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

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Abstract: 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. We find 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, we 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.

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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). 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 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, we aim to fulfil 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). 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 attractiveness of this city. Hence, a high attractiveness becomes a significant pull factor for migrants. Throughout the paper, we call 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 we call 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.

Literature Review

The concept of "Migration" has been analysed 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 labour migration becomes less limited, their study shows that labour 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. 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 labour 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 labour 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 labour 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 analyse 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 on 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.

In this study, 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), we test 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 centres, 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 centres.

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.

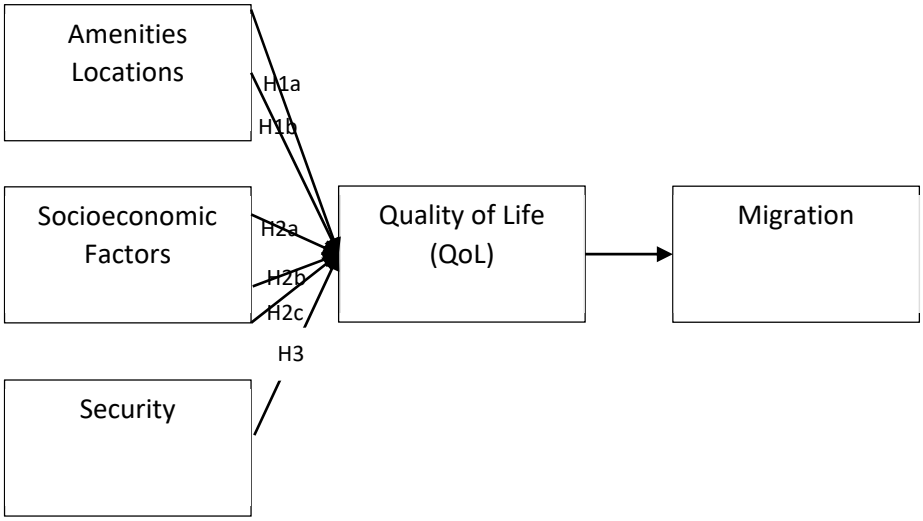
H2b: A high human capital is a pull factor for migration and increases the attractiveness of the city.

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, we have 3 main hypotheses which are grouped under amenities and location, socioeconomic factors, and security. There are sub-hypotheses among these groups:

Figure 1: Hypotheses



Data and Methods

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 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 centre of the cities to the amenities, and creation of matrices. There are two data types used in the paper:

***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 labour 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 - Contextual Variables:

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

Farmland Ratio: Share of farmland in total land.

A general accessibility index can be created by taking averages of distance-related variables. We created an "Accessibility Index" by using GIS data derived from OpenStreetMap to measure the accessibility of amenities for each Turkish city. In the index, we calculated the average minimum distances from city centres 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 centres 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 centres, 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.

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. Our accessibility index is then a modified version of Hansen's accessibility model and it shows the accessibility of amenities for each city in Turkey. We construct the following accessibility index based on distances from a city centre to amenities:

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

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. We determine the city centres' coordinates to calculate distances to the amenities. For instance, the accessibility index includes the average of all distance-related variables. This means that we have taken the average minimum distances to reach the different number of amenities such as airports, community centres, 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, we 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, we create 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:

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

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

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

Figure 2: Moran's I for the balance index

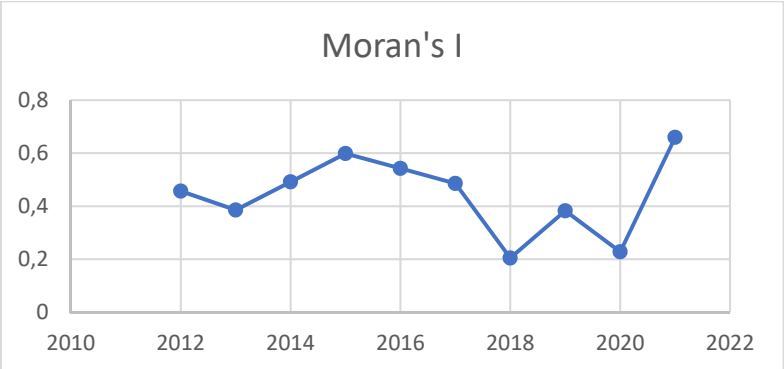
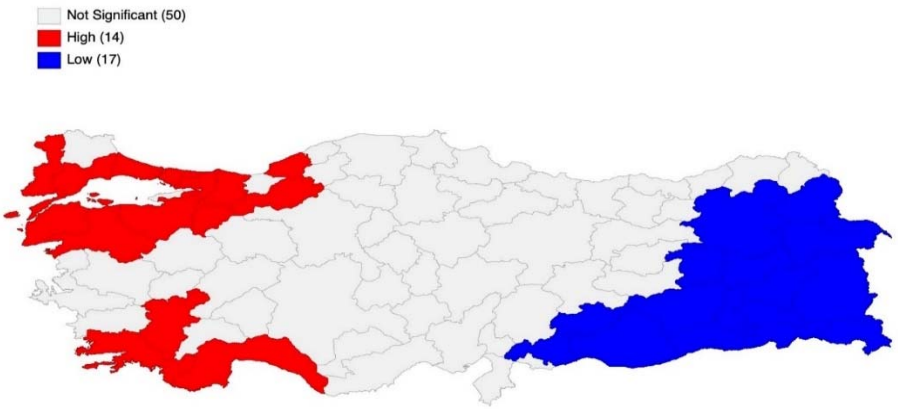


Figure 2 shows that even though there are fluctuations, there is a positive autocorrelation between Turkish cities regarding the balance index for relevant years which are between 2012 and 2021. Further, there are clusters for the balance index when the LISA map is drawn:

Figure 3: An example of LISA Map for the balance index for 2012



As Figure 3 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 analyse (Snijders & Bosker 2011; Teke-Lloyd et al. 2022). Panel datasets are generally more complex and structured, and they need to be analysed by considering this complexity which cannot be analysed 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 our 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). We first run an Ordinary Least Square (OLS) regression model to see the relationship between the balance index and other variables. During this step, we decomposed the error factor by multiplying it with the spatial-weight matrix to adjust the spatial autocorrelation factor. Then, we first state our ML model for the balance index:

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

where B_{ijt} is the balance index for the city i in year t and region j; x_{ijt} represents covariates; μ_{ij} are neighbourhood-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:

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

and

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

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, we run the empty model which includes none of the covariates to separate variances into the groups which are within and between period variances.

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

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

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

Results

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 our paper, 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 centre 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, we group average minimum distances to amenities under the accessibility index as explained in section 3. As seen in Table 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. Our 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 our 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. Our 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). Our result shows 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 our hypothesis H2a. Additionally, we also check how the migrants' level of human capital affects internal migration in Turkey. To measure it, we consider the education level of migrants by two levels which are low and high educated. We 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). Our 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 our hypothesis H2a and H2b. On the other hand, healthcare services are also another significant factor for migration (Evandrou et al., 2010). In our study,

the number of beds in hospitals per hundred thousand people is considered as the indicator of health care. Table 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 we include 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, we can say that hypothesis H1a is not provided in terms of healthcare services according to Model 2.

Table 1: Regression table

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	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*		0.00028		-0.00451***
		(0.00097)		(0.00083)		(0.00151)
Number of Bed		-0.00018***		-0.00016***		-0.00020**
		(0.00006)		(0.00005)		(0.00009)
High School Graduate		0.00470**		0.00156		0.00671*
		(0.00234)		(0.00201)		(0.00364)
College Graduate		0.00619*		0.00181		0.01498***
		(0.00330)		(0.00284)		(0.00512)
Number of Convict		-0.00402***		-0.00013		-0.00944***
		(0.00135)		(0.00116)		(0.00211)
Gdp per Capita ($)		0.00001***		0.00001***		0.00001***
		(0.00000)		(0.00000)		(0.00000)
Accessibility Index (km)		-0.00106***		-0.00029*		-0.00185***
		(0.00018)		(0.00015)		(0.00028)
Farmland Ratio		0.22647**		0.15284		0.33945*
		(0.11503)		(0.09905)		(0.18134)
Gini		-0.35734*		-0.34164**		-0.40062
		(0.19164)		(0.16502)		(0.29491)
p		0.74150***		0.20523		0.97896***
		(0.22521)		(0.19393)		(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	-0.02334	-.01653	0.00712	-.00891	-0.05983

	(0.01684)	(0.07780)	(.0104838)	(0.06699)	(.02586)	(0.12053)
ICC (Time|Region)	.4696571	0.000	.2571054	0.000	.4922708	.0135651
	(.0635382)	(0.000)	(.0550051)	(0.000)	(.0633909)	(.0279435)
ICC (Region)	.3546519	0.000	.2022987	0.000	.3752959	0.000
	(.076565)	(0.000)	(.0583554)	(0.000)	(.0771061)	(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 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 labour force within a place as well (Higa et al., 2019). In brief, our findings confirm the findings of Yu et al. (2019) who claim that type of individuals who migrate internally are generally well-educated people. This means that our findings are valid also in other contexts. By looking at these arguments, we see 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 occurrence of unsafe conditions (De Nadai et al., 2020). In our study, we consider the number of convicts per a 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 recipient. Our 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 our 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 we add the education level of migrants, we see 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 we look at our literature review part.

Inequality is a determining factor for immigration policies within a place (Peters & Shin, 2022). We consider the Gini index as the indicator of inequality. Results from Table 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, we 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), we see 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, we are 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 we consider changes in balance over the 10 years.

Conclusion

Key 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). In our study, we 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, we were able to provide insights into internal migration patterns in Turkey.

We found that socioeconomic factors and accessibility to a bunch of amenities are significant to determine the internal migration path for Turkey. In that study, we 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, our 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 our analysis strongly suggested, these dwellings must have good access to amenities and opportunities to ensure balanced migration. Moreover, our 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, Village Institutes Program was used to improve the QoL in rural areas and encourage internal migration mobility towards rural areas instead of urban centres in the early years of the Republic. However, this program is not being currently implemented. Given our results indicating migration flows towards farmland destinations, Turkish authorities can benefit from this trend and consider similar projects for families living in villages. 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. Our 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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KAKO KVALITET ŽIVOTA UTIČE NA ATRAKTIVNOST GRADOVA I UNUTRAŠNJE MIGRACIJE U TURSKOJ?

Apstrakt: Upravljanje unutrašnjim migracionim tokovima može doneti značajnu korist zemlji u balansiranju mogućnosti između regiona ili gradova. Da bismo se uhvatili u koštac sa nejednakim pristupom mogućnostima, treba razumeti faktore koji podstiču internu migraciju. Ova studija ispituje skup faktora privlačenja i pritiska za internu migraciju prostornom ekonometrijskom analizom i GIS aplikacijama. Smatramo da kada se poveća dostupnost sadržaja, grad postaje privlačniji i poželjniji za migrante. Pored toga, socioekonomski faktori takođe igraju značajnu ulogu u procesu donošenja odluka migranata. U ovoj studiji koristili smo skup podataka koji uključuje socioekonomske i kontekstualne podatke kao što su udaljenosti do sadržaja za svaki turski grad u godinama između 2012. i 2021. Rezultati pokazuju da u Turskoj unutrašnja migracija teče sa istoka na zapad, gde su prilike bolje. Konačno, nivo ljudskog kapitala migranata može izazvati različita razmišljanja o faktorima i može promeniti redosled važnosti varijabli za ljude koji imaju drugačiji nivo ljudskog kapitala, kao što je nivo obrazovanja. Na osnovu nalaza, dokument nudi nekoliko predloga politike za obezbeđivanje uravnotežene migracije u Turskoj.

Ključne reči: unutrašnje migracije, kvalitet života, atraktivnost, mobilnost, pogodnosti, višestruki model, LISA.

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