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ARAŞTIRMA MAKALESİ (Research Article)

PROVINCIAL HUMAN CAPITAL FLOWS AND URBAN DYNAMISM IN TURKEY

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ABSTRACT

Human capital is being argued as an urban development factor for many years. People who can think, create, change way of thinking easily according to fast evolving new situations, make innovations and produce innovative solutions are the bases of urban dynamism. In the world literature, after human capital has gained such an important role, many researches have been conducted in order to understand relationship between human capital flows and spatial development. However, in Turkish literature, mainly due to lack of detailed migration data, this kind of studies are not in sufficient number. In this study, it is aimed to cluster the most popular urban migration destinations according to their human capital immigration profiles by using some exploratory techniques and there are some surprising conclusions reached by these analysis in Turkey, like, although Istanbul is the outlier for almost all of the urban dynamism characteristics for Turkey, she is not lucky enough for gaining the most valuable urban migration profile. Besides; it is seen that there are opportunities to gain and benefit from this valuable profile by developing some policies on training, internship opportunities, creation of jobs for the ones which are not as popular migration destinations as Istanbul, like Kutahya, Erzurum, and Manisa. Therefore, human capital and its relation with space are very important issues for planning authorities and policy makers to dig up. This paper is written to shed light on this crucial issue. In the first part; literature on analyzing the relation between human capital and urban development is presented. In the second part, exploratory analysis of human capital migration is introduced. Third part includes the reached clusters and their interpretations. Paper ends with some concluding remarks pointing issues on further research on this subject.

Keywords: *Human capital flows, Urban development, Urban dynamism*

TÜRKİYE'DE İLLER ARASI BEŞERİ SERMAYE AKIMLARI VE KENTSEL DİNAMİKLER

ÖZ

Beşeri sermaye kentsel gelişmenin bir faktörü olarak yıllardır tartışılmaktadır. Düşünebilen, yaratabilen, hızlı evrimleşen durumlara gore düşünce yönünü değiştirebilen, yenilikler yapan ve yenilikçi çözümler üreten insanlar kentsel dinamizmin temelini oluşturmaktadır. Dünya literatüründe;

beşeri sermayenin böyle önemli bir rol kazanmasının ardından, beşeri sermaye akımları ve mekansal gelişme arasındaki ilişkiyi anlamaya yönelik pekçok araştırma yapılmaktadır. Ancak Türk literatüründe bu tür çalışmalar; daha çok detaylı göç verisinin eksikliği nedeniyle, yetersiz kalmıştır. Bu çalışmada; açıklayıcı veri teknikleri ile, en çok göç çeken iller beşeri sermaye göç profillerine göre kümelendirilmiştir ve bu analizler neticesinde Türkiye için bazı ilginç sonuçlara da ulaşılmıştır. Örneğin; Istanbul kentsel dinamizm özelliklerin hemen hepsi için Türkiye'de dışadüşen olmasına rağmen, en değerli kentsel göç profilini kazanmak yönünde pek de şanslı olmadığı görülmektedir. Bunun yanısıra; Istanbul kadar revaçta olmayan göç çekim merkezlerinin; Kütahya, Erzurum ve Manisa gibi, eğitim, staj fırsatları, yaratılacak iş imkanları gibi politikalar ile bu kıymetli göç profilini kendine çekmek ve fayda yaratmak için fırsatlar olduğu görülmektedir. Bu sebeplerle beşeri sermaye ve onun mekan ile ilişkisi; planlama otoriteleri ve politika geliştiren çevreler için derinleme araştırılması gereken önemli bir konudur. Bu makale; bu önemli konuya ışık tutmak için yazılmıştır. Birinci bölümde; beşeri sermaye ve kentsel gelişme arasındaki ilişkiyi araştıran literatüre sunulmaktadır. İkinci bölümde; beşeri sermaye göçünü açıklayıcı analizler sunulmaktadır. Üçüncü bölüm ise elde edilen kümeler ve yorumlarını içermektedir. Makale bu konunun ilerletilmesine yönelik bazı tespitler ile sonuçlandırılmaktadır.

Anahtar kelimeler: *Beşeri sermaye akımları, Kentsel gelişme, Kentsel dinamizm*

1. INTRODUCTION

Globalization wave evolved migration phenomenon into a fact which holds new dependencies and relations. Thus, mobility and migration concepts interwined. In consequence of these changes; it is no more easy to analyze migration's spatial effects. By the end of 20th and with 21st centuries; migration has begun to turn into local scale dynamic mobilities among the boundaries that we have not witnessed before in history. Nonetheless, motivations of migration and the evolutionary effects of migrants on destinations have also changed. Besides forced migration, voluntary and selective migration has increased. This second type of migrants are known to evaluate many different factors together like standards of living, approximate wages, culturel closeness, social networks, dangers, other benefits and costs in possible destinations and then they make their decisions [1]. Mobility of human capital –educated and productive population- that became visible in 1980s and continuing nowadays as an important factor for urban development is an example to this kind of migration behavior [2], [3], [4], [5]. Increase in mobility of this population group is explained by their higher ability to access and interpret the information [6]. Their main motivation is mostly to carry themselves to a better position in society. Technological improvements and globalization increased migration frequencies and distances. According to 2009 estimations 740 million people moved around within the country boundaries in the world and this accounts for %3.3 of world population [7].

Migration oriented studies are mostly concentrated on economic effects on space. However, with endogenous growth theories human capital and new information gained importance on production side and this stimulated researches themed as "human capital mobility and its impacts on space". This development is resulted with wide range of studies looking for the relation between formation and spillover of new information and ideas with human capital mobility [8], [9], [10], [11] [12], [13] [14], [15]. These researches are mostly concluded that labor and human capital mobility is a balancing and flourishing factor for regional development. At the start of 1980s, migration was defined as a mobility from rural areas to urban regions. This mobility could not be controlled and faced urban regions with unbalanced spatial developments, environment challenges, security problems, inadequate health and

education facilities. Spatial disintegration got biger and biger, day by day [16]. Nowaday, urban to urban migration is also a considerable issue [17], especially the mobility of human capital. In order to stop this spatial disintegration in urban regions and also rural areas, balanced human capital distribution can be a chance to achieve livable and sustainable environments. All these reasons paved the way for this research and we focused on analyzing the provinces attracting human capital.

2. STUDIES ON HUMAN CAPITAL MIGRATION AND URBAN DEVELOPMENT

[18], mentions about the change in economic structures of the cities and nations. He defines the early economies as the manufacturing economies. Then he speaks about the change in the economic focus of the cities from manufacturing to information and he concludes with determining today's economic focus as the cultural or creative industries. According to him, these creative industries are the main tools to attract mobile, educated human capital to the regions. Additionally practical experiences have showed that divergence and dynamism of cultural sector have influence on attracting investments by international companies because it constructs a productive and intellectual environment for their employees [19].

Nowadays, regions or cities need to be competitive in order to become a node in the global network economy [20]. One of the most important components of competitiveness is innovation which is in close relation with knowledge. Thus the relation between regional characteristics and their roles in knowledge production and spillovers has become a growing interest of the recent scientific researches. Models developed in the light of these concerns try to identify the reasons of the knowledge-base differentiations between the regions.

[21], argue in their study that not only the densely populated large cities but also some small urban centers with appropriate environments for knowledge spillovers have the potential to become innovative centers. According to the literature, knowledge spillover becomes possible by the human capital movements between firms. Additionally, on a larger scale, it is possible through the highly qualified university graduate flows between the regions. Although the researches on the relationship between learning regions and human capital flows are not in large amounts, most of the economists and policymakers accepted human capital as the main ingredient of innovation and economic growth [22],[23].

[24]'s surveys conducted with innovative firms located in London metropolitan region showed that transportation infrastructure; general and specialized business knowledge and information; finance, training, knowledge and information; factors of production; technical and professional labor were the four groups of components which develop the firms' innovativeness. However, the most rated prerequisite for innovation is the proximity to highly qualified human capital among those groups. Their study also stressed that international connections play more important role than the local and regional relations in innovativeness. Therefore they are drawing attention to high accessibility –like closeness to important airports or being connected with high capacity transport modes- as regional characteristics of places in terms of innovativeness. Following this finding, they suggest not only to rely on the indicators, based on firms and economy but also on quality of life indicators such as availability of good housing, advanced education facilities for children, accessibility of high quality recreational amenities, etc. in innovativeness analysis. These indicators get high scores in their surveys.

3. RESEARCH QUESTIONS

If we look into the migration literature, we come across with many different types of studies. It is possible to categorize those studies by two main aspects. The first aspect is the scale of migration dealt with and the second one is the kind of determinants used to explain the migration behavior.

The first category consists of two types of studies such as micro scale and macro scale migrations [25].

Macro scale migration models deal with mass migration which is a property that differs them from the micro approach. Thus, the main interest of those models is percentage of unemployed or environmental characteristics. Classical economic models suggest that interregional migration decreases inequality between the regions' economic structures by the flows of unemployed to the regions where they can find better opportunities. However, [8], mentions that Myrdal (1957) had some contradictory ideas which support the imbalances caused by interregional flows of people in a selective nature. According to [8] another influential study on interregional migration was introduced by Lee (1966) who was dealing with detection of the regional characteristics that make people migrate to or migrate from.

Second aspect for the categorization of migration studies is the different determinants used to explain migration behaviors. Classical labor migration models, human capital models, job search models, and gravity models can be listed in this category.
As a result of the mentioned deficiencies of classical theory of labor migration some other alternative models have been developed in order to make better explanations for this complex action. One of them is the **human capital models of migration** [26]. Although it requires effort to collect more information, its explanatory power is higher than the classical theory. The base ideas of this kind of modeling come from the human capital theory.

Human capital theory, originated from [27] work, deals with explanation of the income disparities. Basically; talents, experience and knowledge gained by an individual form the human capital. In order to improve human capital in value; schooling and professional knowledge accumulation are needed. Individuals decide whether to improve human capital in value or not and this decision affects both the efficiency of the work life and the income. Human capital theory is the way of thinking about individual decisions to acquire knowledge and about the consequences of these decisions for productivity [28]. This theory laid the background for some of the economists and they used human capital as important inputs for their growth models. The idea of using human capital concentrations in economic growth models has its roots in the endogenous growth theory that came into existence by the end of 1980's. In early human capital models all the intangible forms of knowledge including human capital skills were considered as unique and competitive inputs for economic growth [29].

Knowledge transfers and accumulation are very important factors for economic and technological improvement where the economy's main material is knowledge and migration is an effective factor in the process of knowledge spillovers between the regions which may adjust the human capital reserve. For that reason, many works have underlined the impact of human capital on the regional development [28], [29], [30], [31], [32], [33], [34], [35], [36], [24], [37]. Researchers assume that as the workers move between the companies or institutions, they share the knowledge learned from the past experiences and the social capital. This process motivates general improvement in knowledge and innovation base of a region. Employees' knowledge is an important factor which increases the

productivity of companies. The way of improving the innovativeness depends on R&D personnel and talented personnel working in operation [38]. Cities' ability to attract the talented people [39], has been also a significant research area.

Human capital approach in migration theory differs from the classical theory with its ability to take into consideration the migrant's remaining working life while assuming that he/she will respond to the higher incomes. One of the main assumptions in this theory is that both mobile and well-educated group of graduates also corresponds to the group who has the highest share in the contribution of the knowledge formation and accumulation [9]. As to express more clearly, when talented and well-educated people move into a region, production capacity increases, competence of the labor market rises and information and innovation begin to be transferred more effectively. Therefore, identifying the influential features in the process of migrants' decision making on destination choices is a very crucial action. It is proved by many researches that cities as living spaces are mostly preferred by well-educated people [38]. Higher payments and improved chances proposed in the cities are major factors stimulating this tendency. Additional factors are listed as chances for education and family life. [26], was the pioneer of this argument. According to him, when somebody moves to a region, he/she makes investment. Following the evaluation of negative and positive consequences of migration, the decision is made. Negative and positive consequences of migration can affect people both economically and psychologically. Regional human capital accumulation has its theoretical roots in this decision making process. [34], introduces another factor of human capital accumulation in regions. He suggests that the reason for migrating to cities is the chance to improve their knowledge and talents by getting together with other professionals and thus rise in their careers. Those further will cause increase in their incomes [34]. Additionally, all the costs and benefits are included in the human capital approach many of which were incomplete in the classical one. The last strength of the human capital approach in migration modeling is its sensitivity to the selective nature of the action which draws the attention to the tendency of the young, highly educated and skilled ones to migrate [38]. This tendency causes the divergence of wages and incomes within a region and also throughout the country. For this reason, quality of life in peripheral places declines in time [40][41]. Despite its wider scope of explanatory factors, the human capital theory has also been criticized because of the assumption that the migrants are able to reach perfect information [42].

Human capital approach has been very inspiring for many of the migration and urban studies in the literature starting with the work of Jane Jacobs in 1984 and continuing with the most recent ones.
[43], used the term 'creative people' as a synonym to 'human capital' and noted that regional economic development depends on the qualifications of the cities to attract creative people. Lucas (1988), inspired by Jane Jacobs, stressed that most of the knowledge is spilled over by the interactions between people accumulated in cities. The importance of human capital has increased with development of industry specialized in high technology products and services.

[44], as a contemporary supporter of creative economies argues that mobile-talented human capital pool is the most important factor for the companies to cluster in certain regions and this source of human capital makes them more competitive and creative. According to [44], economic reasons are not the only reasons for high qualified and talented people to move from one place to another. He argues that diversity of the places is one of the most important driving forces of the talented population's movements between the borders. For this reason, he defines culturally diverse places as the creative centers where creative human capital, innovation and high-tech industry are concentrated. Those places become centers of growth because of the creative people's preferences of living there.

[21], searched the influence of knowledge capacity of the regions on their ability to attract the young graduates. In their research, they analyzed the data which showed them the migration patterns of British students by the help of GIS (Geographical Information Systems). The statistical technique to assess the relationship between regions' knowledge assets and flows of young human capital was a three stage least squares simultaneous equation system. In order to reach their main aim, they brought together the migration data and the regional assets of knowledge production and innovativeness. Knowledge capacity indicators used in the study were regional labor market indicators, industry structure indicators (employment demand and innovation indices), quality of life indicators, and geographical indicators. One of the results drawn from the research is the positive correlation between attractiveness of a region for the young human capital and some of the characteristics of the regions such as innovative potential, crime rate, the proportion of knowledge workers and geographical peripherality. Another outcome of the study is the negative correlation between weakness of the local job market and ability of the region to attract the young talented population. Besides, results of the study prove that having a research institute or a university raises the chance of the region to benefit from the young graduates as talented human source. However, there is no direct evidence of the relationship between universities' contribution to innovative activities in regions.

[45], in their study, assessed the effects of a regional policy to create a well educated and talented population and then make them contribute to regional economy by keeping them within the same region. Results of the survey showed that human capital flows are most influenced by the increase in income per unit of labor relative to national mean among these regional characteristics and higher unemployment rates have discouraging effects on the flows. The analysis also proved that regions growing faster receive more young talented migrants compared to the national average. In terms of quality of life indicators, crime has a stronger effect on decisions to move out of that region. However, population density has an adverse but a weaker effect which means that young talented individuals prefer to move into more populated and diverse places.

4. RESEARCH QUESTIONS and METHODOLOGY

Inspired by the review of literature in the previous part, aim of this study is to catch some clues for further steps on modeling the relationship between human capital migration patterns and urban dynamism by exploring general picture of migration paths and patterns in Turkey. To reach that aim, the study is constructed to answer the following research questions;
1. Which provinces are the most attractive destinations in terms of urban migration? -First step is to filter urban migration data in order to exclude rural migration. Following this, provinces are ordered according to the amount of population received from other city centers and a map is produced. Another city to city migration map is produced by ordering provinces according to proportion of each province's immigration compared to that province's total immobile population.
2. What is the most influential migration reason for each destination? -Second step is to explore and map the relationship between reasons of immigration and destinations.
3. What are the human capital urban migration profiles of the most popular destinations in Turkey? – Third step is to form clusters of provinces according to their human capital migration profiles.

In order to answer above research questions, exploratory data analysis techniques like stem & leaf plots and cluster analysis are used during the production of maps and figures for the study. It is believed that before constructing a regression model in order to understand the most and the least effective indicators on spatial human capital migration patterns, first it is useful and crucial to lay out

the data distribution on space and the interrelations between main indicators of human capital migration and provinces. This research is conducted as a preliminary step for improved spatial econometric analysis.

Data used in this section and in the following sections belongs to year 2000 provincial level data, and all values are calculated from TUIK's (Turkish Institute for Statistics) Migration Statistics by the writers. It is a fact that, in Turkey we do not have a detailed migration data which can be attributed to space. Different institutions have different kind of data according to their interest areas. However, these data are not very convenient to combine and compare in a research of spatial analysis. Detail of data used in the following parts were available for the year 2000. That is why we used this database. Therefore, findings of the research are reflecting a picture belonging to that period. Rural migration statistics are excluded during calculations of migration statistics.

5. MAIN FINDINGS

5.1 Attractiveness of Provinces in Terms of Urban Migration

When we order urban immigration for each province of Turkey, İstanbul, Ankara, İzmir, Bursa, Antalya, and Konya constitute the extreme cases ranging between 82000 to 642000 people (Figure 1).

Mean value for urban inmigration is around 41000, and only 18 out of 81 provinces are receiving population over this value. Most of provinces (55 cases) are accumulated within interval of 3000-28000. Other than the extreme cases, provinces receiving urban immigration over mean value are mostly located in surrounding geographies of metropolitan cities like Istanbul (Kocaeli, Tekirdağ), Ankara (Eskişehir), İzmir (Balıkesir, Manisa, Aydın), Antalya (Mersin, Adana). Samsun is the only province receiving urban immigration over mean value in Black Sea Region. Similarly, Kayseri stands alone for middle Anatolia, and Gaziantep and Diyarbakır for South Eastern regions (Figure 1).

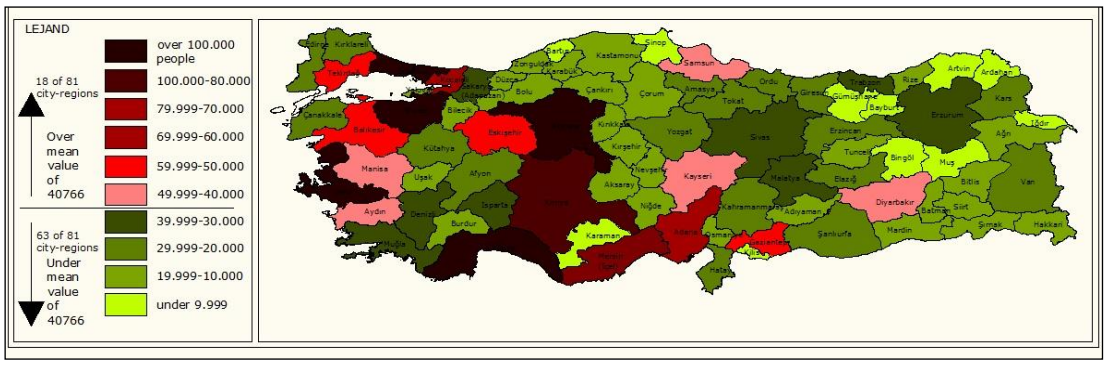

Figure 1. City regions' inmigration from other city regions.

5.2 Influential Migration Reasons for Each Destination

According to results of analysis, for all the defined reasons of in-migration, İstanbul, Ankara and İzmir are calculated as outliers which means that they affect the mean values so much that it becomes difficult to understand the general picture of immigration for the rest of the country. Therefore the analyses above are carried out by excluding those three extreme cases.

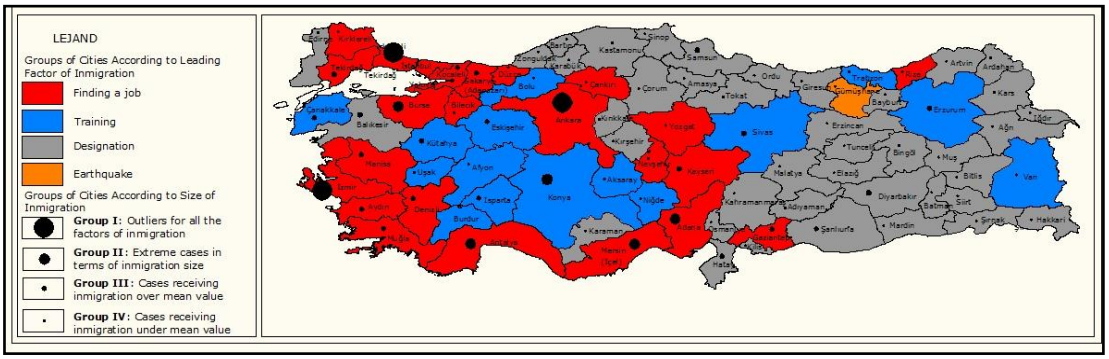

Figure 2. Leading factors of immigration for each province and groups of provinces according to size of immigration.

Figure 2 overlaps two different variables which are size of immigration and the most rated factors of immigration for each province in Turkey. TUIK identified 8 options for immigration factors and categorized the answers according to them. However, categories like "unknown", "other", and "migration related to another member" are not well-defined answers, and they do not give a considerable idea about the migration behavior in Turkey. Therefore, during the creation of the above map those four categories have been ignored. The highest proportions among the categories, designation, security, earthquake, marriage, training, and finding a job have been selected as the leading factors for each city.

Previous explorations of the immigration data have showed that İstanbul, Ankara and İzmir are outliers for all of the immigration factors, and job seeking/finding factor is the most rated answer for these cities. In terms of size of immigration Bursa, Antalya, Mersin, Adana, and Konya are the extreme cases with very high numbers of people. For this second group of extreme cases, job opportunity is again the leading factor except Konya. Training is the most rated factor for Konya to receive population.

Third group of cities in this map show the cities receiving population over the mean value of immigration for the whole Turkey. In this group, Kocaeli, Tekirdağ, Gaziantep, Manisa, Aydın, Kayseri, Muğla, Denizli, and Sakarya are receiving migration due to their job opportunities. Some of them are probably under effect of large neighboring economies like Kocaeli-Tekirdağ-Sakarya (located closer to İstanbul), Manisa-Aydın (located closer to İzmir), Denizli-Muğla (located both closer to İzmir and Antalya), Kayseri-Gaziantep (located closer to Adana). Another interesting result for this third group is that for some of the cities like Eskişehir, Erzurum, Isparta, Sivas, Çanakkale, and Kütahya training factor is more important than the other factors including job opportunity. There are universities located in each city, and there are two universities in Eskişehir. The oldest university dates back to 1957 which is Atatürk University in Erzurum, and the newest ones date back to 1992, namely Çanakkale Onsekiz Mart University in Çanakkale, Dumlupınar University in Kütahya, and Süleyman Demirel University in Isparta. Data on immigration shows that they are important centers for attracting students (URL: yok.gov.tr, higher education catalog, 2011).

Some of the cities in the third group like Balıkesir, Diyarbakır, Samsun, Malatya, Şanlıurfa, and Hatay attract people mostly on designation purpose. Balıkesir is the only city located in the west side that has been preferred on designation purpose; the rest is located in the eastern part of Turkey.

Forth group of cities in this map represent the ones receiving number of people under the mean value for the whole Turkey. In this group, interesting result is that designation is a dominant factor for 35 (more than half) out of 52 cities. Finding a job is at the top of immigration factors for cities like Yozgat, Kırklareli, Bilecik, Çankırı, Rize, Yalova, Düzce and Nevşehir. Those cities are mostly located in the Eastern part of Turkey or in the middle of Anatolia (like Yozgat and Nevşehir) except Rize which is located in the Eastern Black Sea Region. Training is a leading factor for Van, Afyon, Niğde, Bolu, Uşak, Aksaray, Burdur, and Trabzon. Among those cities, except Van, the cities are located in the Eastern or Middle Eastern part of Turkey. Furthermore, they all have a university. The oldest one is located in Trabzon in 1955, and the newest ones are located in Aksaray, Burdur, and Uşak in 2006 (URL: yok.gov.tr, higher education catalog, 2011).

Earthquake appears as a leading factor of immigration for only Gümüşhane.

5.4. Migration Relations and Human Capital Profiles of Imigration

According to the result of exploratory analysis done for this report, it can be possible to work on some clusters showing similar migration paths and patterns in terms of human capital profiles, directions and reasons. As the main aim of the research was to look for a relationship between urban shrinkage and human capital flows, forming clusters of similar migration paths and patterns, and clusters of showing similar shrinkage tendencies can be the next step of the research.

In this part of the analysis immigration patterns of popular destinations will be displayed. Firstly, power of immigration relations are analyzed and shown on maps and then, by the help of radar charts, human capital profiles of immigration to destinations are shown. Human capital is defined as the combination of high skilled, experienced, and educated people. Therefore, here, human capital profiles are represented by percentages of series of indicators which are measures for skills, experience, and education (Table 1).

Table 1. Human Capital Measures, Indicators and Their Relations with Literature.

CONCEPTS DEFINING "HUMAN CAPITAL"	HUMAN CAPITAL INDICATORS FOR MIGRANTS	HOW IS THE INDICATOR RELATED WITH THE CONCEPT OF "HUMAN CAPITAL" ACCORDING TO LITERATURE?
EXPERIENCE	% of 25–54 age group of migrants	Most productive cohort in terms of economic activity and also an important ingredient of skill is gained by experience which is associated with age.
EDUCATION and SKILLS	% of migrants who had higher education (at least university graduates)	Skills in economic activities are highly correlated with education levels of people
SKILLS and EXPERIENCE	% of employed migrants	It is assumed that this cohort of migrants are able to guarantee work contracts before moving to that city on the strength of their skills/education
EDUCATION and SKILLS	% of students	Among the group of migrants who are not in labor force, "students" are the only ones likely to contribute high profile business environment. Rest of this group consists of housewives, jobless people for at least 3 months and quitted searching job via any channel, retired people, and income recipients.
SKILLS, EXPERIENCE, and EDUCATION	% Employees in scientific, technical, professional, and related business	This is the highest profile group of occupations and migrants occupied in these positions are moving only from urban centers to other urban centers which mean that they represent high quality urban business environment.

Analysis will be carried out in groups which were created in the previous map showing the leading factors and volumes of immigration for destination provinces (Table 2). Destinations receiving population under the mean value are excluded because of their less popularity as migration destinations.

Table 2. Leading Factors and Volumes of Immigration for the Most Popular Destination Provinces.

LEADING FACTORS FOR INMIGRATION	**I. CLUSTER OF DESTINATIONS:** Outliers for all the factors of immigration	**II. CLUSTER OF DESTINATIONS:** Extreme cases in receiving immigration	**III. CLUSTER OF DESTINATIONS:** Cases receiving immigration over mean value for Turkey
FINDING JOB	İstanbul, Ankara, İzmir	Bursa, Antalya, Mersin, Adana	Kocaeli, Tekirdağ, Gaziantep, Manisa, Aydın, Kayseri, Muğla, Denizli, Sakarya
TRAINING	-	Konya	Eskişehir, Erzurum, Isparta, Sivas, Çanakkale, Kütahya
DESIGNATION	-	-	Balıkesir, Diyarbakır, Samsun, Malatya, Şanlıurfa, Hatay

In this part of the study, provinces are clustered according to two main indicators which are selected to represent human capital (Table 1). These indicators are percentage of employees in scientific, technical, professional, and related business and percentage of migrants who had at least high school education. Only the provinces attracting over mean value are included for this part of the research. In cluster analysis applied here, Euclidean Distance Measure is used for amalgamation procedures and those measures are clustered according to single linkage hierarchical clustering technique. The lowest similarity level to produce clusters is decided by the help of information emerged as a result of previous exploratory analysis of migration data and the dendrogram (Figure 3).

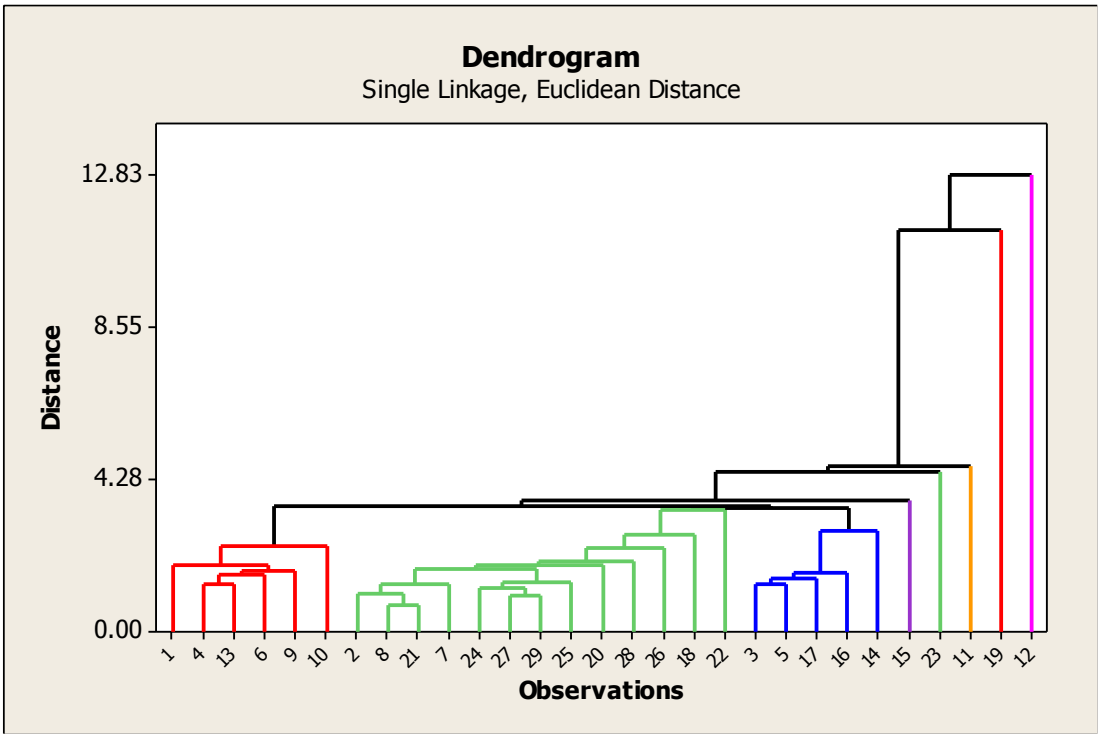

Figure 3. Dendrogram produced by single linkage, euclidean distance cluster analysis.

Table 3. Clusters produced by single linkage, Euclidean distance cluster analysis.

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	Cluster 8
İstanbul	Ankara	İzmir	Muğla	Kütahya	Gaziantep	Erzurum	Manisa
Bursa	Konya	Antalya					
Aydın	Sivas	Sakarya					
Mersin	Adana	Denizli					
Kocaeli	Balıkesir	Kayseri					
Tekirdağ	Malatya						
	Hatay						
	Diyarbakır						
	Isparta						
	Şanlıurfa						
	Samsun						
	Eskişehir						
	Çanakkale						

Cluster 1 (low quality job basis migration destinations) consists of provinces receiving lowest level of human capital (Figure 4 , Table 3). Although this cluster consists of mainly industry centers for the data period, they do not get a high profile of human capital migration. They are still at the top of the destinations provinces. This may be explained by the geographical differences of in-migration origins

(Figures 5, 6, 7, 8, 9). These figures tell us that provinces of cluster 1 are not just regional attractions, they are getting migrants from relatively less developed eastern and northern regions of Turkey. Additionally, the migrants towards this cluster are mostly motivated with job opportunities (Figure 3).

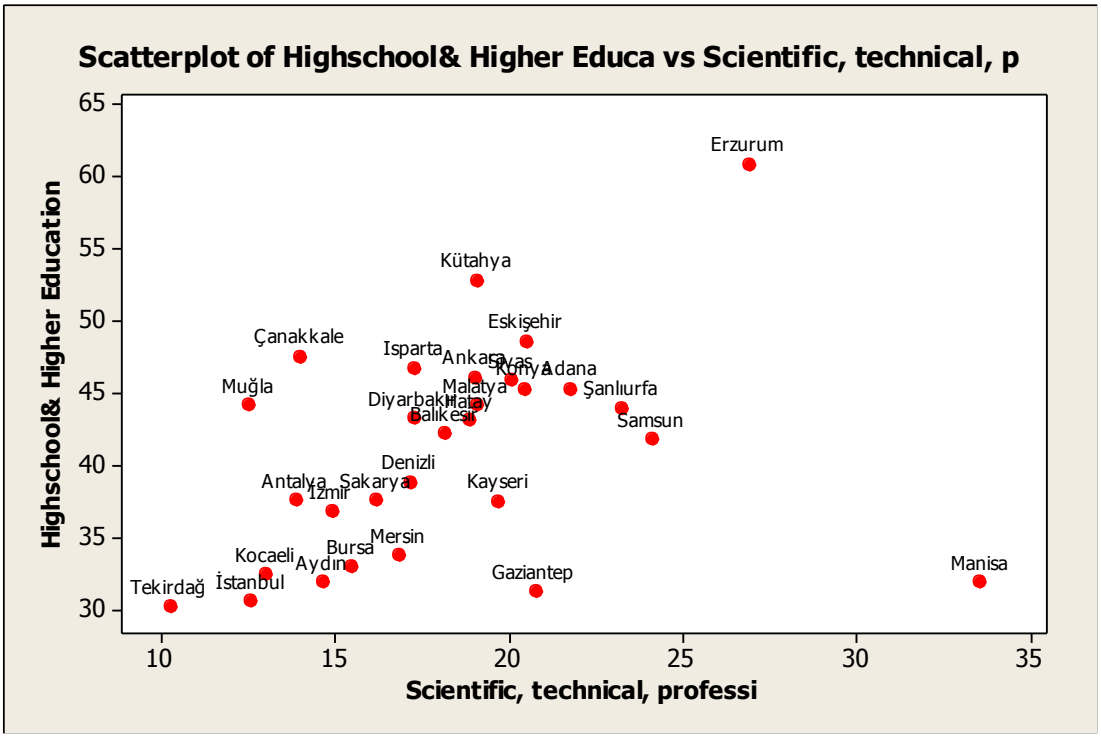

Figure 4. Scatter plot of % of high educated migrants versus migrants holding high profile work positions.

It is interesting that although Istanbul is an extreme case receiving immigration for all of the purposes outpacing the rest of Turkey, structure of migrants are quite different from the other attractive metropolitan areas like Ankara, İzmir, Antalya, Adana and, Konya. As attractive migration destinations Bursa and Mersin are also sharing the same fate with İstanbul. İstanbul, Bursa, Tekirdağ, and Kocaeli are highly industrialized provinces. However, they are attracting low profile of migrants. In fact, when migration relations of Istanbul are investigated it is obvious that, she is not very selective because she is receiving migration from all over Turkey and the ratios are ranging almost evenly. Besides this main characteristic, Black Sea Coastal zone has a small amount of dominance as origin for migration flows towards Istanbul.

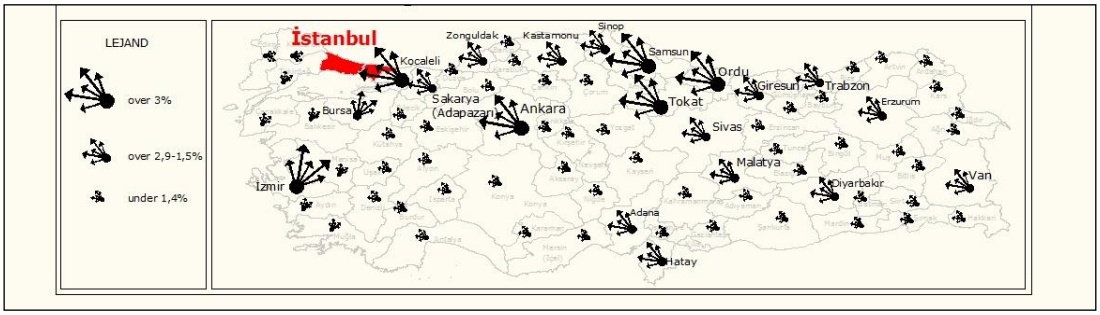

Figure 5. Migration relations of İstanbul.

This may be explained by the decentralization process of industry from Istanbul to neighboring locations like Kocaeli, Tekirdağ, and Bursa. This process might stimulate also decentralization of low profile human capital from Istanbul to new industrial centers.

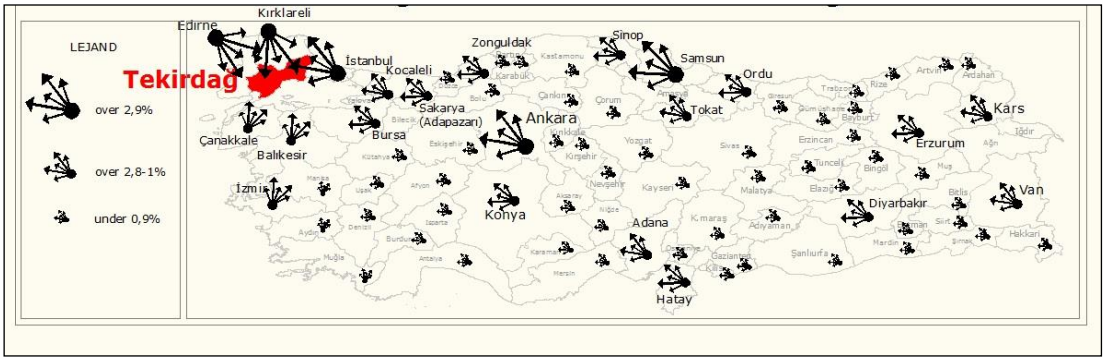

Figure 6. Migration relations of Tekirdağ.

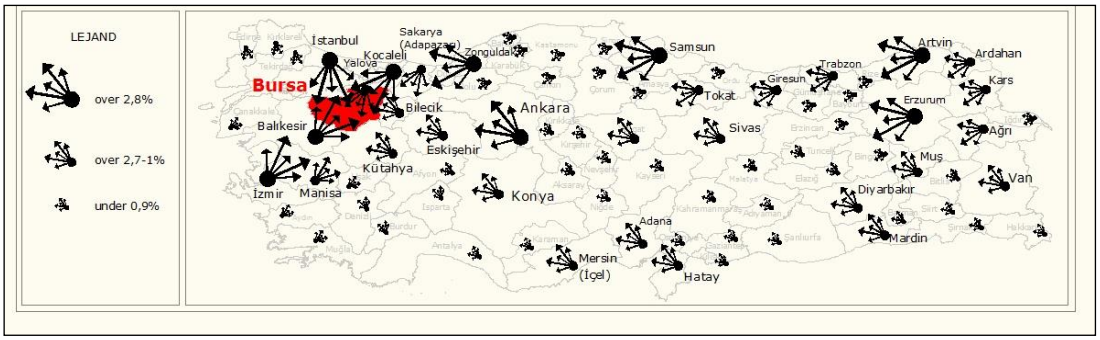

Figure 7. Migration relations of Bursa.

For this first cluster, Mersin has a very different in-migration pattern compared to the rest of the cluster. It is a popular destination for mostly the south eastern provinces of Turkey (Figure 8).

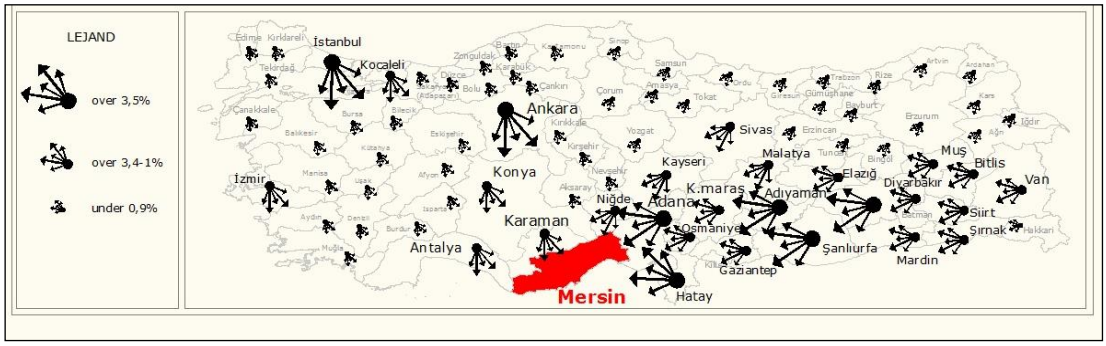

Figure 8. Migration relations of Mersin.

Case of Aydın is something in between. It is receiving most of the migrants from Izmir. Conversely, it is also an attraction for south eastern provinces (Figure 9).

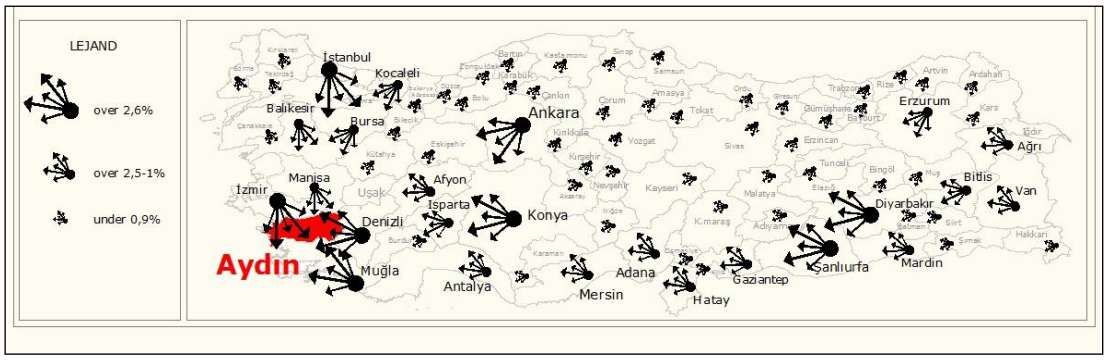

Figure 9. Migration relations of Aydın.

Cluster 2 consists of **high quality mixed purpose basis human capital attraction destinations.** Migration flows towards Ankara are not geographically dispersed like Istanbul case. It is mostly attracting population from closer and less developed provinces for its job opportunities (Figure 10).

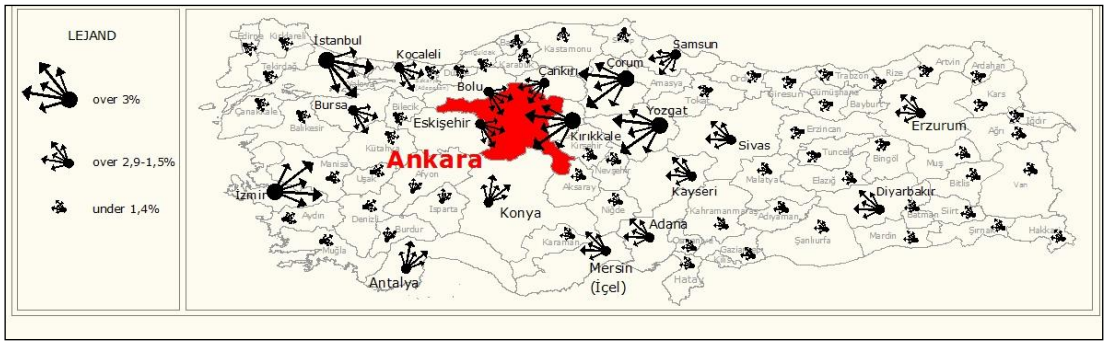

Figure 10. Migration relations of Ankara.

Konya is attracting population from dispersed geographies, but comparably developed urban centers have the dominance on migration flows towards Konya. For Sivas, Adana, Balıkesir, Malatya, Hatay, Diyarbakır, Şanlıurfa both neighboring provinces and metropolitan areas like Istanbul, Izmir, and Ankara dominate the migration flows. For Isparta, Antalya is the first ranked city to send with value of %10,19, and İstanbul is the follower with %8,29. Western provinces dominate migration waves.

Samsun is attracting most of its migrated population from both eastern and western sides of Black Sea coastal zone. However, İstanbul is the leader of migrated population shares of Samsun with distinguishing difference from the rest (% 20,61). Ordu is coming next with 8,44 percentage. Ankara, İzmir, and Bursa are also among the provinces that have primary migration relations with Samsun.

For Eskişehir; Ankara (%11,39) and İstanbul (%9,03) are at the top of the list of. Neighboring provinces, relatively close locations constitute the first category. Secondary origins are scattered to Eastern, South eastern, and South western regions.
For Çanakkale; İstanbul has the highest share in migrated population to Çanakkale with value of %22,4. Rest of the primary relations is with neighboring and close geographies except Ankara. Secondary waves of migration are coming from mostly South and South eastern part of Turkey.

It seems that Istanbul does not improve her human capital reserve via immigration. However, it has important effect on developing other urban centers' human capital reserves. It is also true for Ankara and Izmir with a lesser impact compared to Istanbul.

Cluster 3 consists of medium profile job basis human capital receiver provinces. They are all seem to be regional attractions.

Cluster 4 has only one member which is Muğla. Although its migrants' education levels are very high (they are almost equal to the ones in the second cluster), the percentages of scientific, technical, and professional workers are showing very limited amounts. To put differently, the migrants are highly educated, but hold lower positions at work. This might be the result of different character and the volume of the main economic sector in Muğla compared to the other provinces of Turkey mentioned in this study.

Cluster 5 has only the case of Kütahya. It has a higher profile of human capital from Muğla and it has one of the highest education levels among the rest of the provinces. However, percentage of scientific, technical and professional workers is very low. University might be an influential factor to attract the educated people and conversely small amount of industrial firms might be a bottleneck to offer the migrants high profile positions at work.

Cluster 6 has only Gaziantep which receives a low percentage of highly educated but offers higher percentages of higher profile working positions to the migrants.

Cluster 7 Erzurum is the most extraordinary case with both high levels of education and high profile working positions. Erzurum is another case that attract migration for education purposes. University contained within the province boundaries can be an important factor to attract such a high quality human migration.

Cluster 8 Manisa is another interesting case attracting very low percentage of educated migrants but having the highest percentage of high profile working positions. This may be interpreted based on manufacturing infrastructure of the province back then. Research held within [46], on manufacturing and subcontracting relations between firms and provinces, found out that Manisa was one of the important subcontractor centers for textile and engineering industries. Their findings also showed that; subcontractor firms in those provinces employed low skilled human capital. Therefore, immigration profile of Manisa for the year 2000 is compatible with the industries' needs.

6. CONCLUSION

In this study, using hierarchical cluster analysis technique, provinces that are receiving migration over mean value are analyzed according to the migrants' human capital levels. Eight clusters are identified receiving similar properties of human capital. It is necessary to see extraordinary cases and also the cases showing similar tendencies in terms of attracting human capital in order to produce urban policies to decrease regional developmental disparities in Turkey. There are some surprising conclusions reached by our analysis, like, although Istanbul is the outlier for almost all of the urban dynamism characteristics for Turkey, she is not lucky enough for gaining the most valuable urban migration profile. Besides; it is seen that there are opportunities to gain and benefit from this valuable profile by developing some policies on training, internship opportunities, creation of jobs for the ones which are not as popular migration destinations as Istanbul, like Kutahya, Erzurum, and Manisa. Therefore, human capital and its relation with space are very important issues for planning authorities and policy makers to dig up.. However, the indicators are very limited to draw conclusions that might lead for urban policies. For further studies, more indicators should be included and similarities and differences among the clusters should be compared in depth using quality of life measures.

Human capital migration is a central issue for Turkey. This concept shoul be examined in depth by looking both from the causes and consequences aspects. Besides these causes and consequences should be revealed in relation to urban space. However, as it is mentioned in the data and methodology part; in Turkey, there is a data limitation for this kind of analyses. Migration data should cover; gender, age, education level, working position, stage of the lifecycle, marital status, the position holding at work (both in the destination and in the origin), origin of migration and etc. Migration data should be collected systematically, periodically and compatible with other national statistics. This is very crucial in order to relate migration inputs with spatial urban and regional policies. Goodnews is that there is an ongoing government project under the name of "spatial address recording system" (MAKS). It is aimed with this project to integrate all the various government institutions' textual database with geographical coordinations. When it is completed, we are hoping to overcome the data limitation for migration analysis. Another data gap for human capital migration is its unrelatedness with labour statistics. There should be comparable statistics on the nonmigratory population's and migrants' labour environment, in order to produce spatial strategy and policies.

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