bring a development where they are established by cooperating with local industry and government. By looking at that cooperation, Dotti et al. (2013) studied the impact of universities on local development and the attractiveness of a city. In the study, they showed that universities can also be a good booster for the attractiveness of the cities because a good university can create good cooperation with the city. This ensures local development for the city and universities' positive effect can be shown by measuring this development. The results show that universities may create dynamic labor markets and influence students to prefer these places which can be seen as a brain gain (Dotti et al., 2013). Huggins et al. (2020) argue that the presence of connected collaboration between universities, industrial enterprises, and city administration in a city can lead to increased job opportunities, high-quality amenities, and socialization opportunities. This is further supported by Özdemir (2018), who argues that the education and economic development of a city plays a key role in increasing its attractiveness. In addition to these arguments, seasonal migration has become a significant way of migration after a high number of internal migrations from rural to urban areas in Turkey (Şen & Altın, 2018). Nowadays, an increasing number of irregular external migrations has been affecting seasonal migration negatively. One of the reasons for this is irregular migrants decrease the cost and they are preferred by the employer for season times (Bayramoğlu & Bozdemir, 2019). It is of course hard to empirically analyze the mobility patterns of seasonal workers as they are generally not registered in official statistics.

In addition to all these and in particular to Turkey, people who migrate from rural to urban areas are generally young. This causes low-level development in rural places because of the lack of a young workforce in Turkey and it has to be controlled to reach a balance (Karakayacı & Öz, 2020).

The theoretical framework that this paper will base its investigation of internal migration is “feet voting”. Tiebout (1956) claims that when opportunities are scarce in a place and when residents feel that they have exhausted all mechanisms to change this, they move to other places with better conditions. One of the significant ideas behind the “feet voting” concept is competition between local governments may lead

to an increasing amount and quality of public goods and services. In that case, people would decide to move to places where desirable opportunities such as public goods are available. Additionally, Ferguson et al. (2007) assert that there are different factors affecting “feet voting”. For instance, amenities and jobs are two significant factors that can affect migration or the concept of feet voting. The reason for the significance of these two factors is that they are generally key elements of a city or place that increase benefits for individuals.

1.1.3 Hypotheses

In this thesis, the feet voting mechanism is assumed to originate from: i) unequal distribution of amenities and opportunities among different urban locations in Turkey ii) attractiveness of destination cities iii) diversity of economic activities iv) employment opportunities, v) diversity of human capital vi) unequal regional growth. By using official statistics from the Turkish Statistics Institute (TURKSTAT) and open sources such as Open Street Map (OSM), the thesis tests the following hypothesis:

H1: Accessibility to amenities affects the value of a location and is a key determinant for QoL and internal migration.

H1a: The accessibility of amenities like parks, malls, universities, community centers, and hospitals, which serve as indicators of the quality of a location, enhances the appeal of a city and attracts individuals to move within the same country.

H1b: Migration takes place toward urban centers.

H2: Socioeconomic factors are significant elements of QoL and internal migration.

H2a: An increase in job opportunities and high earning potential makes a city more attractive, which influences individuals' decisions to move there.

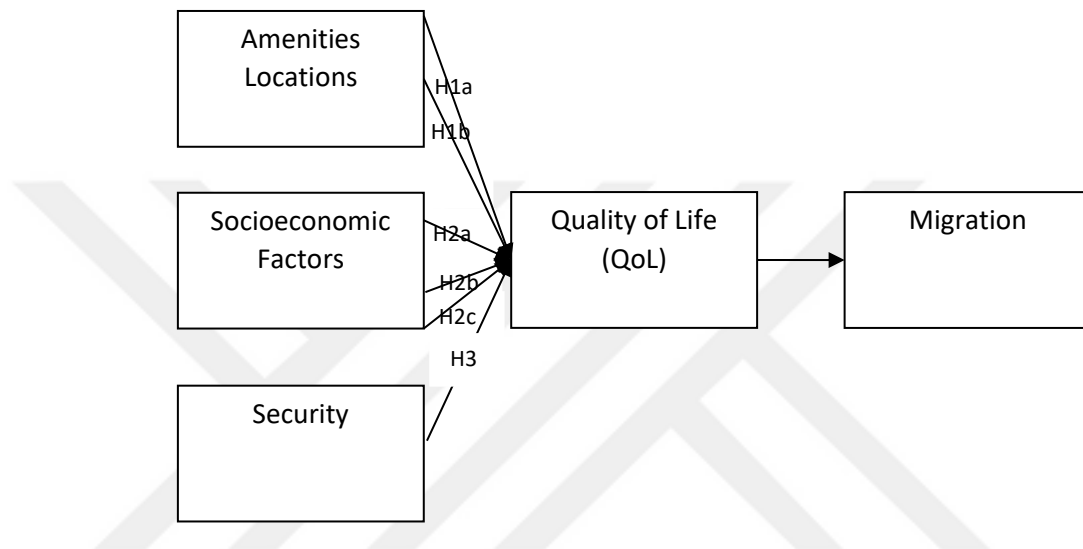
H2b: A high human capital is a pull factor for migration and increases the attractiveness of the city.

H2c: Inequality in a location can be a driving force for people to relocate to areas where opportunities are more fairly distributed.

H3: A sense of safety can be a key consideration for those looking to migrate and can contribute to making a location more attractive as a destination.

In the hypothesis part, the thesis has 3 main hypotheses which are grouped under amenities and location, socioeconomic factors, and security. There are sub-hypotheses among these groups:

Figure 1.1.2.1: Hypotheses



2 CHAPTER

2.1 Chapter 2: Data and Methods

2.1.1 Data

The analysis of the attractiveness of Turkish cities regarding internal migration needs different types of data. In this paper, the data is collected from the TURKSTAT and OpenStreetMap (OSM) by using statistical analysis and QGIS software. The data collected from the OSM is basically a data scraping process. The OSM provides coordinates of the amenities. All the determined amenities' coordinates were scraped from the OSM for Turkey. Then, city centers were identified geographically. By using QGIS software, the distance matrices are created to reach distances between city centers and the different amenities. The reason for choosing TURKSTAT as a data

source is that it is an official governmental institute. Additionally, they share data related to different groups such as young and old people, and categories such as health, education, and migration for years at different levels as city and regional. Furthermore, QGIS software is also used for the centralization of city coordinates, calculation of distances from the center of the cities to the amenities, and creation of matrices. There are two data types used in the paper:

2.1.1.1 Socio-demographic data:

The primary data is collected from TURKSTAT based on previous studies and theoretical contributions to the study of internal migration.

Unemployment Rate: Share of unemployed people in the labor force.

Number of Beds: Number of beds in hospitals per a hundred thousand people.

High School Graduate: Share of high school graduate people in the population.

College Graduate: Share of higher education graduate people in the population.

Number of Convicts: Total number of convicts in the city proper.

GDP Per Capita: Gross Domestic Product (GDP) per capita.

Gini: Level of inequality.

2.1.1.2 Contextual Variables:

Accessibility Index: Average distances from city centers to amenities such as hospitals, parks, malls, etc.

Farmland Ratio: Share of farmland in total land.

2.1.2 Method and Analysis

A general accessibility index can be created by taking averages of distance-related variables. The thesis created an “Accessibility Index” by using GIS data derived from OpenStreetMap to measure the accessibility of amenities for each Turkish city. In the index, the thesis calculated the average minimum distances from city centers to a

limited number of amenities such as three hospitals. The amenities used to create the accessibility index represent different aspects. For instance, minimum distance from city centers to the closest aerodromes and highway density are used as representers of the accessibility of a city. Then, beaches, beach resorts, museums, and hotels can represent how attractive a city is for tourism which creates additional job opportunities for the local community. Community centers, events venues, malls, parks, and theme parks are amenities that can be matched with socialization opportunities where people can spend their leisure time. University and kindergarten are amenities that are related to education. These educational amenities can be significant factors that affect the decision of individuals as an attractiveness factor. Finally, courthouses, hospitals, and police stations are used as the representatives of security within a city. In addition to this, city centers' coordinates are calculated geographically which means center point of the lands for each Turkish city is accepted as the city centers. However, it does not make any significant difference because all of these geographic centers are also close to the residential centers for Turkish provinces as well which does not change the minimum average distance calculations. For the multicenter cities in Turkey, the thesis follows same way to determine city centers. The reason of that is the number of the multicenter cities is not high and the results show that the expected results are not affected from this situation.

Assuming that access to amenities decreases by distance, the minimum distance to a given amenity can be considered a crude measure of accessibility. Therefore, a modified version of Hansen (1959) can be created as a composite index of accessibility by minimum distances to reach a given bundle of amenities. The accessibility index is then a modified version of Hansen's accessibility model and it shows the accessibility of amenities for each city in Turkey. The thesis constructs the following accessibility index based on distances from a city center to amenities:

$$Acc_{ij} = \frac{\sum_{j=1}^{i=n} d_{ij}}{n} \quad (Eq 1)$$

Where d_{ij} is the minimum distance to reach the amenity j from a city center i . n is the total number of amenities (j) such as schools, parks, malls, etc. Eq 1 is run for each city separately to reach the accessibility index for each Turkish city.

Firstly, OSM is used to extract spatial data i.e., the location of amenities in Turkish cities to use in the accessibility index during the creation of the accessibility index. The thesis determines the city centers' coordinates to calculate distances to the amenities. For instance, the accessibility index includes the average of all distance-related variables. This means that the thesis has taken the average minimum distances to reach the different number of amenities such as airports, community centers, parks, malls, etc. The final index of accessibility is similar to Hansen's (1959) accessibility index and coefficients can be interpreted as decay factors. Secondly, the thesis included the highway networks and the ratio of farming fields to the total area for every city in Turkey by using QGIS software. Finally, a yearly panel dataset is created which includes both socioeconomic and contextual data for the years 2012, 2013..and 2021.

As the main variable, the thesis creates a migration balance index for the cities to examine the attractiveness factors of recipient cities and also the determinants of internal migration in Turkey which is similar to the index that is created in the study of Dotti et al. (2013). The index is calculated for every city in Turkey for the years between 2012 and 2021 as follows:

$$\text{Balance Index} = \frac{\text{Incoming} - \text{Outgoing}}{\text{Incoming} + \text{Outgoing}} \quad (\text{Eq 2})$$

The values that the balance index takes vary between 1 (perfectly attractive city) and -1 (perfectly unattractive city) where 0 is for perfect balance. The thesis calculated and added the balance index for each Turkish city for relevant years to the dataset as well.

Before implementing the method, the thesis decided to see whether there is an autocorrelation for the balance index. Then, the thesis calculated Moran' I of the balance index for relevant years:

2.1.2.1: Moran's I for the balance index

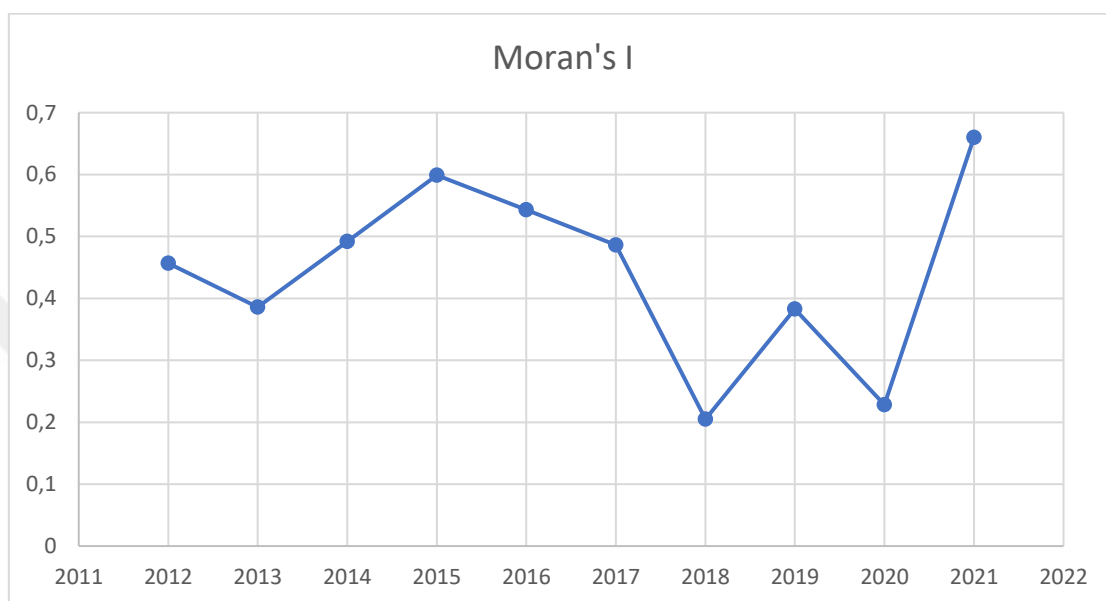
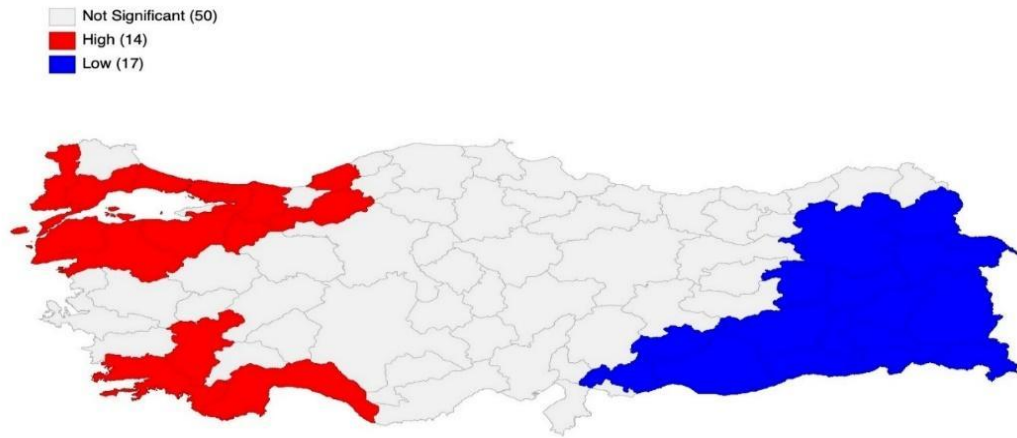


Figure 2.1.2.1 shows that even though there are fluctuations, there is a positive autocorrelation between Turkish cities regarding the balance index for relevant years which are between 2012 and 2021. Further, there are clusters for the balance index when the LISA map is drawn:

Figure 2.1.2.2: An example of LISA Map for the balance index for 2012



As Figure 2.1.2.2 shows, western cities have high-high clusters while there is a low-low cluster for the eastern cities in Turkey.

In the methodology, unlike standard linear models, multilevel models (ML) are better fitted for the panel dataset which has more than one level to analyze (Snijders & Bosker 2011; Teke-Lloyd et al. 2022). Panel datasets are generally more complex and structured, and they need to be analyzed by considering this complexity which cannot be analyzed by models designed for cross-sectional data models. For instance, ignoring spatial effects is one of the reasons for the complexity (Türk & Östh, 2019). In the dataset, there are three levels of variables which are time, provinces, and regions. Implementation of ML ensures the combination of Fixed Effects and Random Effects models which are dealing with panel datasets as well, however, ML fits better with complex panel datasets (Bell et al., 2019). The thesis first runs an Ordinary Least Square (OLS) regression model to see the relationship between the balance index and other variables. During this step, the thesis decomposed the error factor by multiplying it with the spatial-weight matrix to adjust the spatial autocorrelation factor. Then, the thesis first state the ML model for the balance index:

$$B_{ijt} = \beta_{ijt}x_{ijt} + \mu_{ij} + e_{ijt} \quad (Eq 3)$$

where B_{ijt} is the balance index for the city i in year t and region j ; x_{ijt} represents covariates; μ_{ij} are neighborhood-level random effects; and e_{ijt} is an error term. The ML model in Eq 3 involves clustered datasets, however, it does not consider the spatial relationship in the dataset. This brings a significant misunderstanding (Anselin, 1995). To adjust this problem, the method of Pierewan and Tampubolon (2014) is followed by adding spatially autocorrelated residuals to Eq 3:

$$B_{ijt} = \beta_{ijt}x_{ijt} + \mu_{ij} + e_{ijt} \quad (Eq 4)$$

and

$$e_{ijt} = \rho \sum_{i=1}^k w_{ijt} e_{ijt} + \varepsilon_{ijt} \quad (Eq 5)$$

where e_{ijt} are spatially autocorrelated residuals; ρ is a spatial dependence parameter; w_{ij} is a spatial contiguity weight matrix; and ε_{ijt} are random errors.

The full model, which is a spatial ML model includes all the covariates. Additionally, the thesis runs the empty model which includes none of the covariates to separate variances into the groups which are within and between period variances.

Finally, the thesis can calculate the relative importance of hierarchical levels in the model by decomposing the total variance by using the intraclass correlation coefficient:

$$ICC_1 = \frac{var(1)}{var(1)+var(2)+var(3)} \quad (Eq 6)$$

ICC_1 then computes the relative contribution of level 1 variation to the total variance. It indicates reliability.

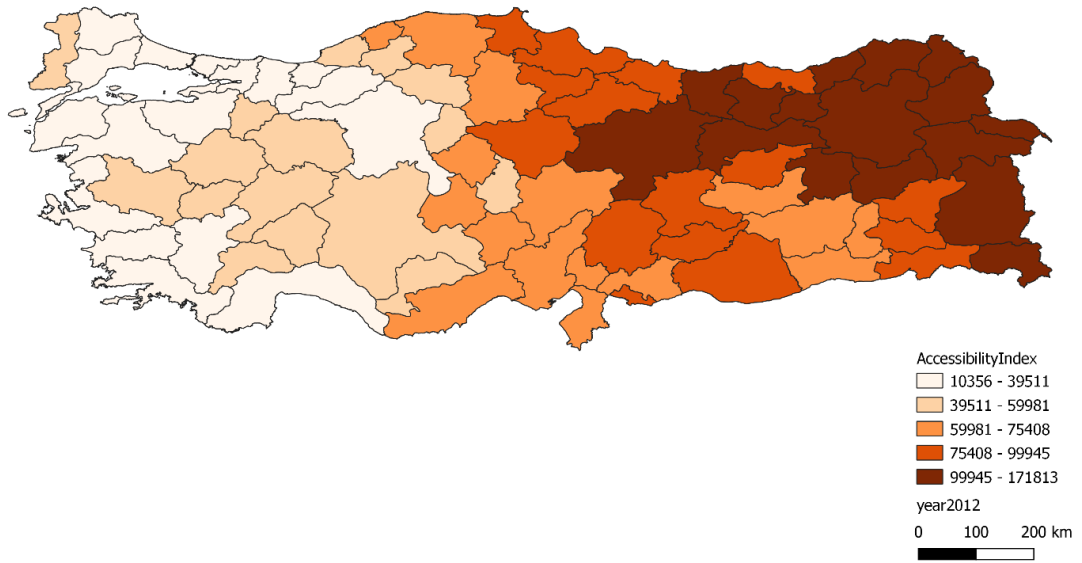
3 CHAPTER 3

3.1 Chapter 3: Results and Conclusion

3.1.1 Spatial Exploratory Analysis

In that part, graphs of the variables that are used in the model of analysis, the mapped version of the balance index, the balance index of low-educated migrants, and the balance index of high-educated migrants will be examined. Firstly, Figure 3.1.1.1 represents the accessibility index among Turkish provinces:

Figure 3.1.1.1: Accessibility Index among Turkish Provinces

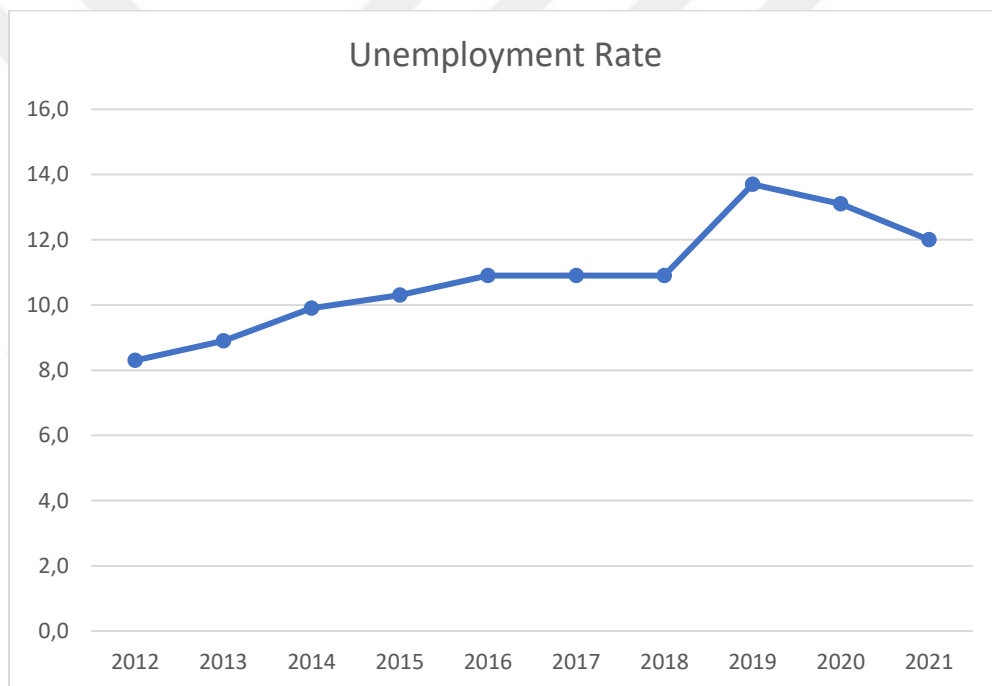


According to Figure 3.1.1.1, Accessibility Index represents the average distance between city centers and the amenities. When the distance between city centers and the amenities gets higher, the color of the city becomes darker. The darker color means that access to opportunities seems challenging, and it is a push factor for individuals for internal migration in that city. On the other hand, cities with lighter colors have lower distances between city centers and amenities. People living in these lighter-colored cities are able to reach amenities easier than in darker cities. Therefore, the

lighter-colored cities become more attractive to individuals and internal migration occurs toward lighter-colored cities from darker-colored cities. Additionally, as easily seen on Figure 3.1.1.1, the western part of Turkey is in general more attractive than the east part when the thesis compares the accessibility index of the cities.

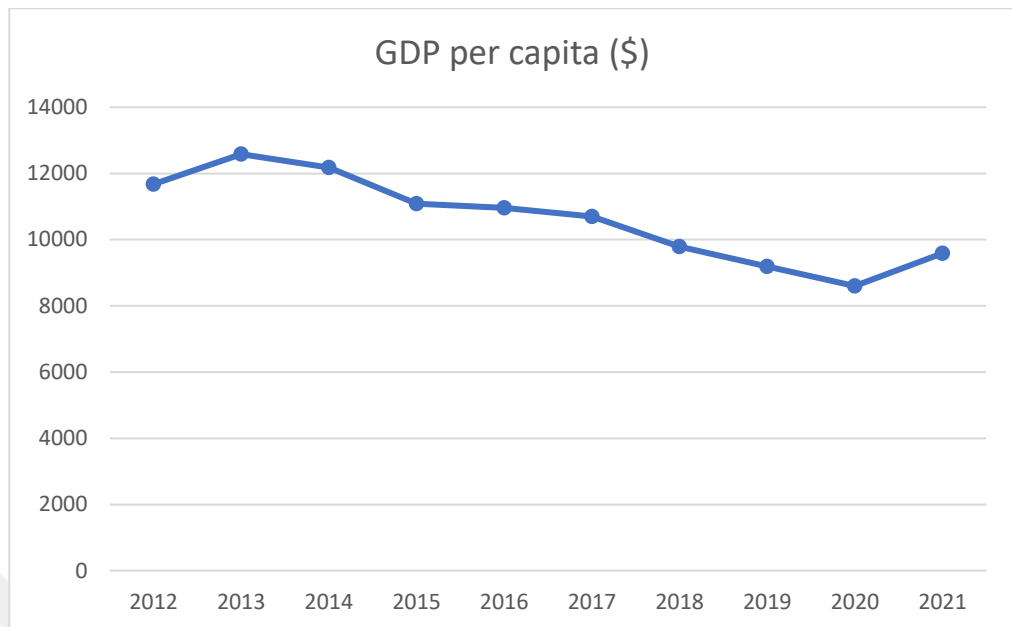
Figure 3.1.1.1 shows the balance index in general, the balance index for low-educated migrants, and the balance index for high-educated migrants in the years between 2012 and 2014.

Figure 3.1.1.2: Unemployment Rate of Turkey



The unemployment rate of Turkey shows an increasing trend until 2019 (Figure 3.1.1.2). After 2019, a decreasing trend appears until 2021. The thesis takes the average of Turkey for Figure 3.1.1.2, however, in the 3.1.2 Multivariate Regression Analysis part, the unemployment rate at the city level is calculated for each Turkish city and year between 2012 and 2021 in order to use in the model.

Figure 3.1.1.3: GDP Per Capita (\$)



GDP per capita (\$) shows a decreasing trend over the years from 2012 to 2021 (Figure 3.1.1.3). Under these circumstances, the value of GDP per capita (\$) may be a significant factor for the places where the migrants prefer. Ahmadiani & Ferreira (2019) show that economic factors can be the determiner of internal migration for a country. New job opportunities and high-income opportunities may be a pull factor for the migrants as well. Therefore, Figure 3.1.1.2 and Figure 3.1.1.3 include significant variables for the model.

Figure 3.1.1.4: Number of Convicts

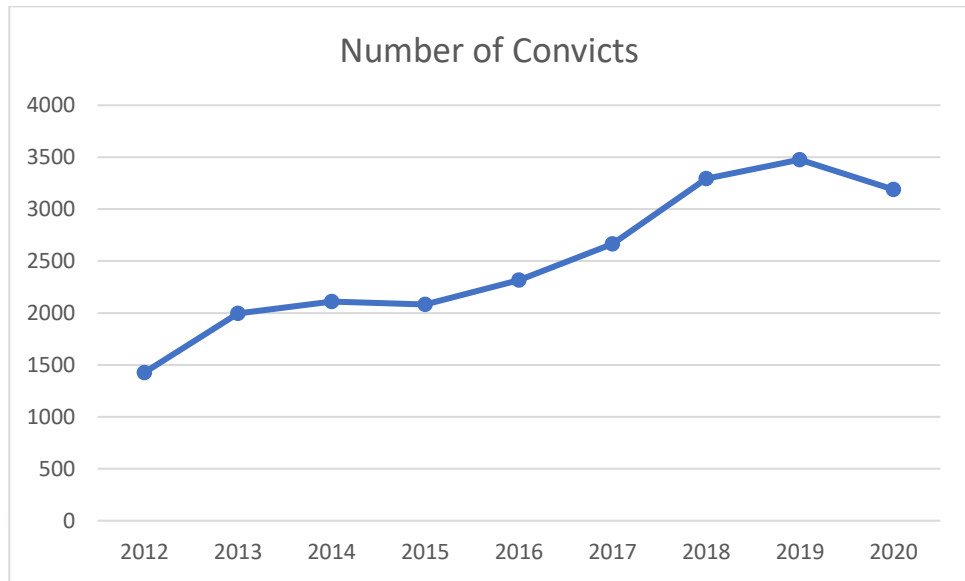
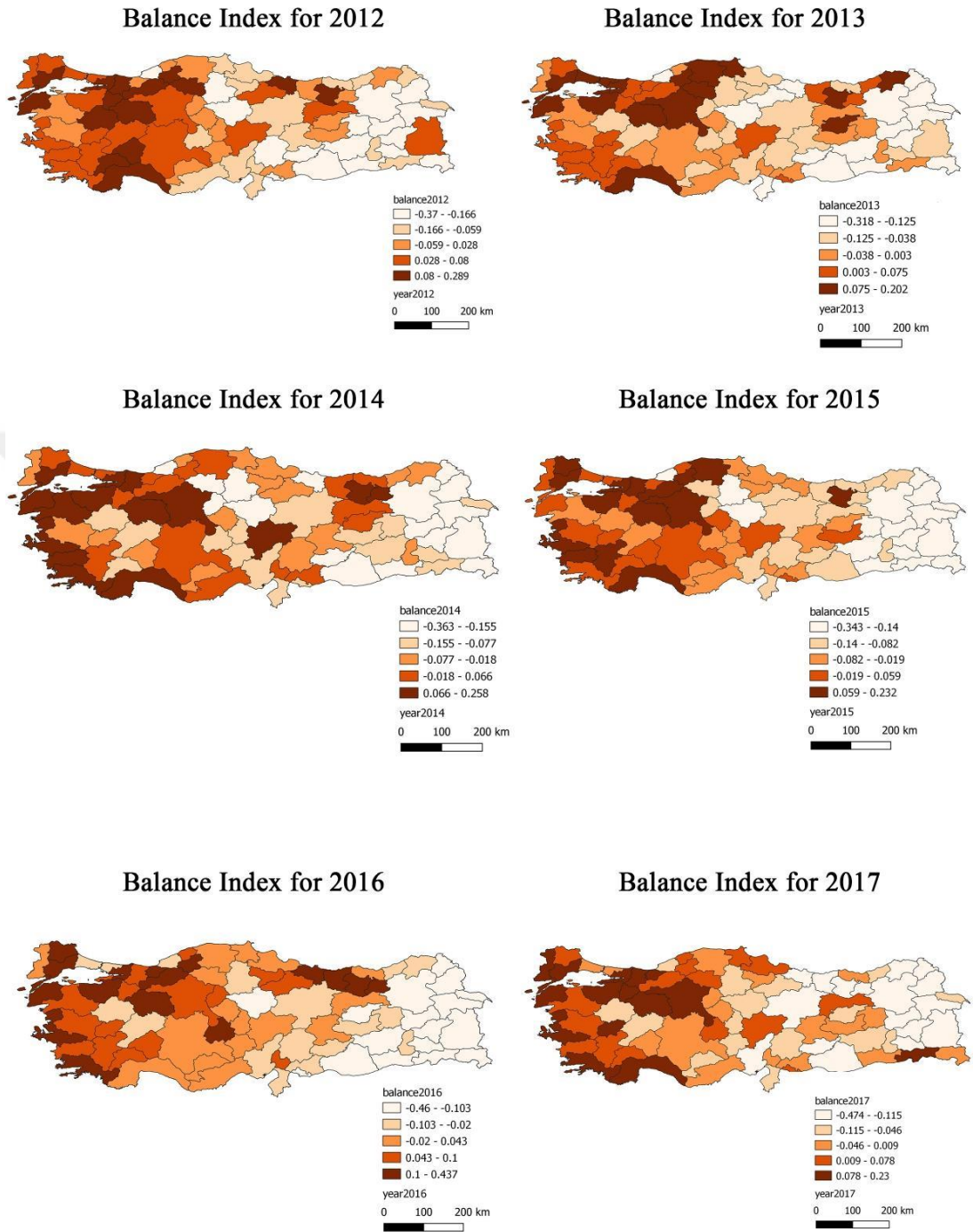
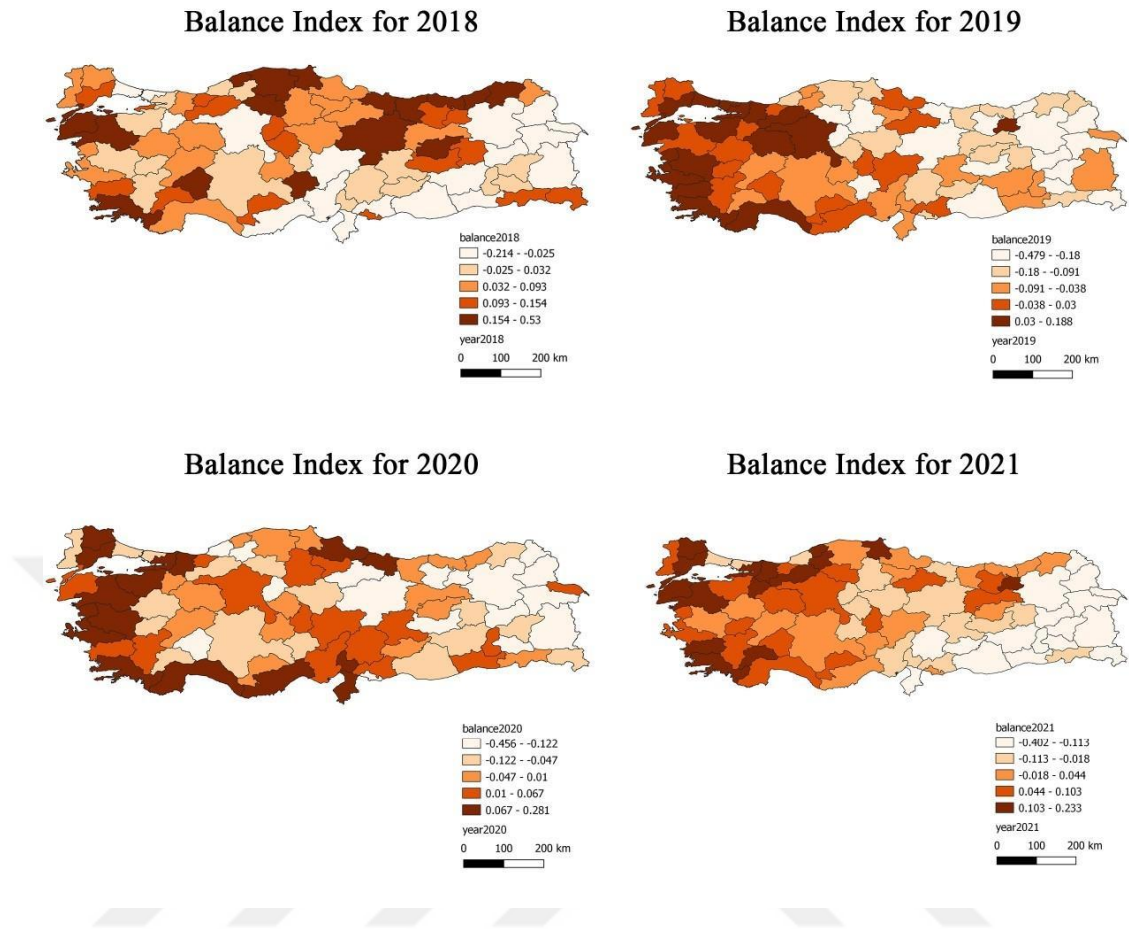


Figure 3.1.1.4 mainly focuses on the average number of convicts in Turkey between 2012 and 2020. The feeling of safety attracts people and becomes a good pull factor for the cities (De Nadai et al., 2020; Awasthi, 2021). For that reason, the thesis shows that there is an increasing trend in unsafety conditions in Turkey when we look at the number of convicts. That's why safer places can be highly preferred by migrants.

Figure 3.1.1.5: The Balance Index for 2012-2021

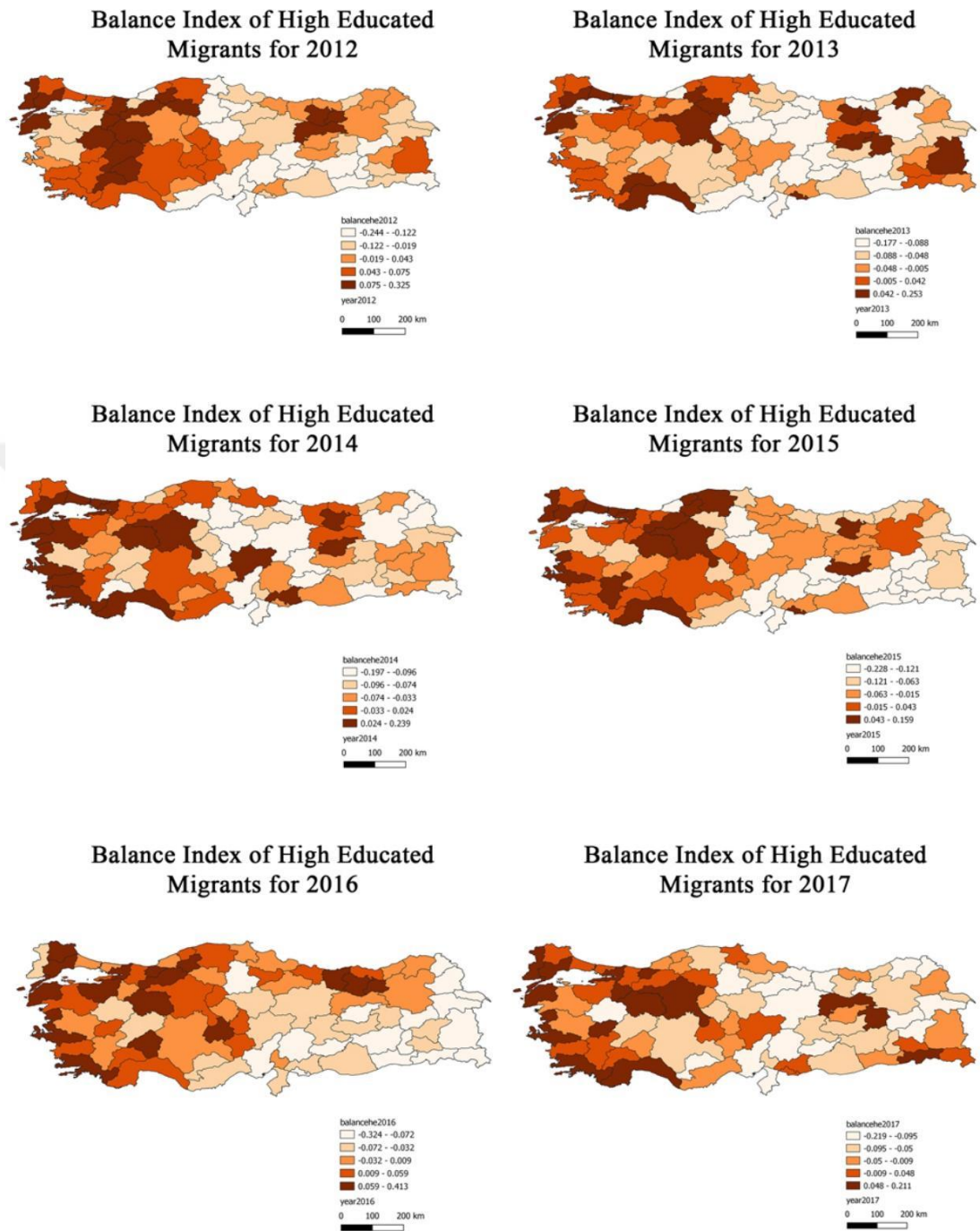




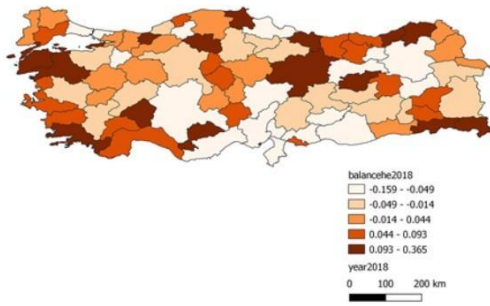
In Figure 3.1.1.5., it is seen that coastal provinces are preferred by migrants. According to Gezici & Keskin (2005), coastal provinces in Turkey have specific advantages such as being a significant center of transport and tourism. From the maps in Figure 3.1.1.5, coastal provinces that are located in the western and southwestern parts of Turkey are more attractive in general. Additionally, when the thesis compares the maps of low-educated migrants and high-educated migrants (Figure 3.1.1.7 and Figure 3.1.1.6), highly educated migrants' balance maps show darker colors in these coastal provinces which may be caused because job opportunities in those provinces are more related to high skills. Zhao et al. (2018) claim that current internal migrants are generally more educated, and they prefer to work in an industrial-based job instead of farming activities. As a result, this brings a migration movement from rural to urban areas. Further, Figure 3.1.1.6 shows that industrial provinces and coastal provinces are preferred by highly educated migrants which affirms the claim of Zhao et al. (2018).

As seen in the northwest and western part, industrial zones are highly preferred because of increased job opportunities, high access to amenities, and high availability of good socio-economic factors. Further, households with high wealth are less likely to migrate from their original places (Coxhead et al., 2019). Therefore, darker colors in the eastern part of the maps of the balance index of low-educated migrants can be explained from the farming perspective. While the eastern cities of Turkey are generally sender, farming activities especially the availability of large farming areas may be a good factor to attract people for internal migration. Looking at that, low educated migrants may be preferring to pursue farming activities in the eastern part of Turkey where there is a high accessibility index and worse opportunities when it is compared with Western cities. According to maps, a similar trend takes place for the valid years. As a result, western cities are generally more attractive than Eastern cities because of the high availability of opportunities and access to amenities.

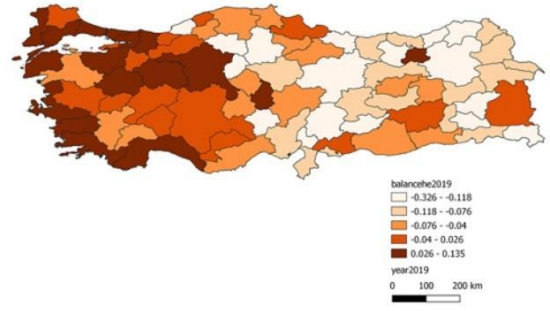
Figure 3.1.1.6: The Balance Index for High Educated Migrants for 2012-2021



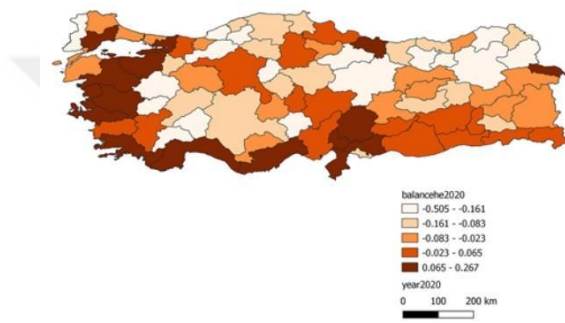
Balance Index of High Educated Migrants for 2018



Balance Index of High Educated Migrants for 2019



Balance Index of High Educated Migrants for 2020



Balance Index of High Educated Migrants for 2021

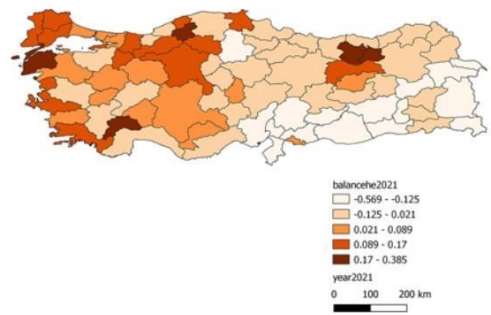
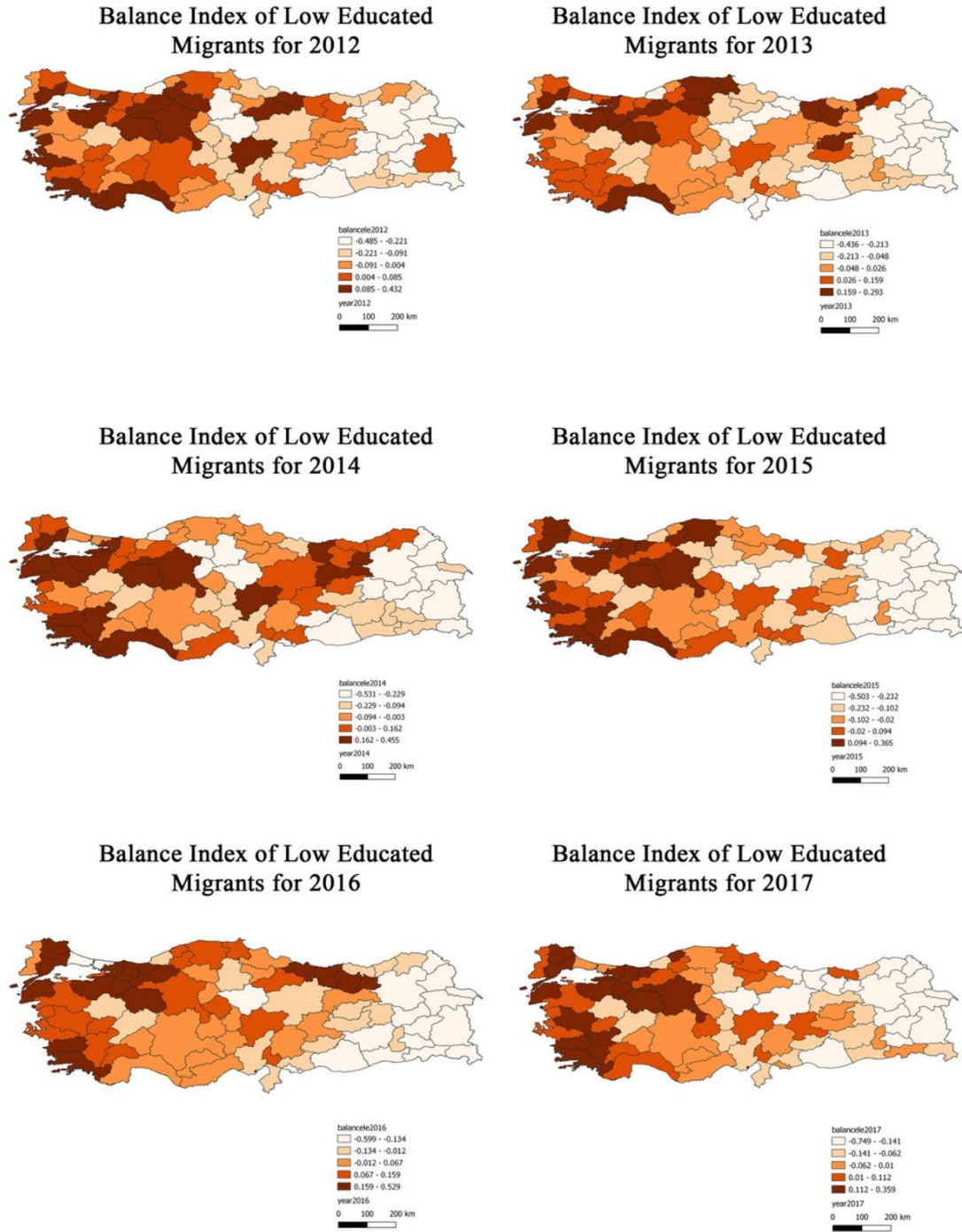
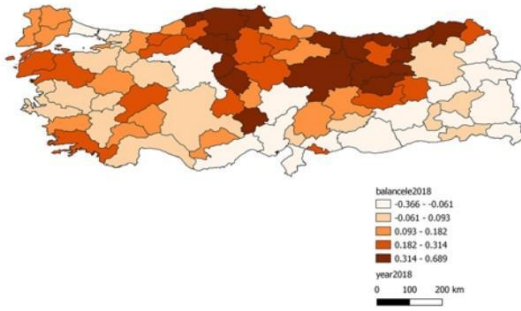


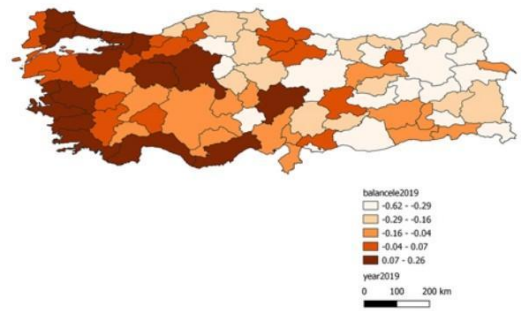
Figure 3.1.1.7: The Balance Index for Low Educated Migrants for 2012-2021



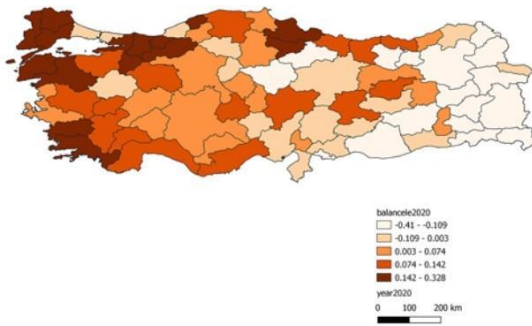
Balance Index of Low Educated Migrants for 2018



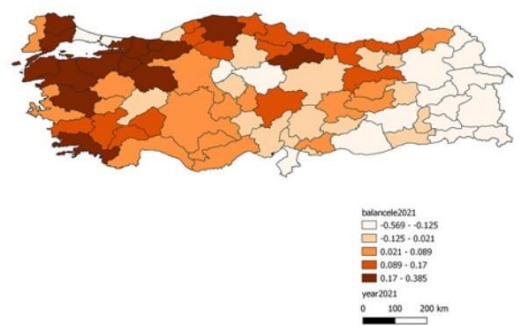
Balance Index of Low Educated Migrants for 2019



Balance Index of Low Educated Migrants for 2020



Balance Index of Low Educated Migrants for 2021



3.1.2 Multivariate Regression Analysis

The balance index is affected by different factors including the unemployment rate, the number of high school and college graduates, the Gini index of economic inequality, and the minimum distance to amenities such as airports, kindergartens, museums, and universities. In general, the QoL structure of a city is one of the key factors of internal migration and it can be indicated by looking at the opportunity for amenity access for individuals. Thus, parks, malls, high schools, colleges, and kindergartens are included as amenities in this paper. Shi et al. (2021) claim that the QoL standard for a city can be calculated by using indices for amenities and a general degree of QOL can be defined for given levels of accessibility. In the thesis, the way of the amenities that affect the balance index in terms of the level of attractiveness is examined by using the balance index as an implicit measure of QOL. Moreover,

amenities explain differences in factors such as rent, wages, and job opportunities in a place, which are major factors in internal migration (Dotti et al., 2013; Laajimi & Le Gallo, 2022). In addition to those, Ahmadiani & Ferreira (2019) show that economic factors such as GDP and unemployment rates also can be used as indicators to evaluate QOL standards. Indeed, Ahmadiani & Ferreira (2019) include such variables as the QOL indicator as well. Laajimi & Le Gallo (2022) show similar results for Tunisia. Different from their study, this paper also shows that distance to high education institutions and other amenities from a city center can be a significant factor that makes a city more attractive. A short minimum distance refers that people have higher access to the amenities in that city. In that paper, the thesis groups average minimum distances to amenities under the accessibility index as explained in section 3. As seen in Table 3.1.2.1, the results show that when the accessibility index increases, the balance index decreases. Increasing accessibility index refers that the minimum average distances to the amenities increase, otherwise, accessibility to the amenities decreases. the result shows that people prefer cities where there is high accessibility to amenities. When the minimum distance to the amenities increases, people's interest in these cities is affected negatively. Kourtit et al. (2021) found that amenities create attractiveness for cities and attractive cities are generally preferred by individuals. It is shown by these arguments that our hypothesis H1a is provided according to the results.

As another determinant, socioeconomic factors can be significant for migrants' decisions on places (Buch et al., 2014; Zhao et al, 2018). In these socioeconomic factors, Piras (2017) shows that GDP per capita, unemployment rate, and migrants' level of development are key determinants in Italy. the results affirm that the unemployment rate and GDP per capita are significant factors for migrants as well. If there is a high unemployment rate in a city, people may decide to move to another city where there is more job opportunity. In addition to this, high GDP per capita is a pull factor for a city and incoming migrants are generally young people (Rodríguez-Vignoli & Rowe, 2018; Bauer et al., 2019). The results show that when the GDP per capita increases within a city, this city becomes more attractive and pulls people from other cities by being a recipient city. This is one of the pieces of evidence that support the hypothesis H2a. Additionally, the thesis also checks how the migrants' level of human

capital affects internal migration in Turkey. To measure it, the thesis considers the education level of migrants by two levels which are low and high educated. The thesis created new balance indexes by looking at these education levels and run the model for these indexes. The result shows that the education level of migrants brings different preferences for people by looking at the factors. For instance, while the unemployment rate is a significant factor for low-educated people, it is not significant for high-educated people for internal migration in Turkey. Similar findings are found in Tunisia, where migration has been shown to flow from origins with high unemployment to destinations of low unemployment (Amara & Jemmali, 2018). The results show that, in Turkey, low-educated migrants move from cities where there is a high unemployment rate to cities with a lower unemployment rate in Turkey. This shows that in addition to the study of Laajimi & Le Gallo (2022), even though a low unemployment rate is a pull factor for cities, people's level of human capital can be a significant factor. High-educated people tend to move to places where there is a high number of high-educated people (Zheng, 2016). These are in line with the hypotheses H2a and H2b. On the other hand, healthcare services are also another significant factor for migration (Evandrou et al., 2010). In the study, the number of beds in hospitals per hundred thousand people is considered as the indicator of health care. Table 3.1.2.1 shows that people, in general, do not care the healthcare services, and it is not a factor that increases the attractiveness of a city for migrants. Indeed, the result is the same when the thesis includes the level of human capital. The reason for that can be sender cities have more available beds in hospitals than recipient cities even though recipient cities have more capacity. Additionally, other factors which can be more significant for migrants can be dominating the health care services. Therefore, the thesis can say that hypothesis H1a is not provided in terms of healthcare services according to Model 2.

Table 3.1.2.1: Regression table

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Balance Empty Model	Balance Full Model	High-Educated Balance Empty Model	High-Educated Balance Full Model	Low-Educated Balance Empty Model	Low-Educated Balance Full Model
Unemployment Rate		-0.00166* (0.00097)		0.00028 (0.00083)		- 0.00451* ** (0.00151)
Number of Bed		0.00018* ** (0.00006)		0.00016* ** (0.00005)		- 0.00020* * (0.00009)
High School Graduate		0.00470* * (0.00234)		0.00156 (0.00201)		0.00671* (0.00364)
College Graduate		0.00619* (0.00330)		0.00181 (0.00284)		0.01498* ** (0.00512)
Number of Convict		0.00402* ** (0.00135)		-0.00013 (0.00116)		- 0.00944* ** (0.00211)
Gdp per Capita (\$)		0.00001* ** (0.00000)		0.00001* ** (0.00000)		0.00001* ** (0.00000)
Accessibility Index (km)		0.00106* ** (0.00018)		-0.00029* (0.00015)		- 0.00185* ** (0.00028)
Farmland Ratio		0.22647* * (0.11503)		0.15284 (0.09905)		0.33945* (0.18134)
Gini		-0.35734* (0.19164)		0.34164* * (0.16502)		-0.40062 (0.29491)
p		0.74150* ** (0.22521)		0.20523 (0.19393)		0.97896* ** (0.35467)
Var(Level1)	.0093	.0110	.0084	.0081	.02009	.0250
Var(Level2)	.002	0.000	.0006	0.000	.0046	.0003
Var(Level3)	.006	0.000	.0023	0.000	.0148	0.000
Constant	-0.01655 (0.01684)	-0.02334 (0.07780)	-0.01653 (.0104838)	0.00712 (0.06699)	-0.00891 (.02586)	-0.05983 (0.12053)

ICC (Time Region)	.4696571 (.063538 2)	0.000 (0.000)	.2571054 (.055005 1)	0.000 (0.000)	.4922708 (.0633909)	.0135651 (.0279435)
ICC (Region)	.3546519 (.076565)	0.000 (0.000)	.2022987 (.058355 4)	0.000 (0.000)	.3752959 (.0771061)	0.000 (0.000)
Log Likelihood	671.218	473.967	738.820	558.763	358.602	237.496
Pro>Chibar2	0.000	0.000	0.000	0.000	0.000	0.000
Observations	810	567	810	567	810	567
Number of groups	26	26	26	26	26	26

Standard errors in
parentheses

*** p<0.01, ** p<0.05, *
p<0.1

where level 1 is time, level 2 is provinces (unit of analysis) and
level 3 is regions.

The level of human capital in a place affects people's decisions and people prefer to move to places where there is an availability of high human capital (Higa et al., 2019; Laajimi & Le Gallo, 2022). In Table 3.1.2.1, when the share number of well-educated people (high school and college graduates) increases, the balance index increases. It shows that in general high human capital accumulation attracts internal migration. In addition to this, this high human capital accumulation brings more high human capital with internal migration. This increases the level of the active labor force within a place as well (Higa et al., 2019). In brief, the findings confirm the findings of Yu et al. (2019) who claim that the type of individuals who migrate internally are generally well-educated people. This means that the findings are valid also in other contexts. By looking at these arguments, the thesis sees that hypothesis H2b is supported as well.

Further, security is another significant factor for internal migration. According to Awasthi (2021), being a safer place is a pull factor for the cities. People generally prefer to avoid places where there is a possibility of the occurrence of unsafe conditions (De Nadai et al., 2020). In the study, the thesis considers the number of convicts per thousand people within a city as the indicator of security. The result demonstrates that there is a decreasing balance index for Turkish cities where the

number of convicts increases. A high number of convicts means low security for a city, and this brings a negative balance index. Therefore, security is a factor that increases the attractiveness of a city, and it plays a role to make cities more attractive and receptive. The results in every full model affirm and support hypothesis H3.

On the other hand, internal migration from rural to urban areas creates an unbalanced circumstance for Turkey (Karakayacı & Öz, 2022). The main factor behind the migration from rural to urban is the high unemployment in urban areas (Lyu et al., 2019). Even though people have a low education level, they generally prefer moving to urban areas from rural areas (Lagakos, 2020). In the study, the results show a different perspective which is when the farmland ratio of a city increases, it affects the balance index positively. Additionally, when the thesis adds the education level of migrants, the thesis sees that the farmland ratio is significant for low-educated migrants, unlike the highly educated migrants. The outcomes of Model 2 and Model 6 for farmland ratio show that there is also a movement towards high farmland ratio places in Turkey as well. According to Model 6, it can be said that farming can create new jobs for low-educated migrants, and it can be a pull factor for cities where there is a high farmland ratio. As a part of the future of the study, this can be also investigated as an unexpected result when the thesis looks at the literature review part.

Inequality is a determining factor for immigration policies within a place (Peters & Shin, 2022). The thesis considers the Gini index as the indicator of inequality. Results from Table 3.1.2.1 indicate that as the Gini index increases, the balance indexes in Model 2 and Model 4 decrease. In that case, inequality appears to be a significant determinant for highly educated migrants but not for low-educated migrants. Consequently, the thesis can say that people avoid inequalities, and it can be a significant determinant while local governments are determining their migration policies for local places. This is also in line with hypothesis H2c.

Finally, looking at the ICC measures from empty models to full models (Model 2, Model 4, Model 6), the thesis sees that while in empty models' variation over time and variance among regions explain 47% in Model 1, 26% in Model 3, and 50% in Model 5, the thesis is able to explain almost all variation when covariates are included in respective models. This means that socioeconomic and accessibility-related factors

have been the main driver of internal migration in Turkey. The explanation rate of the models is high in Model 1 and Model 5 where all migrants and only low-educated migrants are included. This also occurs when the thesis considers changes in balance over the 10 years.

3.2 Conclusion

Significant determinants that make a city attractive and bring incoming migrants have been researched in the QoL and attractive cities literature (see, e.g., Ahmadiani & Ferreira, 2019; Buch et al., 2014; Didenko et al., 2020; Hakim et al., 2022; Lagakos, 2020). The thesis mainly focused on how these determinants such as amenities and socioeconomic factors affect internal migration within Turkey by considering 10 years from 2012 to 2021. Combining migration data, socioeconomic data, and background data such as OSM data, the thesis is able to provide insights into internal migration patterns in Turkey.

In the thesis, a mixed dataset with socioeconomic and contextual data was used to analyze how these factors under the different titles such as safety, education, accessibility to the amenities, level of human capital, and economic opportunities affect the migrants' decision-making process. These different titles were created by looking at the literature. Some of the previous studies focuses on these categories one by one. For instance, a study focuses on only the effect of safety on the internal migration while another part of the studies combines some of these categories such as the effect of human capital level and job opportunities on the internal migration. For that reason, this thesis combines more than two categories for Turkey. As the dependent variable, a balance index was created and calculated for each city in Turkey. This balance index has a range between -1 and 1 and it represents whether a city attracts people to tend to move to the city or not. Other factors such as accessibility to the amenities are used as independent variable in the model. In order to analyze the data, a multilevel regression model was run. Spatial autocorrelation was checked and lost the influence on the model after the error term is multiplied by spatial weight matrix and subtitled with old error term.

The thesis found that socioeconomic factors and accessibility to a bunch of amenities are significant to determine the internal migration path for Turkey. For instance, when the distance between city centers and amenities is low, it increases accessibility, and the city becomes more attractive for the migrants. As seen in the Multivariate Regression Analysis part, people tend to move to a place where there is a high job opportunity, level of human capital, safety, and accessibility to the amenities. On the other hand, farmland ratio was used to represent effect of farming activities on the internal migration. From this perspective, if the farmland ratio increases, the balance index increases as well. This may be showing that farming activities create new job opportunities for people, especially for the low educated people, in the rural areas.

In that study, the thesis departed from the “Feet Voting” expression of Tiebout (1956) which argues that people leave their residents (at various scales) when they think they have exhausted available mechanisms to maximize their utilities. This means that from the analysis of feet voting both sending and recipient cities can generate effective migration strategies and better accommodate the needs of their residents. It is significant to create these strategies because migration increases inequalities between regions and both sender and recipient places (Nilsson & Ramadan, 2020). To this end, various policies related to internal migration and individuals’ social rights have been implemented by the Turkish government. However, even though there are internal migration-based policies, the results show that Turkey provides an internal migration pattern that is relevant to the unequal distribution of socioeconomic factors.

Turkish government follows an internal migration strategy towards balancing internal migration mobility between regions. In that, the needs of migrants such as housing, employment, health, and education are addressed. For instance, to support low-income citizens and migrants, Housing Developing Administration (TOKİ) is responsible for building new residential places while providing affordable housing. However, as the analysis strongly suggested, these dwellings must have good access to amenities and opportunities to ensure balanced migration. Moreover, the results regarding economic factors such as unemployment rates, GDP per capita, and

inequality all point out the significance of economic opportunities (or lack of them) in generating migration flows. Therefore, it becomes clear that the unbalanced development of cities and regions must be prioritized and tackled in policymaking. Further, the Village Institutes Program was used to improve the QoL in rural areas and encourage internal migration mobility towards rural areas instead of urban centers in the early years of the Republic. However, this program is not being currently implemented. Given the results indicating migration flows towards farmland destinations, Turkish authorities can benefit from this trend and consider similar projects for families living in villages. As seen in the Multivariate Regression Analysis part, farming activities should be considered for Turkey by looking at the relationship between the farmland ratio and the balance index. The main idea behind the Village Institutes Program was to create human resources by increasing the number of educated people in rural areas to educate people living in these rural areas and increase the efficiency. In addition to these policies, the Employment and Social Assistance Program for Migrants and National Employment Program are other government policies that are used to create new job opportunities and better social services for migrant workers in Turkey. These programs include training and education as well. The focus on job training programs and affordable housing seems as the key point of the current internal migration strategy. This focus addresses internal migrants, especially low-income citizens, and increases the chance of getting effective outcomes. On the other hand, addressing the needs of marginalized groups such as women and children who can have different and unique needs can be a challenge and a missing part of the internal migration strategy of Turkey. The results regarding safety suggest that internal migration takes place toward safe places. This can be particularly significant for women and children.

In addition, the level of human capital also matters in a part of the determinants such as healthcare services. This may bring new and interesting research points for further studies. Finally, the availability of data on migrants' origin and host locations can be used to extend the scope of this study in future stages.

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