Munich Personal RePEc Archive

Absorptive Capacity of Türkiye's Provinces vis-à-vis Refugee Influx from Syria

Demirci, Mustafa Can and Yucel, Mustafa Eray

Bilkent University, Bilkent University

17 April 2025

Online at https://mpra.ub.uni-muenchen.de/124448/
MPRA Paper No. 124448, posted 18 Apr 2025 11:49 UTC

Absorptive Capacity of Türkiye's Provinces vis-à-vis Refugee Influx from Syria

Mustafa Can Demirci
Ihsan Dogramaci Bilkent University
Department of Economics (Grad: 2024)
Email: mustafacan-24@hotmail.com

Mustafa Eray Yücel
Ihsan Dogramaci Bilkent University
Department of Economics
Phone: +905325435888
Email: eray@bilkent.edu.tr

FIRST COMPLETE VERSION; COMMENTS AND CRITICISMS ARE VERY MUCH APPRECIATED

Abstract

This paper quantitatively examines the refugee absorption/integration rates across Türkiye's 81 provinces while considering the geographical and economic features of each of the 81 provinces. The study mainly focuses on the distribution of Syrian refugees under temporary protection in Türkiye after the 2011 Syrian Civil War and develops an array of econometric models to understand the spatial distribution of refugees. Subsequently, the over-absorbing provinces (the provinces that host more than their model-suggested ideal capacity) and under-absorbing provinces (the provinces that host less than their model-suggested ideal capacity) are highlighted along with a road map for future research venues.

Keywords: Syria; Civil war; Refugee; Temporary protection; Socio-economic absorption; Turkey; Türkiye

JEL Classification: C51; I38; J15; J61

1. Introduction

The Republic of Türkiye, across its more than 100 years of lifespan, has hosted many groups that are running away from conflicts, oppression, discrimination and massacre. Türkiye has hosted many refugee groups such as refugees from Greece and Bulgaria and Jewish people running away from Nazi holocaust in Europe (Satan & Balci, 2017), also being both a hosting and a transit country for people escaping from Iranian Revolution of 1979 (Zapparoli-Manzoni-Bodson, 2015). Like others, Türkiye acted as both a host country and a transit country towards Greece and Europe onwards for Afghans (Kuschminder, 2017). Beginning from 1988, Türkiye became home to the Kurdish refugees that escaped from Iraq, following the chemical attack of the Iraqi Ba'ath regime (Abdelaaty, 2021). Last but not least, Türkiye is hosting around 3 million Syrians and granted them temporary protection status as of 2024 (Directorate General of Migration Management, n.d.). This makes Türkiye one of the top refugee hosting countries in the world. Türkiye's proximity to the epicenters of these conflicts, location at the doorstep of the European Union and location at the

intersection of South Asia, the Middle East, and Europe played a crucial part for asylum seekers to pick Türkiye either as a destination or transit country (Baykal & Özdemir, 2024; Kaya, 2023).

In addition, Türkiye is geographically positioned at the intersection of the Eastern Mediterranean Migration Route which was historically used by migrants crossing through Türkiye to the European Union, and Mediterranean Sea Migration Route (Conant, 2015). Since the Syrian War outbreak in 2011 these routes have grown ever more crowded for Syrian asylum seekers. During the 2015-2016 European migration and refugee crisis, these historical migration routes served as the main pathway, facilitating the arrival of around one million asylum seekers into Europe (Baykal & Özdemir, 2024).

From an international law angle, Türkiye is a party to the 1951 Refugee Convention and the 1967 Protocol, but it maintains a geographical limitation to the Convention (UNHCR Türkiye, n.d.). Individuals who meet the refugee definition and come from Europe are eligible for refugee status in Türkiye, along with the associated rights under the Refugee Convention. In contrast, those who meet the same definition but come from outside Europe are granted "conditional refugee" status under Turkish law (Gürakar Skribeland, 2021). As a result, refugees in Türkiye are left with minimal rights and restricted legal protections. Consequently, for refugees fleeing events outside Europe, resettlement to a third country is considered the primary solution.

In 2014, in response to the ongoing migration from Syria to Türkiye and the EU's asylum and migration directives, the Turkish government enacted the Law on Foreigners and International Protection (LFIP), which sets out regulations for foreigners, refugees, and individuals in need of international protection, including the framework for temporary protection (İçduygu & Şimşek, 2016). After the outbreak of the Syrian Civil War in 2011, Türkiye adopted an open-door policy (Abdelaaty, 2021). Temporary camps and shelters were established by AFAD (Disaster and Emergency Management Presidency that operate under the Ministry of Interior) for Syrian asylum seekers. For example, in the Annual Migration Report published in 2013, it was noted that 210,336 Syrians resided in temporary camps and shelters established in the provinces of Hatay, Gaziantep, Şanlıurfa, Kilis, Mardin, Kahramanmaraş, Osmaniye, Adıyaman, Adana and Malatya (T.C. İçişleri Bakanlığı Göç İdaresi Genel Müdürlüğü [Presidency of Migration Management], 2014, p. 77).

Starting in late 2013, after the camps reached full capacity, Syrians were permitted to settle freely. As anticipated, they settled toward locations according to the economic employment opportunities, geographical and ethnic structure of the provinces (Erdoğan, 2019; Schiefer et al., 2023). These created an unbalanced distribution of Syrians under temporary protection status in Türkiye. Thus, making some provinces such as Istanbul, Gaziantep, Şanlıurfa, Hatay, Adana, Mersin and Kilis to host the majority of the Syrians and shouldered most of the burden of providing for the guests.

With the offensive attacks that started at the end of November 2024, the Assad family, which has ruled Syria for 50 years, lost Aleppo, Hama, Homs and Damascus in December 2024,

and their sovereignty in Syria ended (Gritten, 2024). It remains unclear how the Syrian map will shape in the coming days and whether Syrians in Türkiye will return, i.e., the uncertainty surrounding the countries of the region seems to have re-elevated. Coinciding with these developments, this research will provide a quantitative perspective on the concept of refugee absorption/integration capacity across Türkiye's 81 provinces considering the province's ethnic and cultural features, geographical location and economic opportunities.

In the study, we keep parsimony at the heart of our analysis. In that, simple depictions of refugee influxes on maps are followed by a short array of linear regression models to have a good grasp of the naked data. Subsequently, we resort to a spatial econometric model of refugee flows within the country across provinces. While these models establish our core understanding, we develop a further set of models to unveil the factors that explain why/how different provinces display different absorptions of refugees. What we have found out of this modeling approach can be listed as follows:

- The influx of Syrian refugees scattered to Türkiye's provinces in a way to validate broad/rough geographical expectations, i.e., distance to geographical entrance point of refugees to Türkiye does matter.
- Upon this and more importantly, intra-country flow of refugees seems to have been shaped in line with the historical trade routes and economic abilities of the hosting provinces.
- There exists an apparent neighborhood-based spatial lag structure that shapes the process.
- Finally, having accounted for the geographical and economic determinants of today's refugee hosting capabilities, there is a clear separation between the provinces that over-absorb, just-absorb and under-absorb the Syrian sub-communities that bloom within.

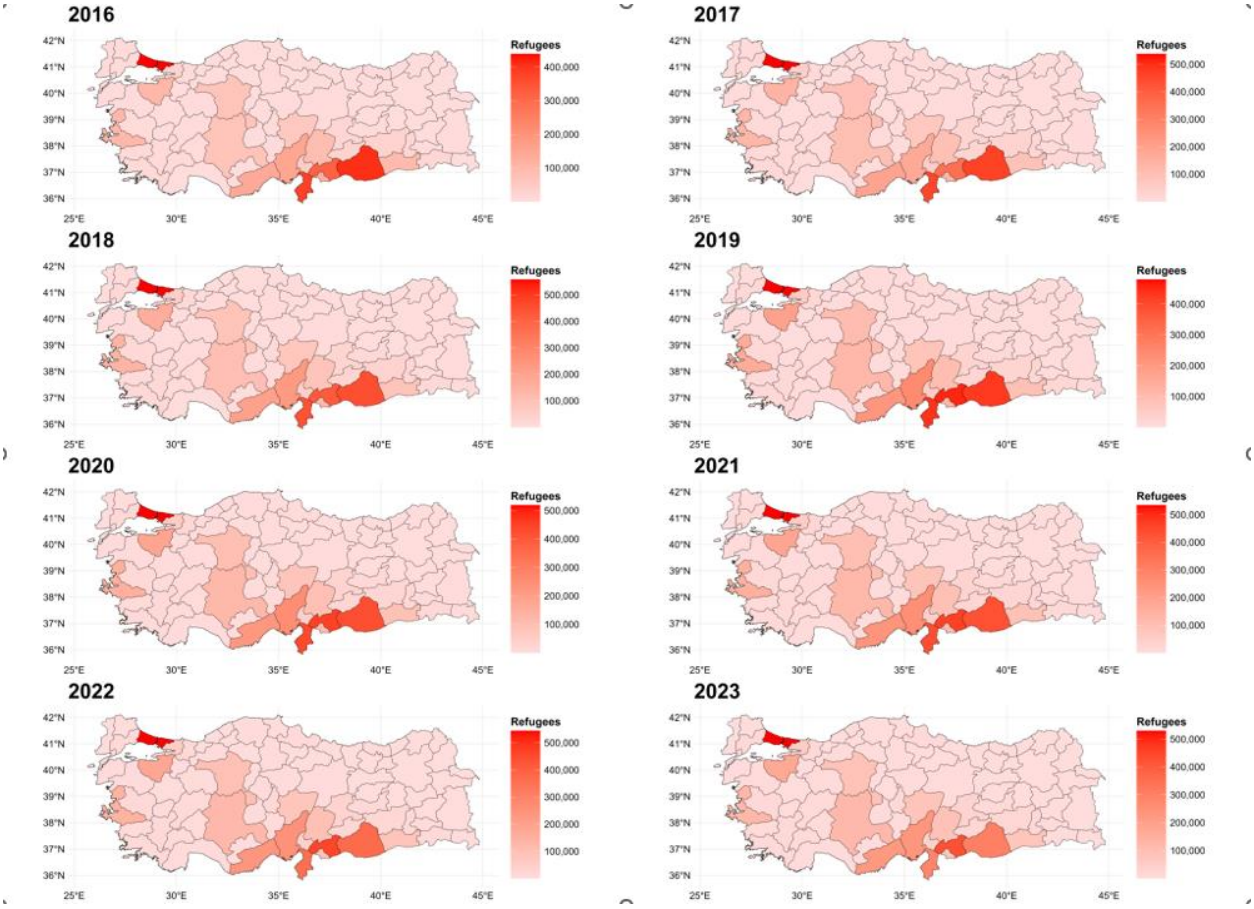
So, the intra-country movements of Syrian refugees have not been in a random or uncontrolled manner. On the contrary, flows of the refuging people followed the physical constraints of provinces visibly.

In the remainder of the study, Section 2 lays down our preliminary examination of the data and variable definitions, so as to provide the readers with a solid understanding of our analytical context. In Section 3, we develop an array of econometric models of the absorptive capacity of Türkiye's provinces to come up with a notion and measure of 'natural' (ideal) capacity. Upon that, Section 4 is devoted to categorization of provinces as under-absorbing and over-absorbing, followed by a discussion of differing degrees of absorption as well as future research possibilities and limitations. Section 5 concludes the study.

2. Preliminary Observations and Refining the Data Set

At the first stage, the distribution of Syrians under temporary protection between the years 2016-2024 is analyzed on Türkiye's map. It is found that Syrians created clusters around the map. In Figure 1, the unbalanced distribution of Syrians can be seen between the years 2016 and 2024. Especially the Syrians under temporary protection is clustered among the border between Syria and Türkiye. Also, population is clustered in provinces as İstanbul and İzmir since they are among the economically biggest cities and situated in a crucial position for the migration routes such as Mediterranean Sea Migration Route and Eastern Mediterranean Migration Route (Conant, 2015).

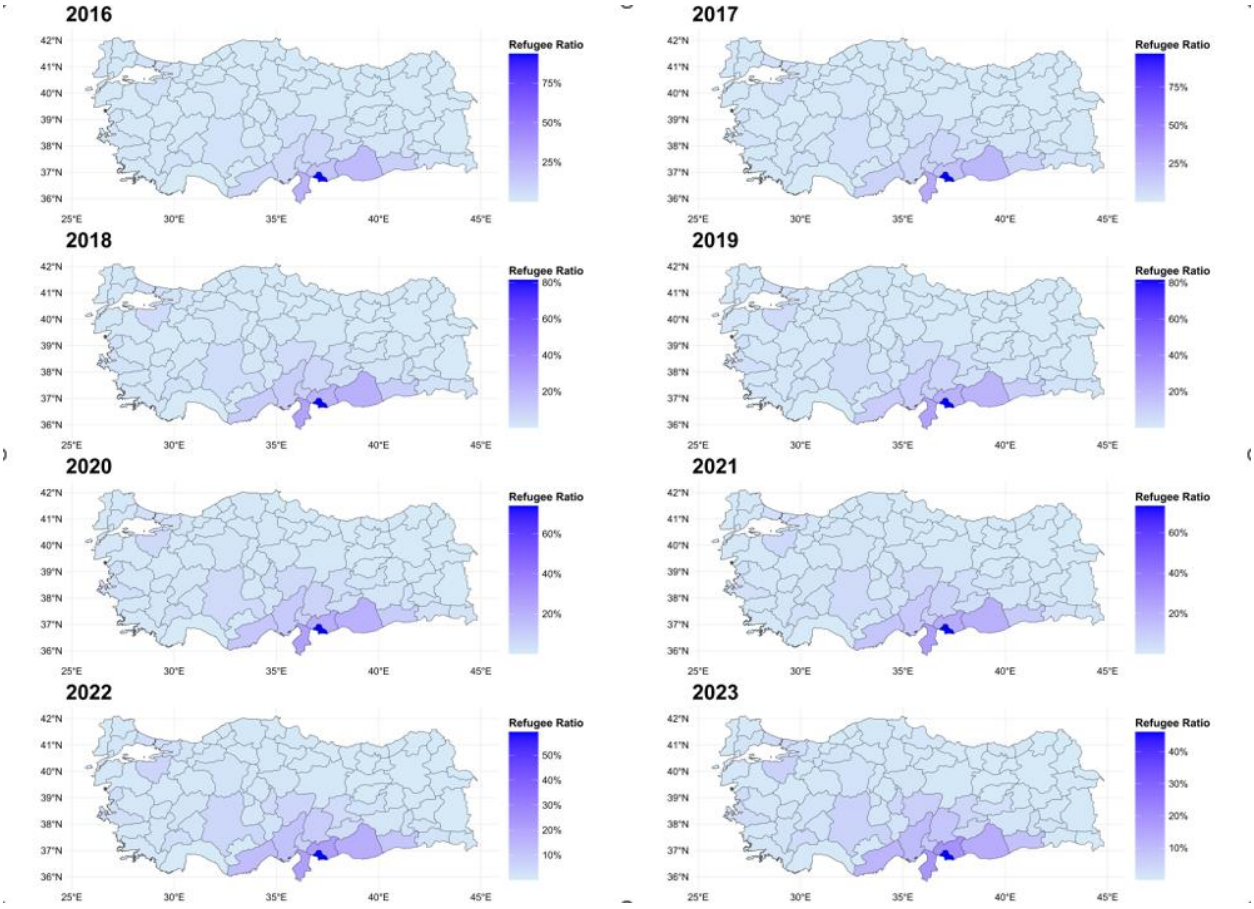
Figure 1. Province Based Distribution of Syrians Under Temporary Protection Between 2016-2023



Note: Data is collected from Directorate General of Migration Management

A basic shortcoming of Figure 1 is that it considers the count of Syrian people in Türkiye's provinces, i.e., it disregards the populations of the hosting provinces and so any inherent proportionalities. If the ratio of the Syrian people under temporary protection status to the local Turkish population is examined, provinces may or may not show the unbalanced pattern. Especially, provinces such as Kilis, Şanlıurfa, Gaziantep and Hatay host a very noticeable number of refugees compared to its local population. More noticeably in 2016, Kilis had a Syrian to Turkish population ratio around 0.93, which translates into nearly there are 1 refugee for each local citizen (Figure 2).

Figure 2. Province Based Distribution of Syrians to Turkish Population Ratio Between 2016-2023

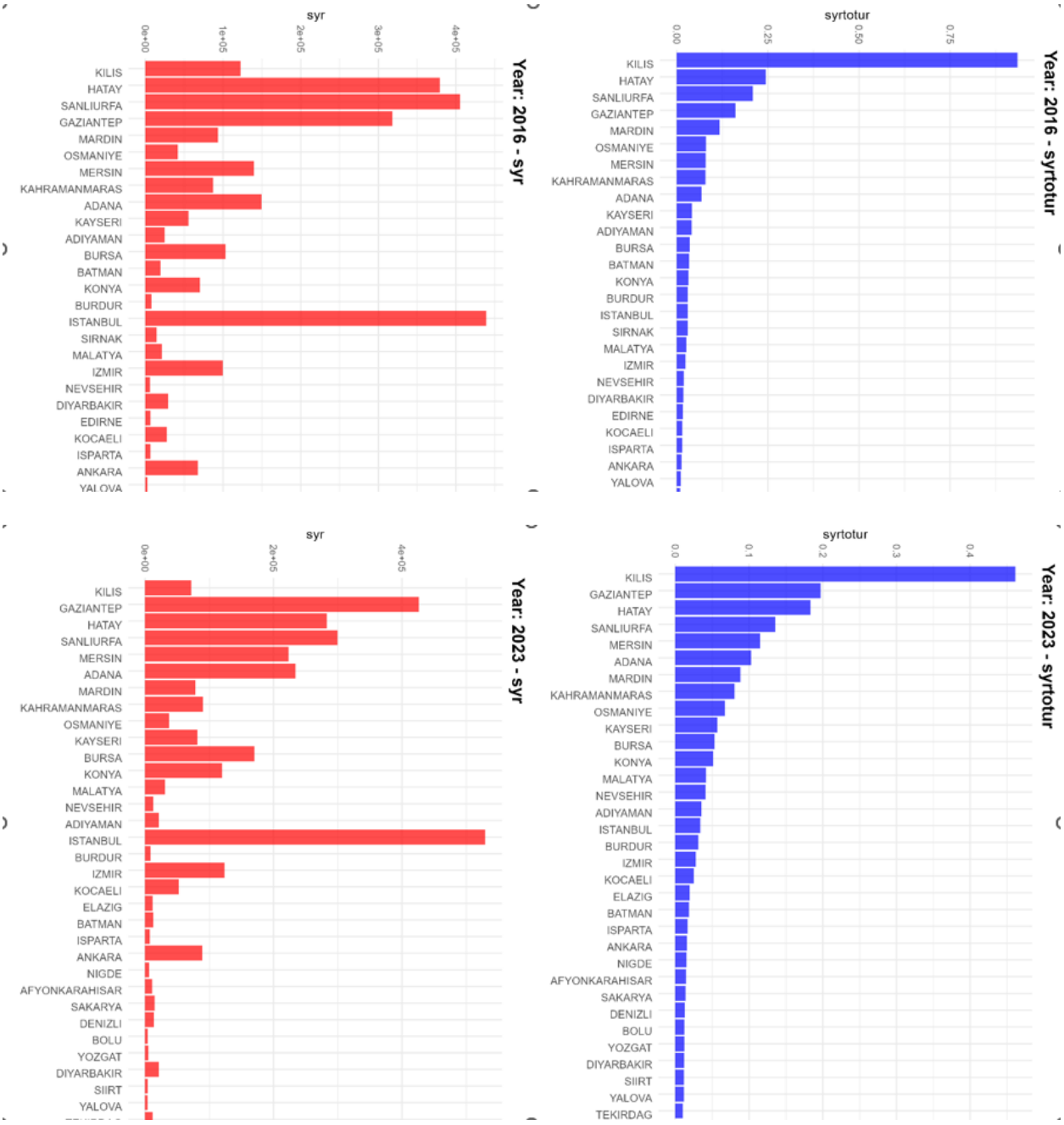


Note: Data is collected from Directorate General of Migration Management

In Figure 2, the distribution of the Syrian-to-Turkish ratio can be seen across the years observed between 2016 and 2024. A first observation here is that, the provinces that border Syria especially accommodate the largest number of refugees relative to the province's own population. In addition, the geographical movements of the Syrian refugees inward from 2016 to 2024 suggest a gradually expanding pattern of settlement that did not reverse its direction. In Figure 3, the

relation between the ratio and the number of Syrian refugees can be easily seen in cities such as Kilis and Istanbul for the years 2016 and 2023. Kilis hosts the most Syrian refugees according to its population and Istanbul is hosting the greatest number of Syrian refugees in itself.

Figure 3. Turkish Provinces According to Number of Syrians Hosted and Ratio of Syrians to the Local Population



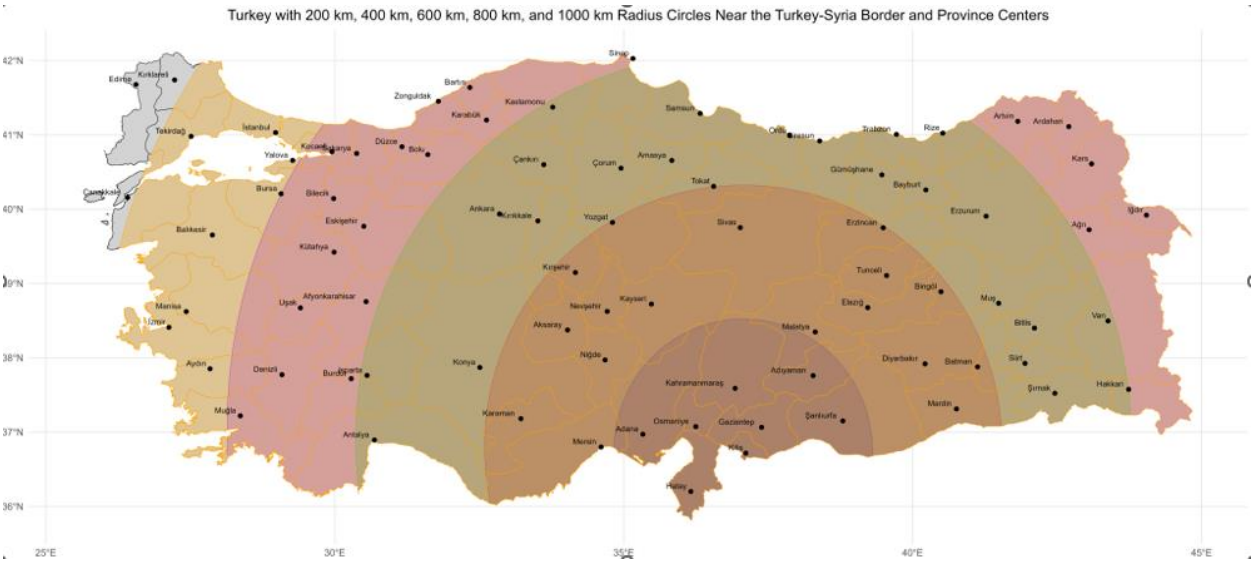
Note: Only the provinces with a Syrian-to-Turkish ratio of at least 1% are included. Provinces are displayed in descending order of Syrian-to-Turkish ratios – graphs located on the right-hand side.

In order to capture the spatial patterns and to refer to the law of "Migration by Stages" by Ravenstein (1885), some dummy (indicator) variables are included in the regression design. In Ravenstein (1885), the stepwise (or gradual) nature of the migration movements is put forth well. In that, migration can be seen as a continual process rather than an instantaneous occurrence. In order to address such a nature of migration in our subsequent regression models, dummy variables to facilitate the measurement of refugee movement are introduced. These dummy variables are defined on the basis of (1) circular bird's flow distances to epicenter of refugee influx, (2) shortest ways (paths) to each province, and (3) historically significant (traditional) trade/migration routes that cut across Anatolia. We present each in what follows.

Circle Dummy Variables

Each circle was created to represent this stepwise process of migration within the country and also created to represent the distance between the epicenter of conflict and the provinces of Türkiye. Circles with radius 200, 400, 600, 800, 1000, 1200 km are created centered at Kilis province (located at the Syria-Türkiye land border). The provinces that have city centers located in these circles are categorized sequentially and are named as CR1, CR2, CR3, CR4, CR5 and CR6. In Figure 4, the circles with different radius and province centers are shown; CR1 representing the provinces in the innermost circle.

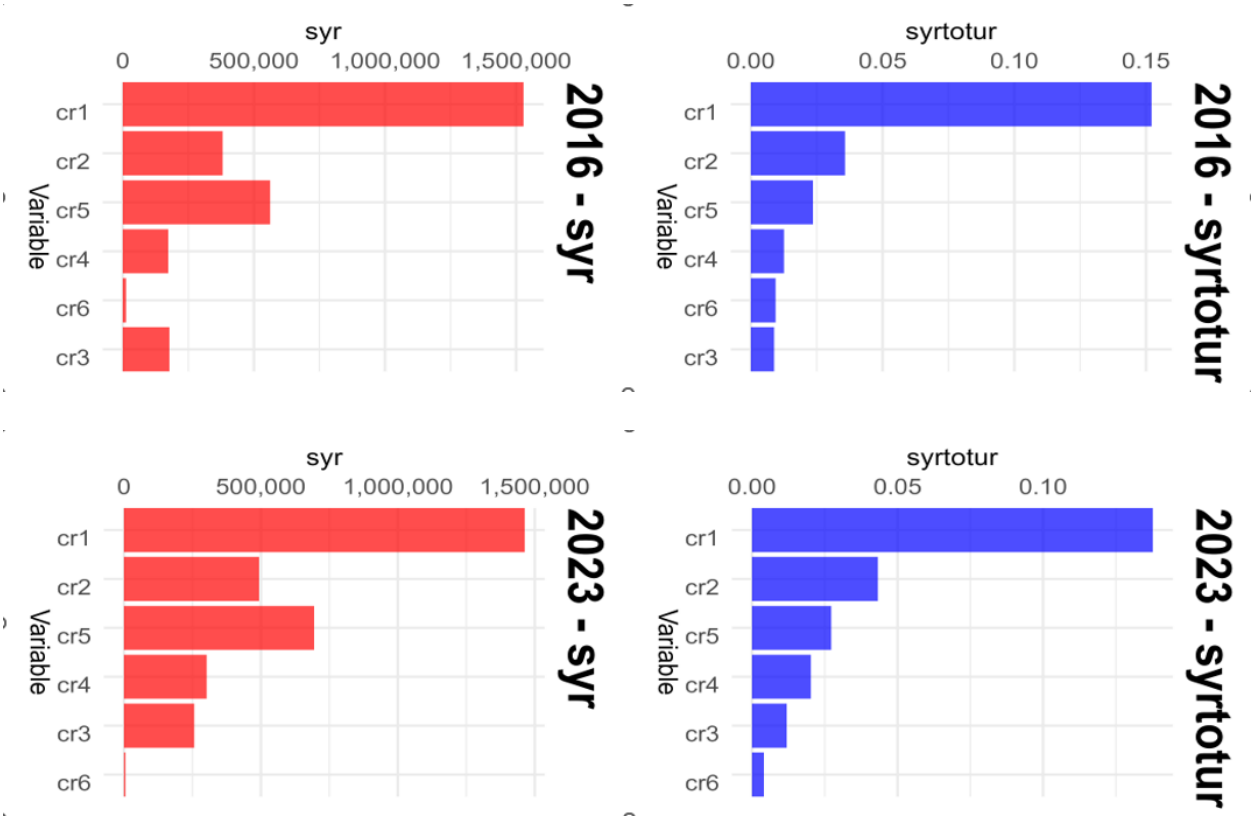
Figure 4. CR Variables



Note: There are multiple epicenters of refugee influx, with quite some geographical proximity; for convenience, Kilis is designated as the epicenter in the calculations that yield this figure.

In Figure 5, the distribution of Syrians and Syrians to Turkish ratio according to our CR variables are presented with bar charts.

Figure 5. CR Regions According to Number of Syrians Hosted and Ratio of Syrians to the Local Population



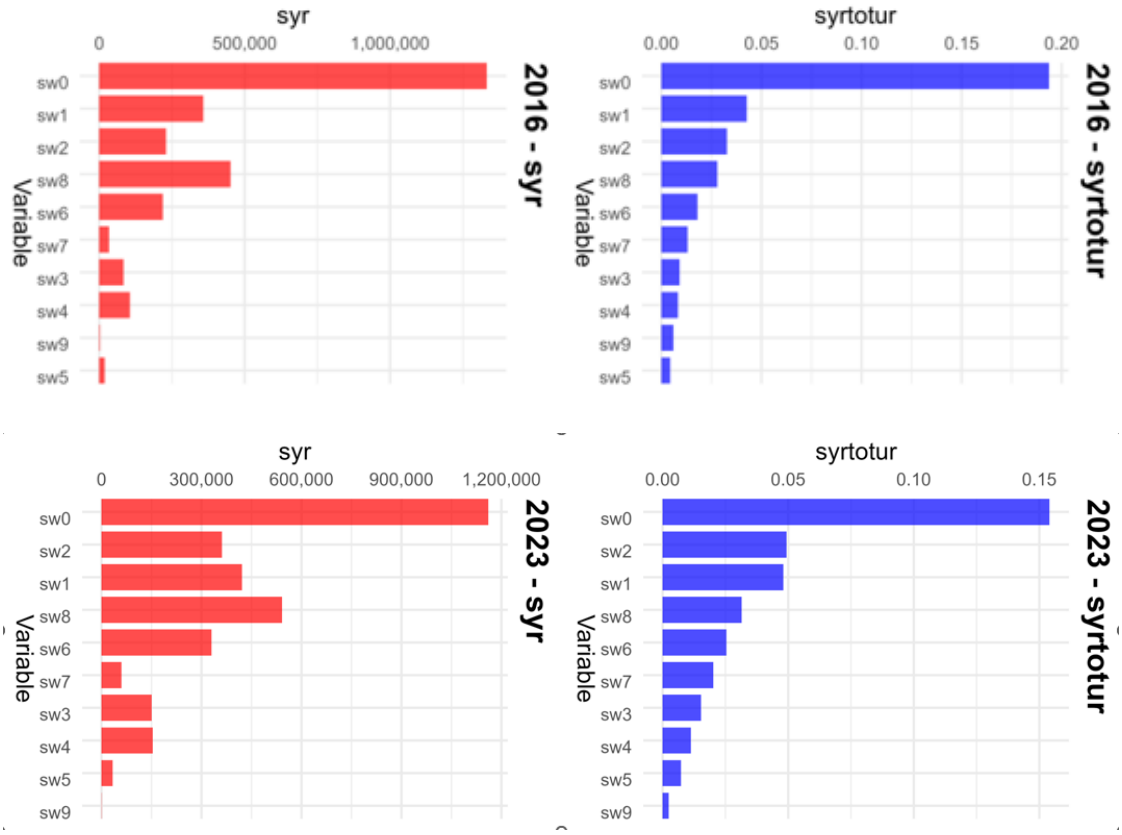
Note: Circular regions are displayed in descending order of Syrian-to-Turkish ratios – graphs located on the right-hand side.

Shortest Way Dummy Variables

These dummy variables are categorized considering the proximity of provinces on the basis of neighborhood. For example, the provinces that are neighboring the Syria-Türkiye border are marked as SW0, and the provinces neighboring these border provinces are labeled as SW1, and so on. With the help of this labeling practice, provinces are categorized according to how many provinces at minimum should be passed across to arrive at the destination province. In Figure 6, the SW dummy variables are shown on Türkiye's map. Figure 6 and Figure 7 regenerate the exercise of Figure 4 and Figure 5.

Figure 6. Shortest Path to Each Province (SW Variables)

Figure 7. SW Regions According to Number of Syrians Hosted and Ratio of Syrians to the Local Population



Note: Shortest way cascades are displayed in descending order of Syrian-to-Turkish ratios – graphs located on the right-hand side.

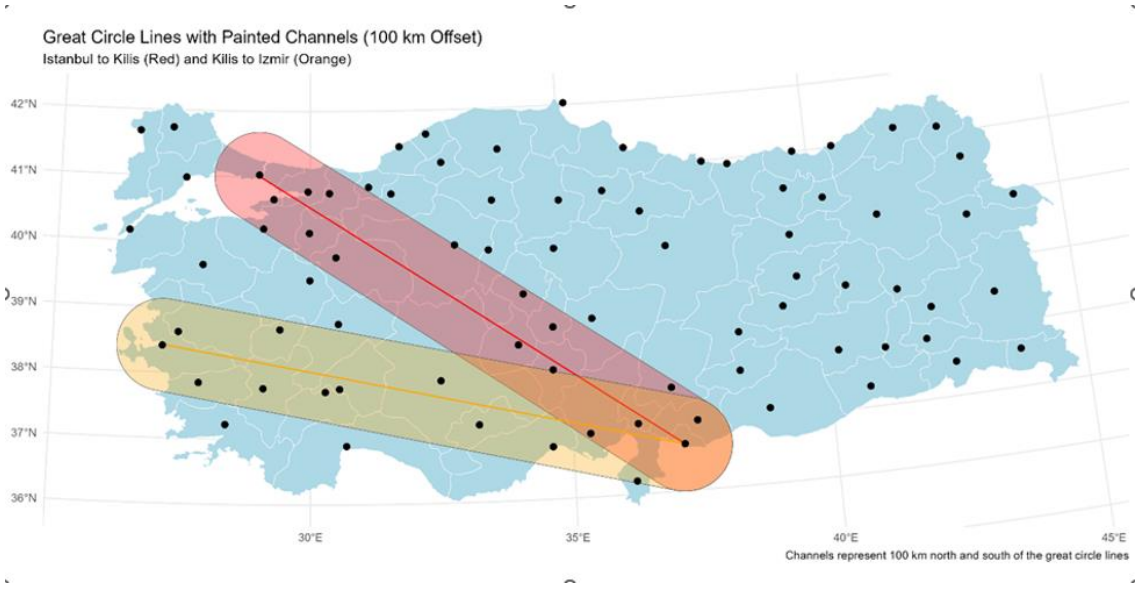
Traditional Trade/Migration Route Dummy Variables

While both of the CR and SW variables stem from a notion of the distance 'between border and the provinces of Türkiye', they slightly differ. Where CR variables mainly focus on whether the city center falls within the circle's area that are created, and SW variables account for the geographical shapes of provinces. In our analyses of the subsequent sections, we preferred to employ CR variables, rather than SW, owing to their definitional simplicity.

Suspecting that the purely mechanical nature of CR variables may hinder the explanatory power of our models, we also categorized provinces with respect to their proximity (or belonging) to historical trade/migration routes in Anatolia.

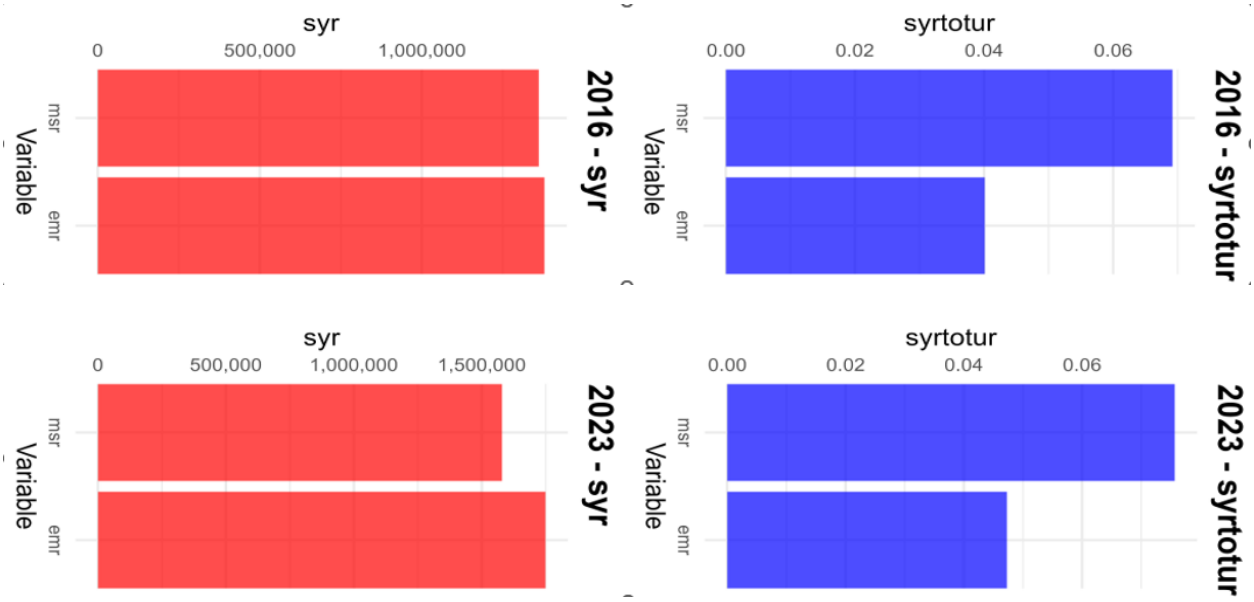
Additionally, some channels with 200 km of vertical width are created to represent the historical migration routes in the Anatolia Region. These channels are named according to the historical migration routes 'Eastern Mediterranean Route' (EMR) and 'Mediterranean Sea Route' (MSR). These dummy variables are created with the same logic that is used while creating CR variables as considering city centers of provinces that are located in this migration channels. Two of the main hubs for these migration routes are İzmir and İstanbul. Therefore, these channels are created alongside that trajectory. In Figure 8, EMR and MSR channels are shown with the city centers located inside the channels. In Figure 9, the distribution of Syrians and ratio of Syrian to Turkish people according to the defined EMR and MSR variables are shown.

Figure 8. Eastern Mediterranean Route (EMR) and Mediterranean Sea Route (MSR)



Note: The vertical elongation of the routes is 200 kilometers.

Figure 9. EMR and MSR Variables According to Number of Syrians Hosted and Ratio of Syrians to the Local Population



Note: EMR and MSR are displayed in descending order of Syrian-to-Turkish ratios – graphs located on the right-hand side.

§

In this section, classification of variables and visualizations are presented. Throughout this section mainly visual analysis is used to have some understanding of the naked data. These visualizations help us to observe the migration behaviour of Syrians under temporary protection throughout the years after the Syrian Civil War. Even though this kind of visual treatment does not provide testable results, it helps us to see the overall picture of the distribution of Syrians in 81 provinces of Türkiye. In an attempt to reach a better grasp of the matter, in the next section, we use various econometric models to analyze the data.

3. Measuring the Absorptive Capacity: Geographic/Spatial and Economic Factors

In this section, we develop econometric models to determine the absorptive capacity of the provinces by using few parameters. In the first stage we used pooled Ordinary Least Squares technique to estimate the absorptive capacity of the provinces, as described by Equation 1.

$$\ln(syr) = \beta_0 + \beta_1 \ln(tur) + \beta_2 cr_2 + \beta_3 cr_3 + \beta_4 cr_4 + \beta_5 cr_5 + \beta_6 cr_6 + \beta_7 emr + \beta_8 msr + \epsilon \quad (1)$$

In Equation (1), the natural logarithm of the number of Syrians under temporary protection is used as the dependent variable. To estimate the absorptive capacity CR, EMR and MSR dummy

variables are used. In addition, to capture the economic magnitude of a province, the population of a province is used as an independent variable. The error terms have a Gaussian distribution.

Table 1. Pooled OLS Estimates

Dependent variable: ln (syr)

Variable	**Coefficient**
Constant	-12.1536***
	(0.0000)
ln (tur)	1.6680***
	(0.0000)
cr_2	-1.4086***
	(0.0020)
cr_3	-2.4599***
	(0.0000)
cr_4	-2.4417***
	(0.0000)
cr_5	-2.4890***
	(0.0000)
cr_6	-1.8647***
	(0.0000)
emr	0.6132**
	(0.0226)
msr	0.9744***
	(0.0013)
n	648
R^2	0.7965
$\bar{R}^2$	0.7940
F	312.69 (***)

Note: *** p < 0.01, **p<0.05

In Table 1, the coefficients of the OLS regression are provided. As expected, a positive correlation between the natural logarithm of the Turkish population and the natural logarithm of the number of Syrian refugees is found. Also, the provinces located on the defined migration routes have significant positive correlation with our dependent variable. Last but not least, in this estimation CR variables tend to have negative correlation with the dependent variable. This finding is intuitive since as the locations get far away from the Syria-Türkiye border, the natural logarithm of number of Syrians declines.

However, the pooled OLS does not include the spatial relationships between provinces of Türkiye, in a way to ignore the fact that migration has a spatial structure (Rogers et al., 2002). In order to address the spatial relationships in our regression analysis we created a spatial weights matrix of 81 provinces (81x81) of Türkiye.

Spatial Weights Matrix

In order to represent the spatial structure, spatial weights matrix of Türkiye's provinces is created. This spatial weight matrix is created to represent first-order contiguous neighbors (LeSage & Pace, 2009). The Contiguity-Based Spatial Weights Matrix for Türkiye (81×81) is defined as:

$$W = \begin{bmatrix} w_{11} & w_{12} & \cdots & w_{1,81} \\ w_{21} & w_{22} & \cdots & w_{2,81} \\ \vdots & \vdots & \ddots & \vdots \\ w_{81,1} & w_{81,2} & \cdots & w_{81,81} \end{bmatrix} \quad (2)$$

where,

$$w_{ij} = \begin{cases} 1, & \text{if provinces } i \text{ and } j \text{ are neighbors} \\ 0, & \text{otherwise} \end{cases}$$

We also transformed this matrix into a row-standardized form to use the matrix as the spatial weights matrix in the regression analysis. Row-standardization takes the given spatial weights and divides each of them by the row sum (Anselin, 2020).

$$w_{ij}^{*} = \frac{w_{ij}}{\sum_j w_{ij}}, \quad \text{for } \sum_j w_{ij} \neq 0.$$

With row-standardization, the sum of all elements in each row equals one and this facilitates the interpretation of operations with the weight matrix as an averaging of neighboring values (Anselin, 2020; Sarrias 2020).

Moran's I Statistic

This research uses Moran's I statistic to determine the spatial autocorrelation of natural logarithm of the number of Syrians under temporary protection in Türkiye. The Moran's I statistic ranges from -1 to 1 (Yu et al., 2020). Values above 0 indicate a positive spatial autocorrelation, whereas values below 0 indicate a negative spatial autocorrelation (Yu et al., 2020). The null hypothesis for the test states that the data is randomly disbursed. Table 2 suggests that similar values are clustered together in a spatial setting rather than being randomly distributed.

Table 2. Global Moran's I of Syrians Under Temporary Protection in Türkiye, 2016-2024

Year	Global Moran's I
2016	0.5321***
	(0.0000)
2017	0.5355***
	(0.0000)
2018	0.5365***
	(0.0000)
2019	0.5261***
	(0.0000)
2020	0.5283***
	(0.0000)
2021	0.5253***
	(0.0000)
2022	0.5260***
	(0.0000)
2023	0.5182***
	(0.0000)
2024	0.5066***
	(0.0000)

Note: *** $p < 0.01$. A positive significant value of Global Moran's I suggests that the data has a positive spatial autocorrelation.

Moran Scatter Plot is given for the years 2016 and 2023 in Figure 10. In order to visualize, the natural logarithm of the number of Syrians has been standardized. Moreover, spatially lagged natural logarithm of number of Syrians are calculated from the standardized values. With the transformation, the Moran Scatter Plot is divided into four Cartesian quadrants, with the horizontal and vertical axes intersecting at zero (LeSage & Pace, 2009). These quadrants give important information regarding the different type of spatial correlation (Anselin, 1996). These Quadrants addresses:

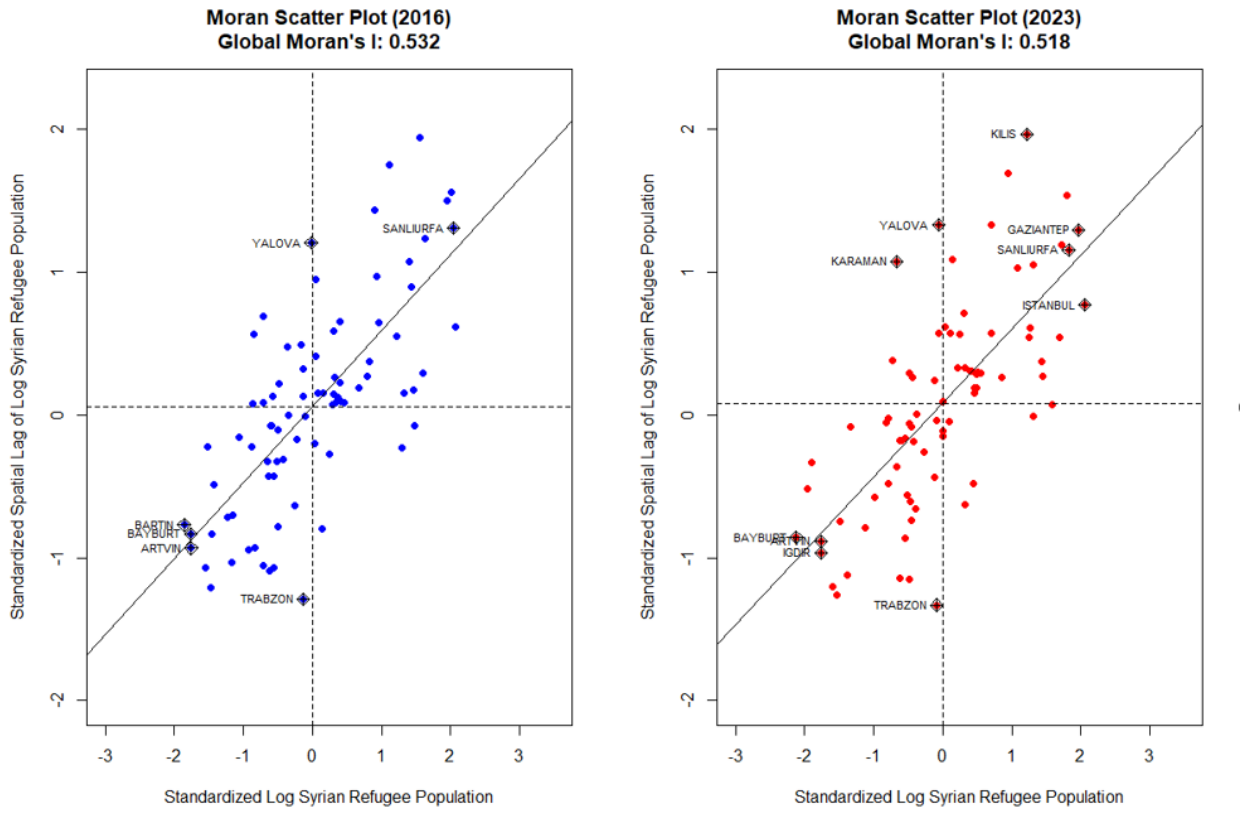
(i) Quadrant I (High - High, HH): Provinces that have high numbers (above the mean) surrounded by high numbers (above the mean).

(ii) Quadrant II (Low - High, LH): Provinces that have low numbers (below the mean) surrounded by high numbers (above the mean).

(iii) Quadrant III (Low - Low, LL): Provinces that have low numbers (below the mean) surrounded by low numbers (below the mean).

(iv) Quadrant IV (High - Low, HL): Provinces that have high numbers (above the mean) surrounded by low numbers (below the mean).

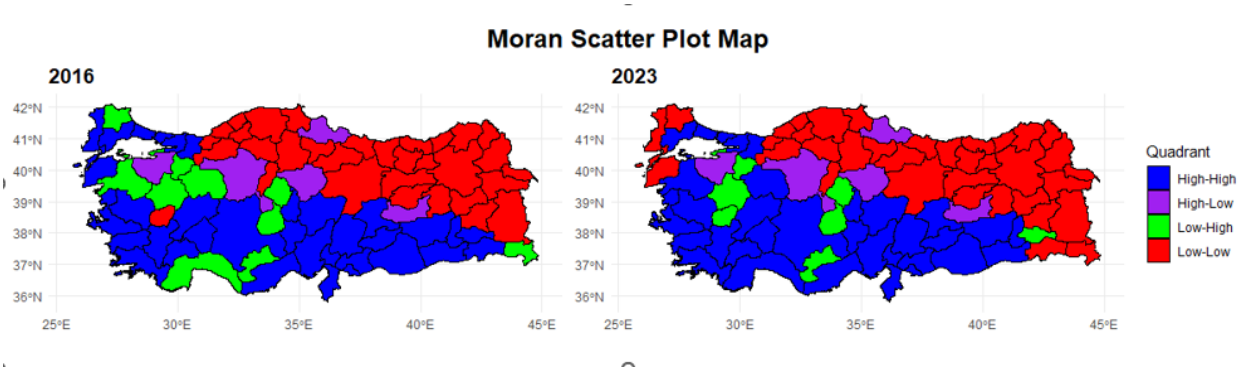
Figure 10. Moran Scatter Plot for Log Syrian Refugees in Türkiye, 2016 and 2023



Quadrants HH and LL indicate positive spatial association and Quadrants LH and HL indicate negative spatial association (Anselin, 1996). As illustrated in Figure 10, the majority of the provinces are located in HH and LL Quadrants.

In Figure 11, provinces were categorized and colored according to the Quadrants defined in Figure 10. As it is seen, for the years 2016 and 2023 northeastern provinces tend to cluster in LL type. Moreover, the south and the southwestern provinces generally tend to cluster in HH form. Most of the provinces are clustered in either HH or LL form which clearly indicates a positive spatial association.

Figure 11. Moran Scatter Plot Map for Natural Logarithm of Number of Syrians, 2016 and 2023



SAR Panel Model

In order to address the spatial pattern of the Syrians in Türkiye's provinces, we added first-order spatial lags into our regression model and generated a Spatial Autoregressive Model (SAR). With the help of the row-standardized spatial weights matrix that we created, we added spatially lagged natural logarithm of Syrians to the model as in Equation 3.

$$\ln(syr_{it}) = \beta_0 + \lambda W ln(syr_{it}) + \beta_1 \ln(tur_{it}) + \beta_2 cr_{2it} + \beta_3 cr_{3it} + \beta_4 cr_{4it} + \beta_5 cr_{5it} + \beta_6 cr_{6it} + \beta_7 emr_{it} + \beta_8 msr_{it} + \epsilon_{it} \quad (3)$$

In Table 3, the coefficients of the SAR regression are presented. As it is shown in Table 3, spatial autoregressive coefficient (λ) is positive and significant. This finding confirms the cluster pattern that high values cluster near high values, and low values cluster near low values. All in all, with the help of the econometric models that are used, the natural logarithm of the number of Syrians in Türkiye's provinces was estimated by using the factors that affected their distribution in Türkiye. In section 4, we will classify the provinces according to whether they are over-absorbing or under-absorbing provinces according to the econometric models.

Table 3. Spatial Autoregressive Model (SAR) Estimates

Dependent variable: ln (syr)	
Variable	**Coefficient**
Spatial AR Coefficient (λ)	0.3712***
	(0.0000)
Constant	-14.4988***
	(0.0000)
ln (tur)	1.5578***
	(0.0000)
cr_2	-0.7171***
	(0.0000)
cr_3	-1.3969***
	(0.0000)
cr_4	-1.4315***
	(0.0000)
cr_5	-1.8925***
	(0.0000)
cr_6	-1.1660***
	(0.0000)
emr	0.2269**
	(0.0270)
msr	0.5993***
	(0.0000)
n	648

Note: *** p < 0.01, **p<0.05

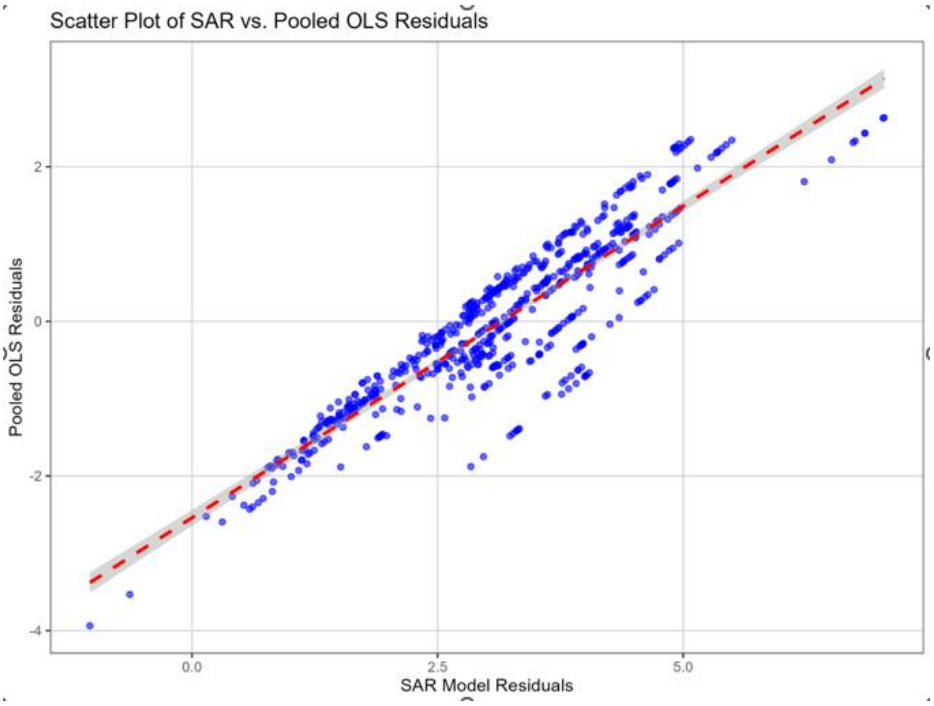
4. Understanding the Absorptive Behavior

In the previous section, various econometric models such as OLS and SAR, are used for analysis. The absorption status of the provinces will be derived from the residuals that we got from those models. The SAR model is chosen to address to the spatial design of the absorption status since the SAR model incorporates the spatial lags inside the model. In Figure 12, the comparison of SAR model residuals and the OLS residuals can be seen for the 648 data observations across 8 years (81x8). As it can be seen from Figure 12, the residuals are mostly in line with each other as expected since our model only incorporates the spatial lag as an extra variable to the model. Both models are essentially similar but the SAR model is more comprehensive, thus for the absorption status determination SAR model is used.

According to the SAR model that we estimated, we tried to label the provinces according to their absorption status. In order to classify the provinces, we used the residuals of the SAR

model. The provinces are categorized into 3 main categories which are ‘Under-Absorbing’, ‘Neutral’ and ‘Over- Absorbing' provinces. Under-Absorbing provinces are the provinces which host less Syrian refugees than what the SAR model suggests. This does not mean that they do not host refugees, it only means that according to the geographical and economic model, they host less than what they are supposed to accommodate. Over-Absorbing provinces are the provinces that host more refugees than what they supposed to according to the econometric model. The Neutral provinces are the provinces that absorb the number of Syrian refugees as the model suggests. These are created by defining intervals using the descriptive statistics of the SAR residuals.

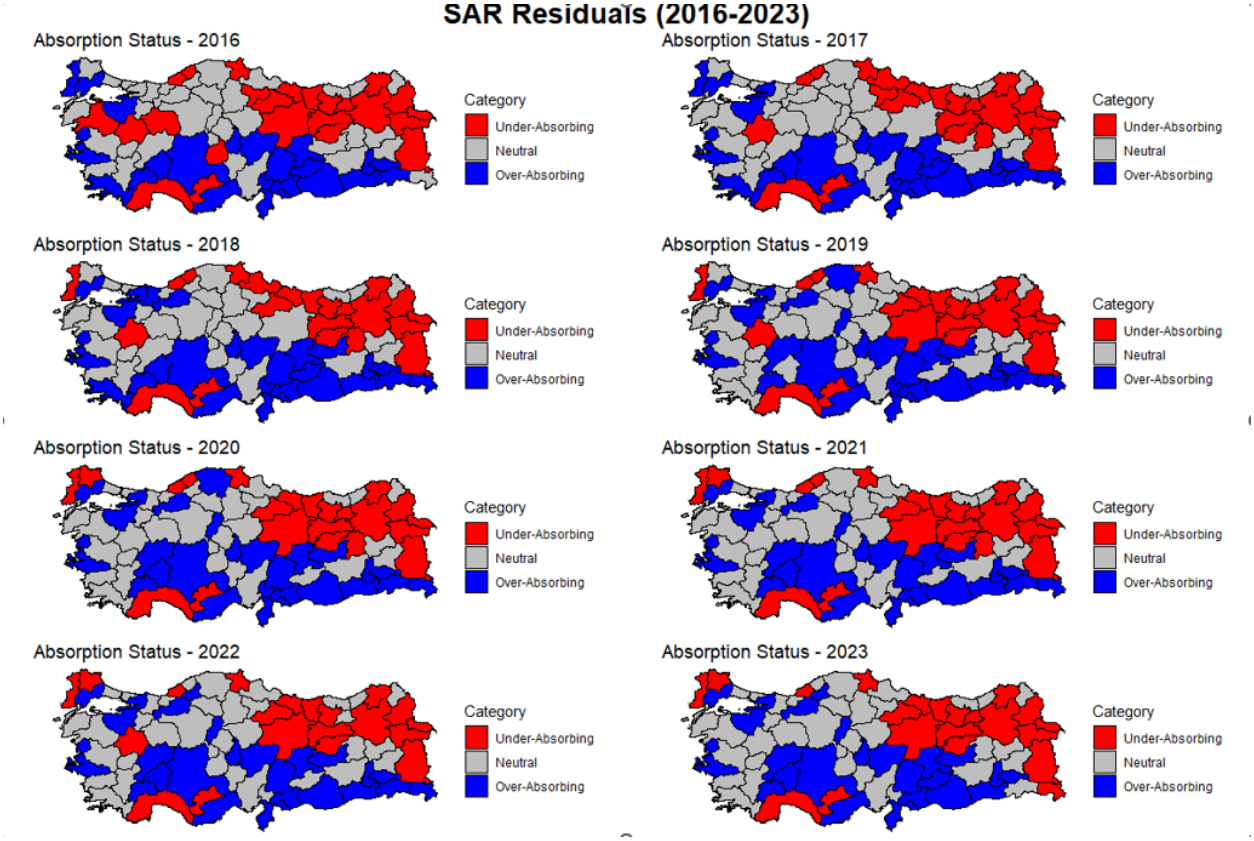
Figure 12. Scatter Plot of OLS (Table 1) Residuals against SAR (Table 3) Residuals



Below the classification for the main 3 categories are given. The mean and the standard deviation of the residuals are calculated for each year between 2016-2023. Afterwards, these 3 categories are created and the residuals of the SAR model are classified according to:

$$\text{Residual}_{i,t} \in \begin{cases} \text{Under-Absorbing (Red)}, & \text{if } \text{Residual}_{i,t} < \mu_t - 0.5\sigma_t \\ \text{Neutral (Grey)}, & \text{if } \mu_t - 0.5\sigma_t \leq \text{Residual}_{i,t} \leq \mu_t + 0.5\sigma_t \\ \text{Over-Absorbing (Blue)}, & \text{if } \text{Residual}_{i,t} > \mu_t + 0.5\sigma_t \end{cases} \quad (3)$$

Figure 13. Absorption Status of 81 Provinces of Türkiye According to SAR Model, 2016-2023



In Figure 13, a map of Türkiye can be seen with provinces colored according to their absorption status suggested from the SAR model. As illustrated, provinces located on the Syria-Türkiye border tend to over-absorb the refugees. In addition, the northeastern provinces of Türkiye tend to under-absorb the refugees. This finding is very intuitive when modeling the refugees' choice of settling down in a province or using Türkiye as a transit country. As the historical migration routes suggest, the northeastern provinces of Türkiye are positioned relatively far from the optimal path to migration to Europe.

Moreover, the climate of this region is much colder than other regions. For instance, provinces in northeastern Türkiye such as Erzurum and Kars have mean surface air temperatures of 5.75°C and 5.13°C respectively (World Bank Group, n.d.). These temperatures get even lower in winter months. For instance, for January, Erzurum and Kars have mean surface air temperatures of -9.0°C and -10.7°C respectively (General Directorate of Meteorology, n.d.). These temperatures are much colder than provinces located in other regions. For the comparison, bordering provinces such as Hatay and Kilis have mean surface air temperatures, for January, of 8.2°C and 6.1°C respectively. The climate of the northeastern provinces of Türkiye is considerably different than the climate of Syria. Factors such as climate and the provinces' far proximity to Europe might have affected the distribution of Syrians in Türkiye. Because of these factors, it is logical that on average

northeastern provinces are under-absorbing and bordering provinces and provinces used for migration toward Europe are over-absorbing.

In addition, when the Moran Scatter Plot in Figure 11 and the Absorption Status Maps in Figure 13 are compared, there seems to be an overlap between them. All these seem to have confirmed the bond between a spatial design and our notion of absorption.

5. Concluding Remarks

This empirical study aimed to quantify the refugee absorption capacity of 81 provinces of Türkiye afterwards the Syrian Civil War. The factors that affected the refugees when choosing a province are tried to be modeled. The distribution of refugees is shown. With the help of the spatial econometric models used in this empirical research, it is found that the distribution of Syrians who escaped from the civil war is not random. Thus, this kind of non-random distribution of refugees created some provinces to be under-absorbing, over-absorbing and just-absorbing (Neutral). This research classified provinces according to their Absorption Status and provided reasons. Overall, it is been seen that mainly the northeastern provinces tend to be under-absorbing and border provinces tend to be over-absorbing.

However, the limitations of this research and future research suggestions should be addressed. The province-specific data of some variables are either not publicly available or scarce and thus have not been added to this research. Some probable reasons for this non-random distribution of Syrian refugees, such as ethnic factors, could not be integrated into the model due to data limitations. Also, it is not feasible to determine the exact migration route of the people. That's why, for the representation the wide channels are given for EMR and MSR. These channels thus only give the overall sense and direction of the migration. In addition, the Pooled SAR model is used for analysis without including fixed effects. In future research, with more province-specific data availability, usage of fixed effects and more advanced econometric practices, this research can be expanded.

References

Abdelaaty, L. (2021). Refugees and guesthood in Turkey. *Journal of Refugee Studies*, 34(3), 2827–2848. https://doi.org/10.1093/jrs/fez097

Akgündüz, Y. E., van den Berg, M., & Hassink, W. (2015). The impact of refugee crises on host labor markets: The case of the Syrian refugee crisis in Turkey (IZA Discussion Paper No. 8841). *Institute for the Study of Labor (IZA)*. https://www.econstor.eu/bitstream/10419/108723/1/dp8841.pdf

Anselin, L. (1996). The Moran scatterplot as an ESDA tool to assess local instability in spatial association. In M. M. Fischer, H. Scholten, & D. Unwin (Eds.), *Spatial analytical perspectives on GIS in environmental and socio-economic sciences* (pp. 111-125). Taylor & Francis.

Anselin, L. (2020, October 2). *Contiguity-Based Spatial Weights*. GeoDa. https://geodacenter.github.io/workbook/4a_contig_weights/lab4a.html

Baykal, B., & Özdemir, Ö. (2024, August 27). Turkey aims to halt irregular migration and migrant smuggling in the Eastern Mediterranean. *Migration Policy Institute*. https://www.migrationpolicy.org/article/turkey-irregular-migration-smuggling-security

Büyük Sivas Haber. (2019, January 3). Türkiye'de geçici koruma altındaki 3 milyon 622 bin 366 Suriyeli nerede yaşıyor. Büyük Sivas. https://www.buyuksivas.com/gecici-koruma/

Conant, E. (2015, September 24). The world's congested human migration routes in 5 maps. *IOM*

Directorate General of Migration Management. (n.d.). Geçici koruma. *Republic of Turkey Ministry of Interior*. Retrieved January 5, 2025, from https://www.goc.gov.tr/gecici-koruma5638

Erdoğan, M. M. (2019). *Syrian refugees in Turkey*. Konrad-Adenauer-Stiftung. Retrieved from https://www.kas.de/tuerkei

Erdoğan, M. M. (2020). Syrians Barometer 2019 (p. 28). UNHCR. https://www.unhcr.org/tr/wp-content/uploads/sites/14/2020/09/SB2019-ENG-04092020.pdf

Erdoğan, M. M. (2021). Suriyeliler barometresi 2020: Suriyelilerle uyum içinde yaşamın çerçevesi (p. 61). UNHCR Türkiye. https://data.unhcr.org/en/documents/details/91513

Erdoğan, M. M. (2022). Syrians Barometer 2021 (p. 61). UNHCR. https://www.unhcr.org/tr/wp-content/uploads/sites/14/2023/01/SB-2021-İngilizce-19-Ocak-2023.pdf

Erdoğan, M. M. (2022). Syrians Barometer 2022 (p. 29). UNHCR. https://www.unhcr.org/tr/wp-content/uploads/sites/14/2024/07/SB-2022-EN-d1-2.pdf

FİB Haber. (2022). Nevşehir'e Piktes projesinin gelmesi gerekiyor. https://www.fibhaber.com/nevsehire-piktes-projesinin-gelmesi-gerekiyor

General Directorate of Meteorology. (n.d.). *İl ve İlçeler İstatistik*. Republic of Türkiye Ministry of Environment, Urbanization and Climate Change. Retrieved February 19, 2025, from https://www.mgm.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?k=H

Gritten, D. (2024, December 9). *What just happened in Syria and who's in charge?* BBC News. https://www.bbc.com/news/articles/c99x0l1d432o

Gürakar Skribeland, Ö. (2021). Turkey: Party or non-party state? *Forced Migration Review*, (67), 46-48.

İçduygu, A., & Şimşek, D. (2016). Syrian refugees in Turkey: Towards integration policies. *Turkish Policy Quarterly*, 15(3), 59-69.

İçduygu, A., & Şimşek, D. (2016). Syrian refugees in Turkey: Towards integration policies. *Turkish Policy Quarterly, 15*(3), 59-69.

Kaya, A. (2023). The world's leading refugee host, Turkey has a complex migration history. *Migration Policy Institute*. https://www.migrationpolicy.org/article/turkey-migration-history

Kocaeli Koz. (2020). Şaşırtıcı ama gerçek: Bu Kocaeli'deki Suriyeli sayısı azalmaya devam ediyor. https://www.kocaelikoz.com/haber/5803060/sasirtici-ama-gercek-bu-kocaelideki-suriyeli-sayisi-azalmaya-devam-ediyor#

Kuschminder, K. (2017). Afghan refugee journeys: Onwards migration decision-making in Greece and Turkey. *Journal of Refugee Studies, 31*(4), 566–587. https://doi.org/10.1093/jrs/fex043

LeSage, J., & Pace, R. K. (2009). *Introduction to Spatial Econometrics* (1st ed.). Chapman and Hall/CRC. https://doi.org/10.1201/9781420064254

Ravenstein, E. G. (1885). The laws of migration. *Journal of the Statistical Society of London, 48*(2), 167-235. https://doi.org/10.2307/2979181

Refugees and Asylum Seekers Assistance and Solidarity Association. (2022, December 31). Türkiye'deki Suriyeli sayısı Aralık 2022. https://multeciler.org.tr/turkiyedeki-suriyeli-sayisi-aralik-2022/

Refugees and Asylum Seekers Assistance and Solidarity Association. (2023, December 31). Türkiye'deki Suriyeli sayısı Aralık 2023. https://multeciler.org.tr/turkiyedeki-suriyeli-sayisi-aralik-2023/

Rogers, A., Willekens, F., Little, J., & Raymer, J. (2002). Describing migration spatial structure. *Papers in Regional Science, 81*(1), 29–48. https://doi.org/10.1111/j.1435-5597.2002.tb01220.x

Sarrias, M. (2020). *Introduction to Spatial Econometric* [Lecture slides]. Universidad de Talca. https://www.msarrias.com/uploads/3/7/7/8/37783629/lecture1.pdf

Satan, A., & Balci, M. (2017). Refugee policies of Turkey during World War II. *ICPESS 2017 Proceedings, Volume 1: Political Studies* (pp. 71–79). Center for Political, Economic and Social Research (PESA).

Schiefer, D., Düvell, F., Sağıroğlu, A. Z., & Mann, L. (2023). Sampling refugee groups: The example of Syrians in Turkey. *International Migration, 61*(4), 231–247. https://doi.org/10.1111/imig.13130

T.C. İçişleri Bakanlığı Göç İdaresi Genel Müdürlüğü. (2014). *2013 Türkiye göç raporu*. İçişleri Bakanlığı Göç İdaresi Genel Müdürlüğü. Retrieved January 6, 2025, from https://www.goc.gov.tr/kurumlar/goc.gov.tr/YillikGocRaporlari/2013_yillik_goc_raporu.pdf

T.C. İçişleri Bakanlığı Göç İdaresi Başkanlığı. (2016). 2016 Türkiye göç raporu (pp. 78–79). https://www.goc.gov.tr/kurumlar/goc.gov.tr/YillikGocRaporlari/2016_yiik_goc_raporu_haziran.pdf

T.C. İçişleri Bakanlığı Göç İdaresi Başkanlığı. (2016). 2016 yılı faaliyet raporu (pp. 76–77). https://www.goc.gov.tr/kurumlar/goc.gov.tr/evraklar/Stratejik-Yonetim/Faaliyet-Raporlari/2016-Yili-Faaliyet-Raporu.pdf

T.C. İçişleri Bakanlığı Göç İdaresi Başkanlığı. (2017). 2017 yılı faaliyet raporu (pp. 82–83). https://www.goc.gov.tr/kurumlar/goc.gov.tr/evraklar/Stratejik-Yonetim/Faaliyet-Raporlari/2017-Yili-Faaliyet-Raporu.pdf

T.C. İçişleri Bakanlığı Göç İdaresi Başkanlığı. (2024). Geçici koruma. https://www.goc.gov.tr/gecici-koruma5638

TURKSTAT. (2024). Population projections 2023–2100: Population of provinces by years. https://data.tuik.gov.tr/Bulten/Index?p=Population-Projections-2023-2100-53699&dil=2

TURKSTAT. (2024). The results of address-based population registration system 2023. Retrieved October 23, 2024, from https://data.tuik.gov.tr/Bulten/Index?p=The-Results-of-Address-Based-Population-Registration-System-2023-49684&dil=2

UNHCR Türkiye. (n.d.). Refugees and asylum seekers in Türkiye. *UNHCR Türkiye*. Retrieved January 6, 2025, from https://www.unhcr.org/tr/en/kime-yardim-ediyoruz/refugees-and-asylum-seekers-tuerkiye#:~:text=The%20Republic%20of%20T%C3%BCrkiye%20is,events%20occurred%20outside%20of%20Europe.

World Bank Group. (n.d.). *Türkiye*. Climate Change Knowledge Portal. Retrieved February 19, 2025, from https://climateknowledgeportal.worldbank.org/country/turkiye

Yu, X., Shen, M., Shen, W., & Zhang, X. (2020). Effects of land urbanization on smog pollution in China: Estimation of spatial autoregressive panel data models. *Land, 9*(9), 337. https://doi.org/10.3390/land9090337

Zapparoli-Manzoni-Bodson, A. (2015). *The making of the Iranian refugee: From revolution to asylum.*