



Hacettepe University Graduate School of Social Sciences

Economics

Master of Art

**REGIONAL ECONOMIC EFFECTS OF REFUGEES: TURKISH
CASE**

Muhammed Emin KARAARSLAN

Master's Thesis

Ankara, 2019

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ACCEPTANCE AND APPROVAL

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Bu alıřmadaki bütn bilgi ve belgeleri akademik kurallar erevesinde elde ettiđimi, grsel, iřitsel ve yazılı tm bilgi ve sonuları bilimsel ahlak kurallarına uygun olarak sunduđumu, kullandıđım verilerde herhangi bir tahrifat yapmadıđımı, yararlandıđım kaynaklara bilimsel normlara uygun olarak atıfta bulunduđumu, tezimin kaynak gsterilen durumlar dıřında zgn olduđunu, **Do. Dr. zge Kandemir Kocaaslan** danıřmanlıđında tarafımdan retildiđini ve Hacettepe niversitesi Sosyal Bilimler Enstits Tez Yazım Ynergesine gre yazıldıđını beyan ederim.

Muhammed Emin KARAARSLAN

DEDICATION

I dedicate this thesis to my beloved wife Şeyma and my daughter Meryem who have always supported me with unconditional love and trust.

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I would like to express my appreciation to my thesis advisor Associate Professor Özge Kandemir Kocaaslan whose guidance in any case carried me one step further.

I would like to express my gratitude to Assistant Professor Leyla Firuze Arda Özalp who always supported and guided me with trust.

I would like to thank each member of my two families for their encouragements and supports.

ÖZET

KARAARSLAN, Muhammed Emin. Mültecileri Bölgesel Ekonomik Etkileri: Türkiye Örneği, Yüksek Lisans Tezi, Ankara, 2019.

Suriye'deki çatışmalar 2011 yılında başladı ve olaylar diğer ülkelere dönük büyük bir göç ile sonuçlandı. Türkiye, yaklaşık 3,6 milyon kişiyle, dünyadaki en fazla Suriyeli mülteciye ev sahipliği yapıyor. Bu yüksek sayıda mülteci girişi Türkiye'yi birçok yönden etkiledi ve bu çalışma bu olayın ekonomik yönüne odaklanmayı hedefliyor. Göç hareketinin ilk aşamasında mülteciler Suriye'ye yakın bölgelerde kalmayı tercih ediyorlardı. Alınan insan sayısı, yaşadıkları bölgelere ve şehirlere göre çok büyük olduğu için, girişin özellikle istihdam oranları, ekonomik tercihler, fiyat seviyeleri ve dış ticaret üzerinde bazı ekonomik sonuçları oldu. İktisat teorisinde fiyat düzeyi, istihdam ve dış ticaret, ekonomik büyüme için önemli faktörlerdir. Bu nedenle, bu çalışma, mültecilerin yoğun olarak yerleştiği bölgelerde mültecilerin Türkiye'nin bölgesel ekonomisi üzerindeki etkileri hakkında fikir sahibi olmak için bu parametrelerdeki değişikliklerle ilgilidir. Ampirik analizde Farkların Farkı tahmin metodolojisi kullanılmıştır. Tahmin sonuçlarına göre, mültecilerin enflasyonist etkilerinin kira fiyatları için istatistiksel olarak anlamlı olduğu, ancak diğer temel tüketim malları için anlamlı olmadığı bulunmuştur. Bu tahminin istihdam sonuçları, mültecilerin “yerlilerin istihdamı üzerindeki etkisinin” olumsuz olduğunu göstermektedir. Sonuçların dış ticaret yönünün sadece ihracatta olumlu olduğu görülmüştür.

Anahtar Sözcükler

Fiyat Düzeyi, İstihdam, Dış Ticaret, Suriyeli Mülteciler

ABSTRACT

KARAARSLAN, Muhammed Emin. Regional Economic Effects of Refugees: Turkish Case, Master's Thesis, Ankara, 2019.

The conflicts in Syria started at year 2011 and series of events resulted with a massive amount of people to migrate some other countries. Turkey hosts the highest number of Syrian refugees in the World, about 3.6 million people. This high number of refugee inflow has affected Turkey in many ways and this study aims to focus on the economic aspect of this incident. At the first phase of the movement, refugees were preferring to stay within regions that are close to Syria. Since the amount of people that has been intake was massive compared to the regions and cities they had settled, the inflow had some economic consequences particularly on employment rates, preferences, price levels and foreign trade. In the economic theory price level, employment and foreign trade are prominent factors for economic growth. Therefore, this study is concerning the changes in these parameters to have an opinion about the effects of refugees on the regional economy of Turkey at the regions where refugees are concentratedly settled. In the empirical analysis Difference-in-Differences estimation methodology has been used. According to the estimation results, inflationary effects of refugees have been found to be statistically significant for rental prices but not for other concerned fundamental consumption goods. Employment results of the estimation suggest that the refugees' effect is negative on the natives' employment. The foreign trade aspect of the results has been found to be positive only on export.

Key Words:

Price Level, Employment, Foreign Trade, Syrian Refugees

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ABBREVIATIONS

CPI: Consumer Price Index

DGMM: Directorate General of Migration Management

DID: Difference in Differences

EU: European Union

GDP: Gross Domestic Product

IOM: International Organization for Migration

IV: Instrumental Variable

LEWIE: Local Economic-Wide Impact Evaluation

LFPR: Labour Force Participation Rate

NUTS: Nomenclature of territorial units for statistics

OECD: The Organisation for Economic Co-operation and Development

OLS: Ordinary Least Square

SMSA: Standard Metropolitan Statistical Area

SVAR: Structural Vector Auto Regression

TURKSTAT: Turkish Statistical Institute

UK: United Kingdom

UN: United Nations

UNHCR: United Nations High Commissioner for Refugees

US: United States

VAR: Vector Auto Regression

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INTRODUCTION

Migration is one of the oldest human reaction to the environmental changes. It has many effects on the host country. Therefore, there are several studies in different fields about the effects of migration. This study investigates the effects of Syrian refugees on the regional economy in Turkey. Because, at year 2017, Syrian refugees constitute the majority of forced displaced individuals in the world and Turkey hosted the majority of Syrian refugees. (UNHCR, 2018) The conflicts in Syria started with “Arab Spring” movements and grew up rapidly. (Dağlı, 2018; Tahir, 2018) After it evolved into a civil war, massive migration movement begun. (Konviser, 2017) The migration movement toward neighbour countries affected the life in social, political and also economic fields.

When we turn to the Syrian refugees in Turkey, the migration took place after 2011. At the first two years of movement, the number of refugees were limited. Most of the refugees had settled temporary protection camps until 2014 but in 2014 the number of refugees dramatically increased and reached approximately 1.5 million people (DGMM, 2019). As a result, refugees spread across country. Even though, they have a chance to live in any city, they mostly preferred to live in cities which are close to Syria (see Table 1 and Table 4).

The migration movement has some economic consequences. These consequences of migration can be summarized as an increase in the population and this population increase on one hand, causes an increase in demand for goods and services, on the other hand, causes an increase in supply for labour. In this context, this study investigates the economic effects of Syrian refugees on the price level, employment and foreign trade.

To investigate the effect of refugees on these macroeconomic indicators, the difference-in-differences methodology will be applied. This method requires two groups which are similar except the concerned incident and two time periods which contain the data before and after the incident. At one of the groups, the

incident takes place while at the other one it does not. Doing so, this methodology allows us to investigate the particular effects of the incident.

To examine the effect of refugees on prices, 3 different items level consumer price indexes will be analysed. To analyse the effect of refugees on employment, unemployment rate and labour force participation rate will be examined under 3 different education levels. The effect of refugees on foreign trade will be investigated using export and import share of GDP. These analyses will provide us evidence about the effects of refugees on fundamental macroeconomic indicators.

The findings of previous studies indicate that in general there is a significant effect of refugees on prices (Balkan & Tumen, 2016; Tumen, 2016). The effect of refugees on labour market is also found significant and negative in the previous literature (Ceritoglu, Yunculer, Torun, & Tumen, 2017; Del Carpio & Wagner, 2015). The effects of Syrian refugees on Turkish foreign trade have not been investigated before. But effects of migrants on foreign trade found significant which is linked to the increase of bilateral trade between hosting and origin country in previous studies (Blanes-Cristobal, 2008; Gould, 1991; Gümüş, 2015; Lewer, 2011; Lewer & Van den Berg, 2009).

In this context, the main objective of this thesis is to investigate the effects of refugees on regional economy, because the current political situation shows that the presence of refugees will continue for a while and the refugee flow and the refugee population is one of the most prominent economic and sociological issues in Turkey. Even though several researchers have focused on the effects of immigration on Turkish economy, in this study I focus on a wider time period in the empirical analysis which will provide more information about effects of refugees in longer term. Also, effects of Syrian refugees on Turkish foreign trade have not been studied before. In this study, it will be investigated to detect the scope of Syrian refugees' effect on Turkish economy.

The organization of this thesis is as follows: In Chapter 1, a general information about migration will be provided. Also detailed information about conflicts in Syria and migration movement will be presented. Later, the Turkish aspect of the

migration will be described. Next, a general information about the underlying macroeconomic indicators will be presented on country and regional level. In Chapter 2, the previous studies on the effects of immigrants on economic activity and relevant macroeconomic indicators will be reviewed. In Chapter 3, DID estimation methodology will be explained. Then, the data on refugees and macroeconomic indicators that are used in this study will be described. Later, the estimation results will be presented and explained. Conclusion section summarizes the main conclusions of the thesis and suggest some of possible reasons behind the found effects.

CHAPTER 1

MIGRATION, CONFLICTS IN SYRIA, TURKEY

1.1 MIGRATION

Starting from the pre-modern history there are countless examples of mass human migration from one place to another. The difference and at the same time the similarity among these migrations is the reason. Migrations are similar because they occur after an environmental change and they are different because the type of environmental change differs. If there is a lack of resources to sustain subsistence, people decide to move another place which has more resources. Or, if there is a war and people no longer have a place to live in peace, then they start to look for an available place to live. According to the UN definition of migration is by IOM, (2019),

“the movement of a person or a group of persons, either across an international border, or within a State. It is a population movement, encompassing any kind of movement of people, whatever its length, composition and causes; it includes migration of refugees, displaced persons, economic migrants, and persons moving for other purposes, including family reunification.”

According to UN data, at year 2017 there were about 258 million people who were migrants (DESA), of which about 68 million was displaced without their own will, around the world.(UNHCR, 2018)

Type of migration and migrants take different names with respect to the reason of the migration. The migration might take place because of an economic, educational or personal reason. However, it may happen because of an adverse environmental reason such as conflicts, terror, human rights violations etc. The term that is used for unwillingly migration is “forced migration”. Before going further, definition of refugees would be helpful. In 1951 Convention, the refugee status is defined by (IOM, 2019) as follows,

“owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his

nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country”

The situation in Syria can be evaluated under this perspective. Because the number of Syrian refugees increased through the increasing conflicts. At the next section a detailed information about the Syrian aspect of incidents will be provided.

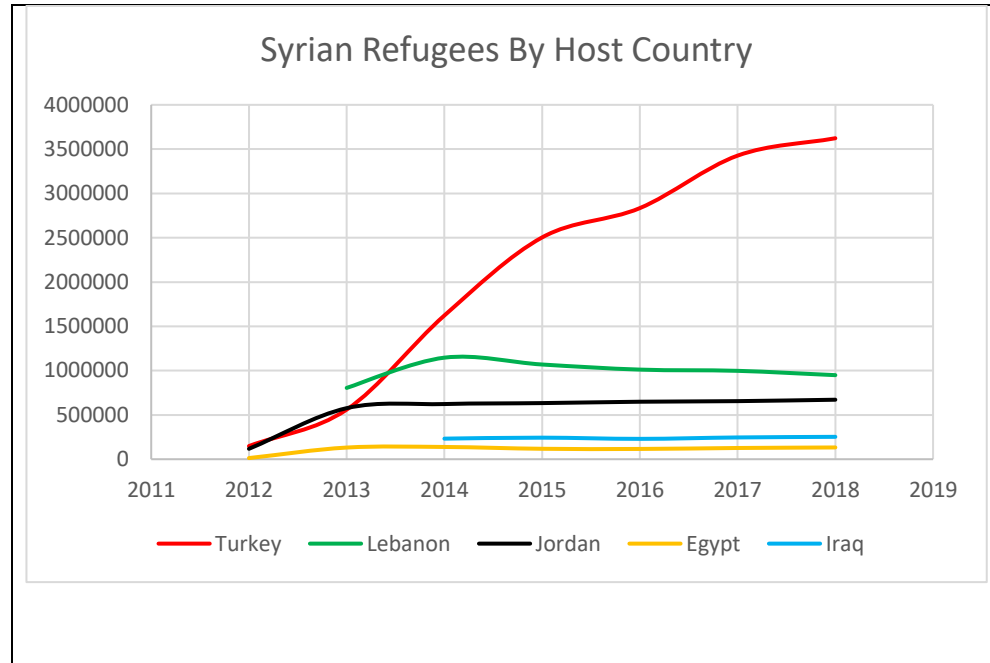
1.2 CONFLICTS IN SYRIA AND ASYLUM-SEEKING PROCESS

The beginning of the conflicts in Syria dates back to year 2011 but the reasons of the conflicts had come up from the movements occurred in the whole region named “Arab Spring”. The igniter incident of this movement occurred in Tunisia at 17th December 2010. After a week from the incident in Tunisia, protests leaped to the neighbour country Algeria. At 12th January 2011 protests started in Lebanon and at 14th January 2011 in Jordan. At 11th February 2011, Husnu Mubarak, the president of Egypt resigned. As we can see the protests against governments evolved in a different appearance and they rapidly spread among other Middle East countries. (Tahir, 2018)

The Syrian aspect of the incidents is not independent from the regional developments. The first action that took place in Syria, happened at 6th March 2011 in Daraa with arresting students by an accusation of writing on walls anti-government writings. The first violence action happened at 15th March. Fire opened upon the protesters and many protesters lost their lives. Following months have scented anti-government street demonstrations especially Fridays after Friday Prayer. At June 2011 conflicts got in a different appearance; the first refugee groups have flown to Turkish border. The Regime tried to prevent people to asylum to the Turkey. At July 2011, “Free Syrian Army” established and according to Red Cross, the situation in Syria evolved into a civil war. In August 2011, former US president Barack Obama called Syrian government to resign. By the following period, conflict and clashed got harder. Using conventional weapons against people caused migration movements. The mass migration

movements started at the beginning of 2012. (Dağlı, 2018) Following Figure 1 shows the Syrian migrant numbers by the hosting country at the end of years.

Figure 1: Number of Syrian Refugees by Host Country



Source: UNHCR, Syria Regional Refugee Response

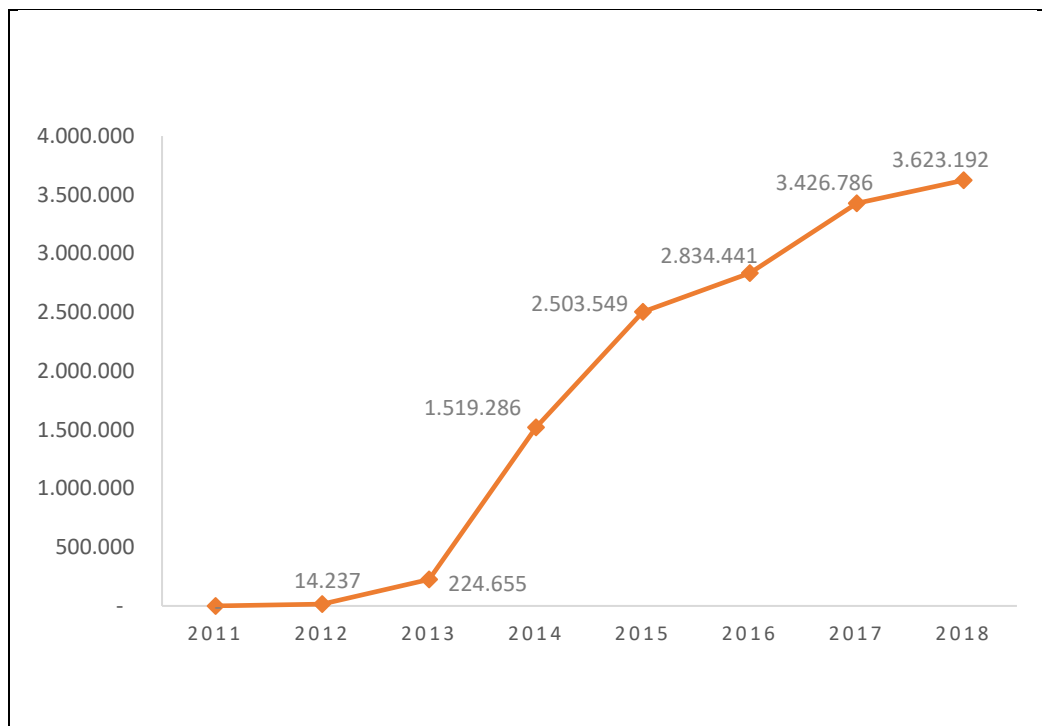
At 20th August 2012, former US president Barack Obama warned Syrian regime on the threat of using chemical weapons. He said, it is the “Red Line” of the situation in Syria and will have serious consequences. But at 19th March 2013, regime used chemical weapons. (Konviser, 2017) This was the turnout point of the migration movements. From this point, migration movements grew. Following chemical weapon attacks and other states’ interventions in Syria made the clashes more brutal. At this phase, Syrian refugees mostly preferred to migrate to Lebanon and Jordan instead of Turkey. But as the clashes heat up and the number of affected people accelerated, their movement got another direction. Because it had seemed that the problem was not going to be solved soon. Moving to Turkey was beneficial on some aspects for Syrian refugees. First of all, Turkey could be used to pass Europe easily. Secondly, its economy is much more promising and has opportunities than other countries. Therefore, Syrian refugees changed their direction and massive migration movement toward Turkey had been started. This migration movement have brought some consequences for

Turkey on as economic, social and political fields. The following section observes the Turkish view of the Syrian refugee inflow.

1.3 TURKISH VIEW OF SYRIAN REFUGEE INFLUX

The Syria originated migration wave was not seemed important at the beginning of the conflicts but while time passes, clashes and interventions within the Syrian land expanded causing serious migration movements. To explain it, at the beginning, at year 2012, Turkey hosted only about 15 thousand of refugees and at the next year the number of refugees increased about 220 thousand. It should be noticed that the refugees settled in the near-border refugee camps in these two years but later, when the crisis got grown up, number of the refugees increased dramatically to about 1.5 million. At the present situation (at the beginning of 2019), Turkey hosting about 3.6 million people of which only about 140 thousand settled in temporary protection camps; the rest have speeded out within the country. (DGMM, 2019)

Figure 2: Number of Syrian Refugees In The Scope Of Temporary Protection By Year



Source: DGMM, Migration Statistics

As it can be seen in Figure 2, there is a sharp increase in the number of refugees at year 2014 and the trend continues through the years after. The settlement of

this massive amount of people to the temporary camps would be impossible therefore the Turkish government let the Syrians to spread across the country. Table1 shows the distribution of the number of Syrians in the scope of temporary protection by the provinces at the end of year 2017.

Table 1: Syrian Refugees on the Scope of Temporary Protection by Provinces at the End of Year 2017

PROVINCES	NUMBER OF REFUGEES	PROVINCES	NUMBER OF REFUGEES	PROVINCES	NUMBER OF REFUGEES
ADANA	172.106	EDİRNE	6.493	MALATYA	27.388
ADYAMAN	28.204	ELAZIĞ	7.907	MANİSA	8.967
AFYONKARAHİSAR	5.823	ERZİNCAN	166	MARDİN	90.723
AĞRI	1.086	ERZURUM	923	MERSİN	191.799
AKSARAY	2.290	ESKİŞEHİR	3.652	MUĞLA	12.994
AMASYA	586	GAZİANTEP	350.278	MUŞ	1.213
ANKARA	93.915	GİRESUN	173	NEVŞEHİR	7.819
ANTALYA	563	GÜMÜŞHANE	87	NİĞDE	4.876
ARDAHAN	147	HAKKARİ	5.319	ORDU	801
ARTVİN	60	HATAY	457.191	OSMANİYE	49.926
AYDIN	10.335	İĞDIR	104	RİZE	853
BALIKESİR	3.670	ISPARTA	6.892	SAKARYA	11.977
BARTIN	65	İSTANBUL	538.001	SAMSUN	5.087
BATMAN	20.817	İZMİR	129.841	SİİRT	3.754
BAYBURT	57	KAHRAMANMARAŞ	99.156	SİNOP	113
BİLECİK	706	KARABÜK	613	SİVAS	4.030
BİNGÖL	871	KARAMAN	665	ŞANLIURFA	463.149
BİTLİS	881	KARS	208	ŞIRNAK	14.859
BOLU	1.742	KASTAMONU	1.283	TEKİRDAĞ	8.645
BURDUR	8.369	KAYSERİ	70.574	TOKAT	1.058
BURSA	134.541	KIRIKKALE	1.097	TRABZON	2.721
ÇANAKKALE	4.538	KIRKLARELİ	2.282	TUNCELİ	110
ÇANKIRI	501	KIRŞEHİR	1.109	UŞAK	2.180
ÇORUM	2.535	KİLİS	131.881	VAN	2.849
DENİZLİ	10.407	KOCAELİ	46.682	YALOVA	3.540
DİYARBAKIR	31.788	KONYA	100.118	YOZGAT	4.046
DÜZCE	997	KÜTAHYA	635	ZONGULDAK	379

Source: DGMM¹

This movement has brought some economic challenges to face for Turkey. First one is the increasing population, corollary the increasing demand aspect of migration. Since the number of people living in the country or in each province (if

¹ The data presented in this table was obtained from DGMM with official application.

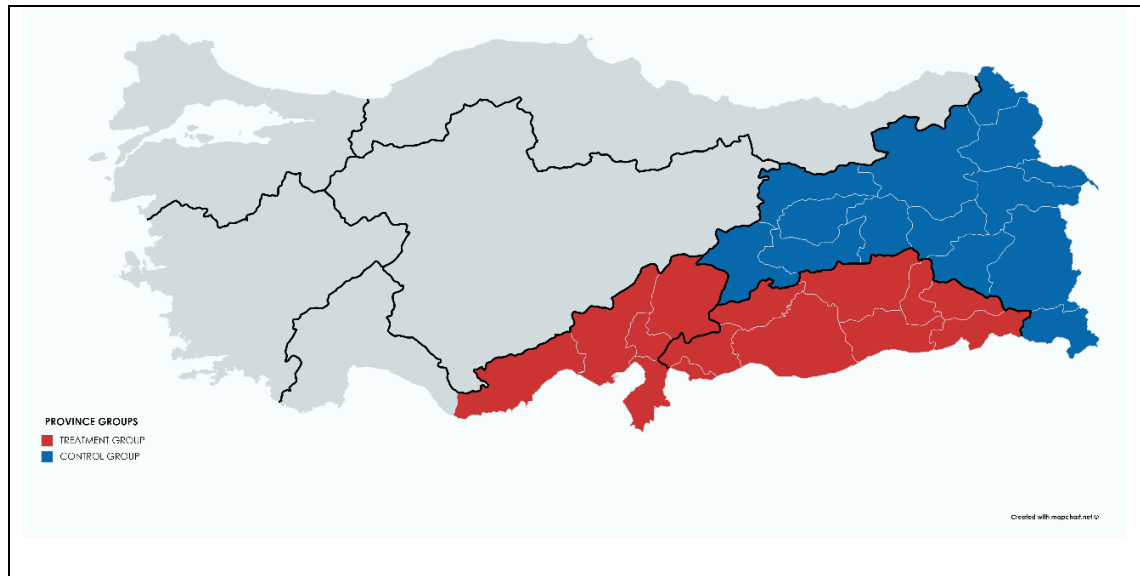
we consider the province base analysis) has risen, this would cause an increase in the demand. Immigrants' demand structure might be different from that of the natives since their preferences, demand elasticities and consumption habits are different, yet it is an increase in the population and will affect the demand inevitably.

Secondly, due to the subsistence of refugees, the refugees are likely to affect the employment in Turkey. The Syrians in the scope of temporary protection were not allowed to work in Turkey but this prohibition did not prevent them to seek for and work in a job. The key point here is that since the Syrians were not allowed to work, they generated an opportunity of low-cost labour force for employers. No doubt, this opportunity may lead to some serious economic impact on hosting counties' natives.

Thirdly, the last economic aspect that will be evaluated in our case is the foreign trade. The features that might affect the consumption pattern of the refugees are on the table again and this time it may lead to a beneficial change in Turkish economy. The consumption habits of Syrians and some other Arab countries are well known by the Syrians. And also, some of the refugees were engaged in trade before they migrated to Turkey, meaning they were merchants. This awareness of the opportunities may help to create and shape new economic bounds between Turkey and other Arab countries.

To sum up, the refugees have some prominent effects on the economy of hosting countries. In this context, this study will try to evaluate the effects of refugees on the price level of some goods and services, employment and foreign trade level. In this study, the effect of refugees will be analysed on a regional base because most of the refugees (about 62 percent) were settled in the concerning regions of the study at the end of year 2017. (See Table 4) Our study region is separated into two groups which are similar in many aspects but different in one certain thing, the number and density of the refugees. This will be helpful to capture the refugees' particular effects on regional economy. Figure 3 shows the regions that are concerned in our case.

Figure 3: Visualization Of Regions Of Concern



Source: Own plotted.

In this study we will try to evaluate the refugees' effect on some fundamental indicators of the economy. The indicators are price level, employment, foreign trade. By evaluating these indicators, we will be able to understand the effects of refugees on main economic variables. Previous researches on this topic cover narrower time range, for example Ceritoglu et al. (2017); Del Carpio and Wagner (2015); Tumen (2016) The main difference between this study and previous studies is that my study covers a wider range of time period. Tumen (2016) states that, the long-term effects of refugees might be different than the effects in the short run. Besides when we look at the number of refugees through time (see Figure 2) it can be seen that, after 2013 there is a dramatic increase in number of refugees. Thus, this study can provide more reliable results as it covers a wider time period.

1.4. TURKISH ECONOMY

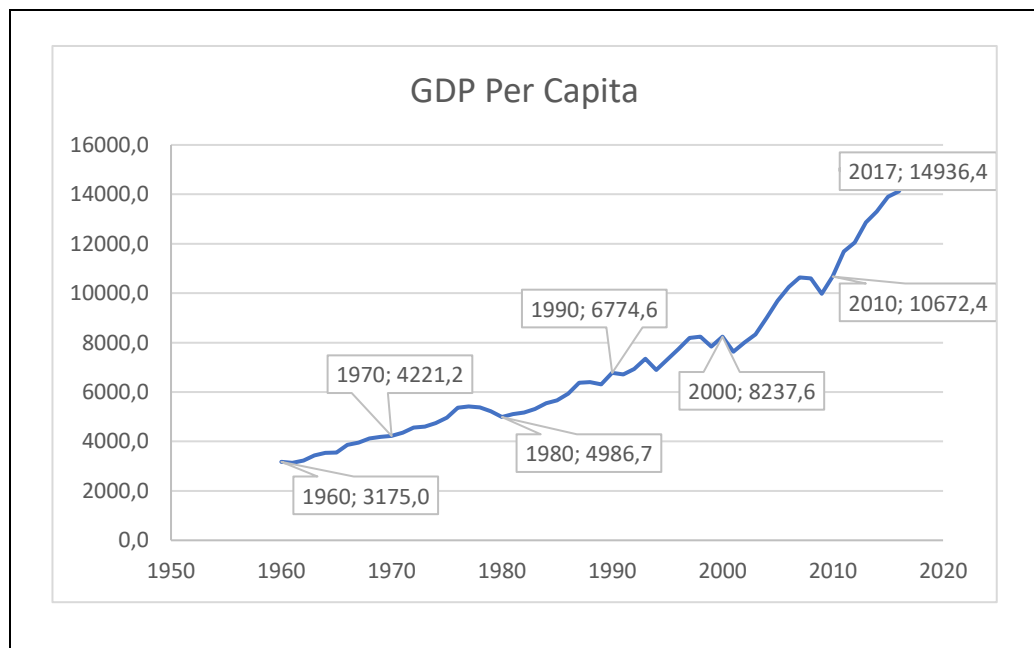
Since this study is focused on the economic aspect of the refugee inflow incident, a review of Turkish economy on country-wide and regional scale is going to be presented first. Thus, in this section the economic conditions and particularly the pattern of the analysed indicators in Turkey and in the related regions will be reviewed.

1.4.1. General Economic Condition

In this section, a general overview about Turkish economy will be made by using GDP, price level, employment and foreign trade indicators.

With the change in the political power at the beginning of 2000s, a different economic agenda had been applied. As it is discussed by Acemoglu and Ucer (2015) under the new pattern, the economy suddenly became more attractive. As it is seen in Figure 4, the GDP per capita of Turkey had followed an unstable increase pattern until 2001 crisis. Later, the rapid growth had begun. The rapid growth period lasted until the global crisis at year 2008. Even though the growth performance had been interrupted at the year after the recent crisis, the economy recovered itself next year and moved on the growth path.

Figure 4: GDP per Capita of Turkey (Constant 2010 US Dollars)



Source: World Bank, World Development Indicators

At the beginning of the migration movement, at year 2012, Turkey was the 17th biggest economy in the world with 873.982 million of US dollars. As we came to year 2017 Turkey was still the 17th largest economy in the world with 851.549 million of US dollars. Table 2 shows the ranking of world's 20 largest economies.

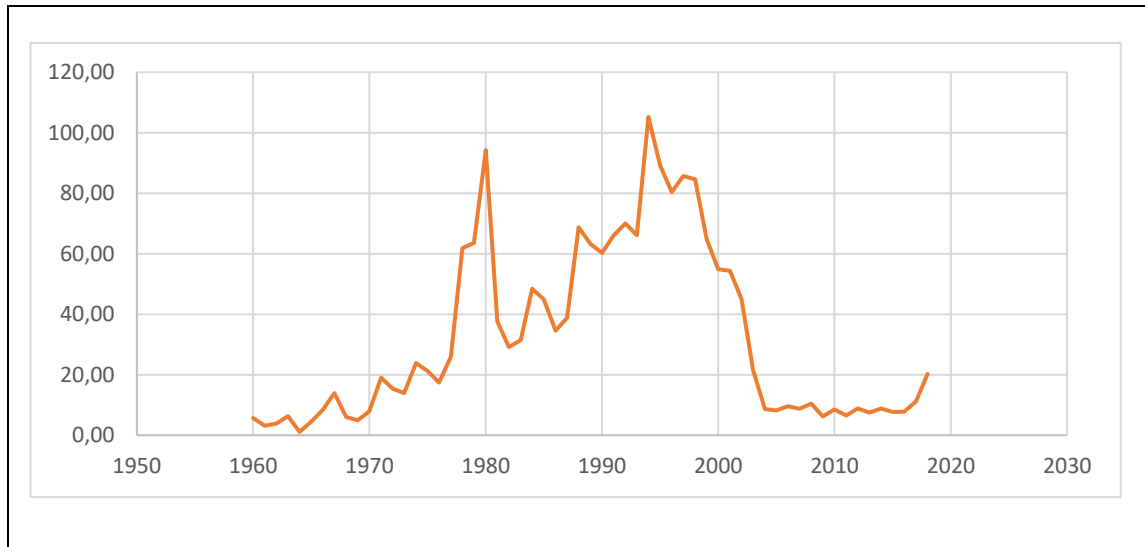
Table 2: GDP ranking at year 2017

Gross Domestic Product (Current US\$)		
<i>Ranking</i>	<i>Economy</i>	2017 <i>(millions of US dollars)</i>
1	United States	19.390.604
2	China	12.237.700
3	Japan	4.872.137
4	Germany	3.677.439
5	United Kingdom	2.622.434
6	India	2.600.818
7	France	2.582.501
8	Brazil	2.055.506
9	Italy	1.934.798
10	Canada	1.653.043
11	Russian Federation	1.577.524
12	Korea, Rep.	1.530.751
13	Australia	1.323.421
14	Spain	1.311.320
15	Mexico	1.150.888
16	Indonesia	1.015.539
17	Turkey	851.549
18	Netherlands	826.200
19	Saudi Arabia	686.738
20	Switzerland	678.887

Source: World Bank, World Development Indicators

But according to the latest World Bank overview about Turkish economy (11 October 2018), the structural and operational problems will cause a downward growth performance at coming years. Besides, there are some other problems in Turkey's economic structure that may cause to deepen the crisis environment. First of all, Turkey has a high inflation problem. Before the previous decade inflation rates were extremely high. There have been times of high inflation in which the Turkish economy faced more than 100% inflation rates. Experiencing structural and operational problems may cause to suffer high inflation problem as before. In Figure 5, annual inflation rate of Turkey is presented. As we can see, the stable pattern after the beginning of 2000s is about to be finished. Therefore, any policy implementation to prevent high inflationary pattern and to achieve stability gains importance under these conditions.

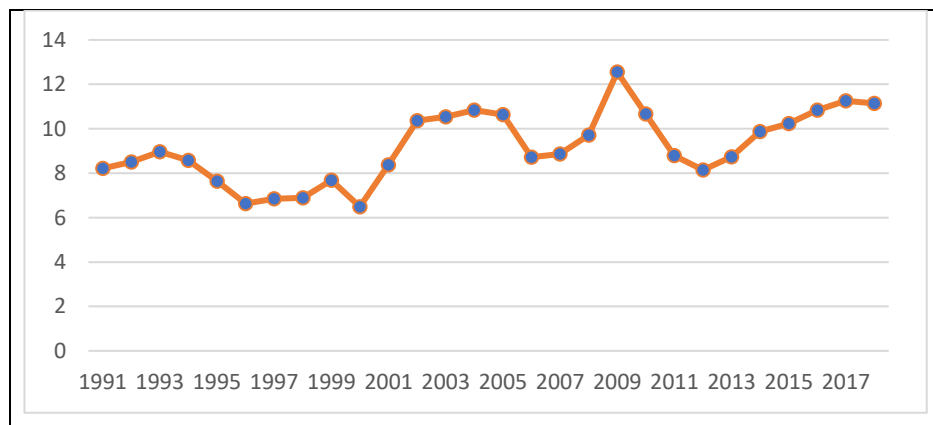
Figure 5: Yearly Inflation Rate in Turkey.



Source: World Bank, World Development Indicators

One of the other serious economic problems that Turkish economy struggles with is the high unemployment rate. The possible reasons behind this ongoing problem are high population growth, low female employment, low quality of labour supply for industrial production and unfavourable structural features of labour market (Doğanalp, 2018). From the year 2017, the Turkish government started a programme named “Employment Mobilization” in which some incentives implemented to increase employment, against high unemployment because Turkey suffers increasing unemployment trend after 2012, as it can be seen at Figure 6. This topic has extreme importance to sustain the development and growth of the economy.

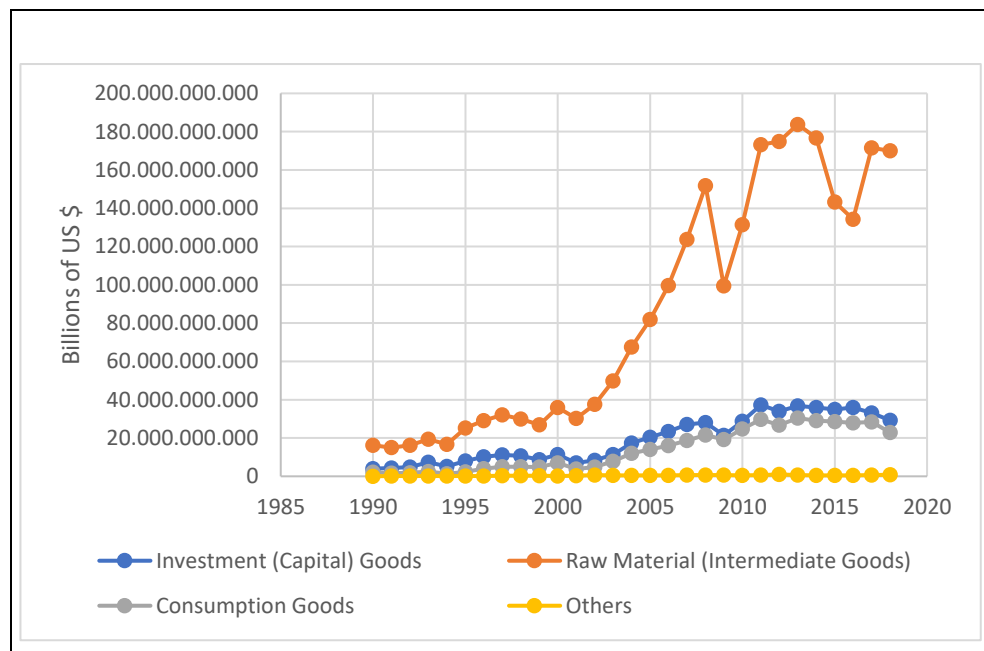
Figure 6: Yearly Unemployment Rate in Turkey



Source: World Bank, World Development Indicators

In Figure 7, Turkey's annual import levels are presented from year 1990 to 2018. When we examine the import flows in the Turkish economy, we can see that there is an increase in the import of intermediate goods starting from the beginning of 2000s. This situation shows that the economy is highly dependent on import in order to produce goods. Under this structure, the economy becomes more vulnerable because in a crisis environment the exchange rate rises the cost of production inevitably and consequently either the total production will be reduced, or some other unfavourable precautions will be taken to reduce the cost of production such as dismissing employees.

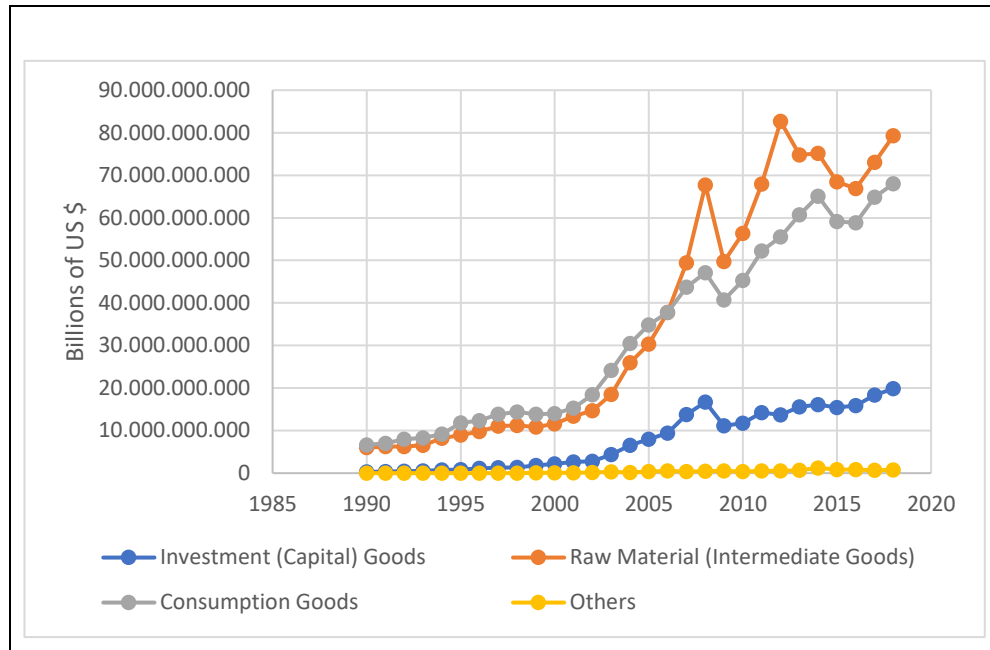
Figure 7: Turkey's annual import amounts.



Source: TURKSTAT, Foreign Trade Statistics

When we turn to examine the export side, it is seen in the Figure 8, there is an increase in the volume of export after 2000. When it is considered together with the import levels, it can be interpreted as Turkey's import of intermediate goods affected the export of consumption goods positively.

Figure 8: Turkey's annual export amounts.



Source: TURKSTAT, Foreign Trade Statistics

As a conclusion, the performance of Turkish economy is not so bad since the beginning of 2000s but still it is a growing economy in which there are some structural and operational problems to overcome to achieve a sustainable economic growth performance. The political events that the country experiences in last years, such as the failed military coup, transboundary anti-terror operations, massive amount of refugee influx and the change of state's governing structure made the ongoing situation more difficult to manage. Given these conditions this study aims to analyse and evaluate the effects of refugees on the regional Turkish economy. Thus, next section will examine the structure and situation of the economy of the concerned regions.

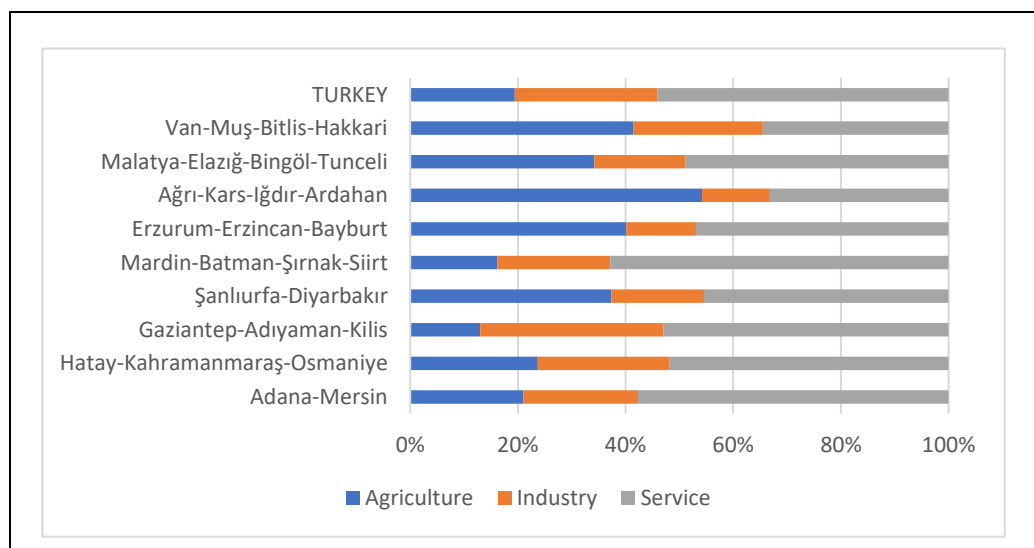
1.4.2. Regional Economic Conditions

In this section a general overview for the economy of the related regions will be presented. To make such an overview, the sectoral share of employed individuals, inflation rate and foreign trade data of the related regions will be evaluated.

We use a comparative analysis methodology in this study. The comparison will be made between two groups of provinces. In one of the groups, refugees are concentratedly settled while in the other group the refugee settlement is not compact as much as in the first group. The group in which the refugees are extremely settled, is named as “Treatment Group”. In treatment group, there are 14 cities of 5 NUTS2 level regions. These cities are Adana, Mersin, Hatay, Kahramanmaraş, Osmaniye, Gaziantep, Adıyaman, Kilis, Şanlıurfa, Diyarbakır, Mardin, Batman, Şırnak, Siirt. When we turn to the other group named as “Control Group” there are 15 cities of 4 NUTS2 level regions. These cities are Ağrı, Kars, Iğdır, Ardahan, Erzurum, Erzincan, Bayburt, Malatya, Elazığ, Bingöl, Tunceli, Van, Muş, Bitlis, Hakkari.

Looking at the sectoral share of the regions, at Figure 9, we can clearly see that the treatment group’s agricultural share is less than the control group’s. Also it can be seen that the industrial sector share of the treatment group is higher than that of the control group. The same pattern is also valid for the service sector share of two groups. Except with Şanlıurfa-Diyarbakır province, all the treatment group’s service sector share is higher than the control group’s. Overall, it can be concluded up that the treatment group’s economy is more developed than the control group’s. If we look at the Turkey’s overall distribution of sectoral share of employed people shown in Figure 9, it can be seen that the treatment group is close to the overall distribution of Turkey.

Figure 9: Sectoral share of employed people at year 2017.



Source: TURKSTAT, Workforce Statistics

The other macroeconomic indicator that will be evaluated to understand the regions' economic structure is the inflation rate. Generally, regional inflation rates do not significantly differ from the overall economy's inflation rate. (Beck, Hubrich, & Marcellino, 2009) It is valid in Turkish case as well. Table 3 presents the regional and Turkey's overall annual inflation rates.

Table 3: Regional Inflation Rates.

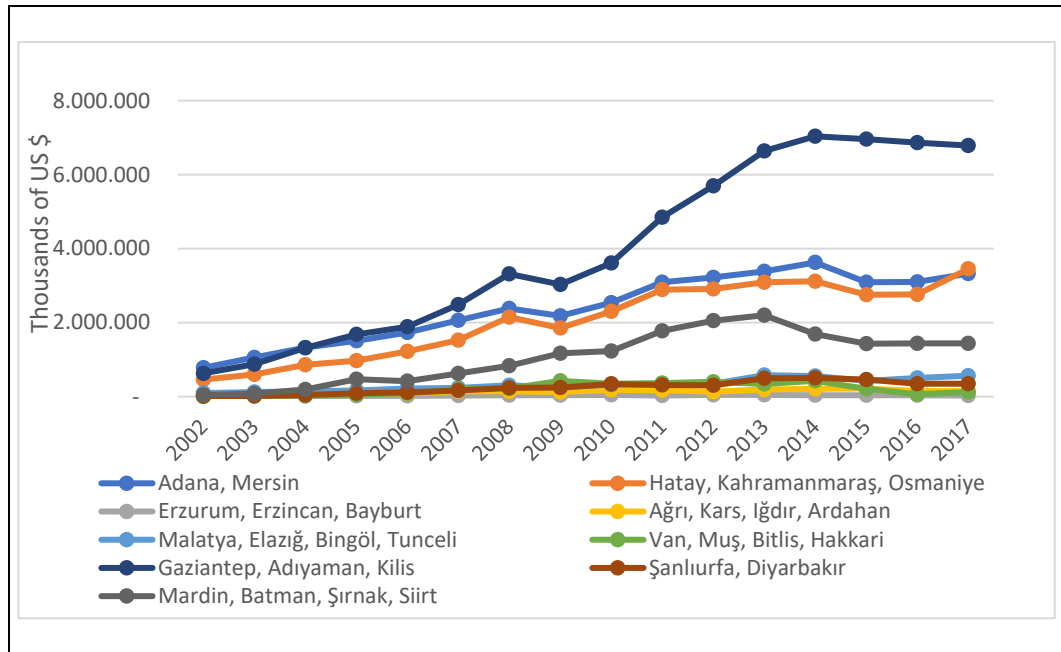
Year	Adana, Mersin	Hatay, Kahramanmaraş, Osmaniye	Gaziantep, Adiyaman, Kilis	Şanlıurfa, Diyarbakır	Mardin, Batman, Şırnak, Siirt	Erzurum, Erzincan, Bayburt	Ağrı, Kars, Iğdır, Ardahan	Malatya, Elazığ, Bingöl, Tunceli	Van, Muş, Bitlis, Hakkari	TURKEY
2005	7,12	6,91	5,22	5,19	5,82	9,25	7,43	5,93	6,09	7,72
2006	9,81	8,57	10,23	9,62	7,91	9,63	8,50	10,13	9,73	9,65
2007	8,93	8,45	9,27	8,83	8,91	8,55	9,74	7,61	8,90	8,39
2008	9,80	11,29	11,22	10,42	10,87	12,02	12,19	11,60	13,45	10,06
2009	8,55	6,74	8,11	9,26	7,44	4,56	5,57	7,81	7,13	6,53
2010	7,13	7,10	6,84	7,70	5,85	8,17	8,83	6,95	7,06	6,40
2011	11,02	11,35	11,68	11,75	11,20	12,07	11,79	11,49	10,77	10,45
2012	5,82	5,46	6,24	5,43	5,28	5,59	6,18	6,71	5,67	6,16
2013	7,45	7,36	8,51	7,55	6,58	8,04	6,63	7,40	7,22	7,40
2014	7,36	7,23	8,75	9,11	8,07	6,87	8,57	8,13	8,25	8,17
2015	9,47	8,96	9,38	8,33	8,00	7,77	7,53	7,72	7,41	8,81
2016	9,86	8,76	8,15	9,47	9,08	9,12	9,79	8,78	8,28	8,53
2017	12,20	12,88	12,89	12,47	12,22	12,17	11,40	12,27	13,59	11,92
2018	21,94	22,09	22,62	23,20	23,32	20,40	23,53	21,05	22,90	20,30

Source: TURKSTAT, Regional Statistics

As it can be seen in Table 3, the pattern of the inflation rate for the provinces is similar to the overall economy. At 2005, the inflation rates of provinces and country are lower than the country's previous inflation rate trend. Also, all of the provinces have lower inflation rate than overall inflation rate. But through time, almost all of the inflation rates of provinces exceed the country's inflation rate. It is obvious that the unfavourable developments which are mentioned at the end of section 1.4.1. affected these regions as well as the country. At year 2008, the inflation rate for all provinces is above 10 percent except Adana-Mersin region. As we can see, the high inflation rate is a serious problem for the whole economy

and for the regions as well. In this respect, it can be said that the inflation rates of the provinces are not different from the country's overall rates. From this point of view, it can be said that, the regional economic effects of refugees can be used to obtain a nation-wide interpretation.

Figure 10: Amount of export of the concerned regions.



Source: TURKSTAT; Foreign Trade Statistics

When we consider the foreign trade structure of the regions, we can observe that the export capacity of control region is low contrary to the treatment region. Figure 10 represents the amount of export in the related regions from 2002 to 2017. This situation may arise due to the production type of the regions. The control group mostly produce agricultural products and the treatment region's share of industrial sector is higher compared to the control region as we mentioned previously. This may be the reason of observing a higher level of export in the treatment region. From this point of view, it can be said that the treatment group is economically more developed than the control region.

To sum up, the related regions are not highly developed. Under this condition, understanding the impacts of refugees on the aforementioned indicators is important. Because any fundamental change in these variables might help these

regions' economies to grow, and eventually be developed, or to get worse. If there are significant effects of refugees on the regional economy, it will be highly important to know and use in future policy making processes.

CHAPTER 2

LITERATURE REVIEW AND METHODOLOGICAL BACKGROUND

Several researches have investigated the impact of refugees on economic activities. Empirical and theoretical methodologies are both used in previous studies. Different empirical methodologies have been performed in previous studies. For example, Tumen (2016) used difference in differences estimation methodology to investigate the impact of refugees on economy while Del Carpio and Wagner (2015) used OLS and IV estimation methodology. There are different reasons for the variety of employing different empirical methods. Firstly, the reason of migration is important on determining the method. For example, if the migration is forced migration, then the method needs to be compatible with catching the rapid changes in economic indicators. For example, Akgündüz, Van den Berg, and Hassink (2015) employed the difference in differences methodology to search the effects of forced migration. Besides, Dustmann, Fabbri, and Preston (2005) employed OLS and IV estimation methodology in their study on voluntarily migration. Differently, Alix-Garcia and Saah (2009) employed OLS estimation methodology in case of a forced migration. Therefore, it can be said that different econometric methodologies applied in the previous literature. Second, the range of the migration is also important in choosing the appropriate empirical method. To explain, if the refugees are settled in a restricted region then the method that is used to detect their effects would be different than the case in which the refugees settled without any restriction. For example, Taylor et al. (2016) employed a Monte-Carlo Simulation methodology in case of a forced migration while Aldawsari (2018) employed OLS estimation methodology, again, in case of a forced migration. The difference between these two studies is the settlement range of the refugees. Third reason is the scope of the immigrants themselves. If the immigrants are called as refugees, the policy implications toward, and corollary the economic impact of, them will be different than the case in which the immigrants are called as asylum seeker.

In this study, I will mainly review the studies which focus on the impacts of refugees on some macroeconomic indicators as inflation rate, unemployment rate and foreign trade.

2.1. ECONOMIC IMPACTS OF MIGRATION

In this section, previous studies about the impacts of refugees on some economic indicators will be reviewed. Most of the studies focus on a specific aspect of the refugee influx but some of them analyses its impacts on more than only one economic indicator.

In Taylor et al. (2016) the effects of the Congolese refugees in Rwanda on the wealth of the natives have been evaluated. In the study two types of help have been considered, cash aid and in-kind food aid. They applied Monte Carlo simulation methodology by using "local economy-wide impact evaluation" (LEWIE) approach that is designed to measure the effects of a policy shock or a project in the local economy. The findings indicate that cash aid was beneficial for the natives' wealth in the manner of business and household income spillovers. However, in-kind food aid has not created such a beneficial effect for locals, because refugees were tending to sell the aid products thus the aid products' prices have been pressured because of excess supply which was generated by refugees. This situation has made the local producers to challenge with low prices. As a conclusion refugees led to a positive effect on income spillover of the host country when the supplied aid was in cash but when the aid was in form of in-kind the spillover effect was smaller.

Alix-Garcia and Saah (2009) focus on the Burundian and Rwandan refugees in Tanzania. Their study aims to measure the effect of refugees on the price level and the wealth of natives in the host country. The methodology they used to capture this effect is ordinary least square methodology. To measure the impact on prices they choose to use the data of commodity prices for selected goods - mainly agricultural goods- for the period 1992-1998; and for the impact on the household wealth effect, they used the assets and employment data of the household for the period 1991-1996. They concluded up with the result that the refugees increased the prices of agricultural products in the long term. Even

though the short-term effect of the refugees on the food-aid products' prices is negative, in the long term all of the prices of the products examined in the study have gone up. Regarding the wealth effect of the refugees their findings indicate that refugees have negatively affected the wealth of the natives in the urban area while in the rural the effect of refugees on the wealth of natives is found positive

Tumen (2016) examines the effects of refugees on labour market, consumer prices, wage level and house rental prices in Turkey using difference-in-differences methodology. This methodology requires a treatment group and a control group. For treatment group Southeaster regions of Turkey under classification of NUTS2 were selected and for the control region eastern Turkey cities were selected. The results show that the effect of refugees on the employment of natives varies across formal and informal sectors. The results of the study suggest that refugee inflow leads to a decline of employment of natives in informal sector. On the contrary, refugee inflow leads to an increase in the employment of natives in formal sector. However, the overall effect of refugees on the employment of natives is negative. There was no statistically significant effect on the wages at both formal and informal sectors.

One may expect an increase in the price level as a result of the increasing demand due to the refugee influx, but immigration studies suggest the opposite. Tumen (2016) also concludes up with the same result and finds that the effect of the refugees on the consumer prices is negative. However, in Tumen (2016) this downward effect is decomposed in two parts. This effect is found to be originated from supply side. There are two types of products: formal labour-intensive products and informal labour-intensive products. For the formal labour-intensive production goods, there is almost no change in prices. But for the informal labour-intensive production goods there is a significant decline in prices. This decline is found to be directly related with the refugee inflow. Regarding the house rental prices, the lower-end house prices changed in a small amount, but the prices of the upper-end house increased more significantly as the natives started to search for better and safer neighbourhood.

Weber and Weigand (2016) examine the effect of refugees on German economy using data from 1970 to 2014. The researchers used SVAR estimation with IV technique to understand the effects of refugee inflow on GDP, unemployment and wage share. Their findings show that refugee immigration has unfavourable effects especially on unemployment rate, GDP per capita and wage share of natives in the middle-run. These adverse effects can be summarized as an increase in the unemployment rate, a decrease in the GDP per capita and a decline in the wage share of natives. Even though, these adverse effects are observed to decline in the longer run as a result of integration of immigrants to society over time, they protect their presence.

Aldawsari (2018) searches the effect of Syrian refugees on Turkish labour market, inflation and economic growth using OLS for the period between 2011 and 2017. Her results indicate that refugees led to a decrease in employment and economic growth in Turkey. The effect on CPI was found to be positive which means that refugees increase the price level.

Saiz (2003) investigates the effects of migration shocks on the housing prices in Miami using difference-in-differences (DID) methodology and rental price data from 1979 to 1983. The results suggest that the migrants increased the rental prices in the short-run. The rise in rental prices is more significant in poorer areas compared to richer areas.

Lach (2007) searches the effects of immigrants those flowed to Israel from former Soviet Union. He used store-level data CPI for 915 products and monthly CPI at year 1990. The results show that the prices of consumption goods declined due to the high price elasticity and lower searching cost of immigrants. This finding is explained by the willingness of immigrants to spend more time for searching cheaper goods. Consequently, sellers lowered prices to sell more goods. This is the main reason behind the decline in prices.

Sá (2014) investigates the effects of immigrants on house prices. He used the records of all rental sales transaction from 2003 to 2010 in England and Wales. The results of OLS estimations suggest that there is a negative effect of immigrants on house prices caused from the mobility of the natives. Natives

preferred to move another place and this trend led to a decrease in the demand in the concerned region and corollary, a downward pressure on prices.

Balkan and Tumen (2016) discuss the effects of Syrian refugees on price levels in Turkey employing DID methodology and using data from 2010 to 2013. Researchers use CPI categories which are provided by TURKSTAT publicly. In line with the previous literature, their findings also indicate that consumer prices declined. This decline is found to occur mostly due to the high price elasticity of refugees and the decline in the cost of informal labour-intensive production.

Akgündüz et al. (2015) examines the Syrian refugees' effect on Turkish economy using difference-in-differences methodology. The study accepts the South-eastern Anatolia as treatment region where Syrian refugees were mostly allocated. The findings show that housing and food prices increase while there is no significant effect on the employment level of skilled natives. However, there is a decline in internal migration to refugee hosting regions.

Some other studies investigate the impact of migration on labour market in host countries as immigrant influx may affect labour supply and demand. One of the pioneering studies in this field is Altonji and Card (1991) uses the 1970 and 1980 Census data on the American Standard Metropolitan Statistical Area (SMSA) to measure the effects of immigrants on the less-skilled native workers' outcome applying a weighted least squares method. The study provides different results using different methods. Using the first-differenced specification method, immigrants' effect on the employment of the less-skilled natives is positive while a negative effect of immigrants on the employment of the less-skilled native is observed under the cross-sectional method with data of 1970 and 1980 Census.

Dustmann et al. (2005) investigate the impact of migration on labour market outcomes in Britain using OLS methodology and Labour Force Statistics data from 1983 to 2000. In the study it is stated that immigrants are equally skilled with natives. The migration towards Britain that concerned in their study is not a forced migration. Therefore, results of the OLS estimation suggest that there is no significant effect of immigrants on the British labour market. There are some differences across the education level but still the effects are found insignificant.

Del Carpio and Wagner (2015) perform a detailed analysis about the effect of Syrian refugees on the change in the native employment. In this study Turkish Labour Force Statistics micro-level data set for 2011 and for 2014 have been used through the NUTS 2 region of Turkey (a subset of the provinces). Using OLS they find that the refugee inflow is positively correlated with the Turkish employment and this increase is driven by full-time, formal and irregular employment of the native workers. However, with the IV estimation, the effect of refugees is found to be a decrease in the employment of the natives. Yet, the main effect found is on the informal employment. Their findings suggest that every 10 refugees displace 6 native worker and those unemployed workers seek for a formal job mainly. For every 10 refugees 3 formal and regular time jobs created. The most important finding of the study about the labour market impact of refugees is that refugees tend to settle in regions where there has been a growth in employment already.

In a recent study Ceritoglu et al. (2017) focus on the labour market impact of the refugees. In this study, researchers use the difference-in-differences methodology. Their results suggest that the effects of refugees on the native employment are negative. This effect is observed mostly at the informal sector. The employment restrictions of the refugees led this effect because they were not allowed to work in an official job. Also, the increase in labour supply originated from the massive refugee inflow led to a decrease in the labour force participation. According to the findings of the study, native men who had worked in an unofficial job remained unemployed after they had been displaced because of the refugee inflow. On the contrary, native women decided to leave the labour force after they had been displaced because of the refugee inflow.

Lordođlu and Aslan (2016) focus on the labour market effects of the refugees in 5 border cities. These cities hosted most of the refugees in Turkey at that time. The study follows data interpretation and field study methodology by comparing economic indicators for 2011 and for 2014. The results of the study are similar to those of the empirical studies in the related literature. Regarding the refugee migration, they also emphasize the low labour cost and the asymmetric competition with the native entrepreneurs. Their findings show that Syrian

refugees form a low cost labour force and thereby cause to an increase in the unemployment rate of natives.

Fakih and Ibrahim (2016) investigate the impact of the Syrian refugees on labour market in Jordan using VAR estimation and Granger Causality tests and labour force data from 01:2012 to 12:2013. They find that there is no significant effect of refugees on the Jordanian labour market.

The relation between migration and foreign trade has also been widely examined by several researchers. When we revise the literature, we find that the studies generally focus on the bilateral trade effects of migration. For instance, Gould (1991) evaluates immigrants as information sources about the preferences of the origin country. Also, he analyses the effects of Canadian immigrants on the foreign trade of US. According to the findings of the study, immigrants affect the host country's foreign trade as they cause a decrease in the cost of obtaining knowledge about the origin country's market, consumption habits and preferences. It is also found out that migration induces the foreign trade in consumption goods more than in production goods. As the immigrants' length of stay increases the level of export goes up and the level of import goes down. Besides, if the number of immigrants is not high then the main effects is observed on exports but if there are high number of immigrants then the main effect is observed on the import sector.

One other study about the immigrant effects on foreign trade is Blanes-Cristobal (2008) which focuses on the effects of immigrants on Spanish foreign trade using data from 1995 to 2003. Results of the study suggest that there is a positive relation between immigrant stock and volume of foreign trade and the effect is smaller on import compared to the effect on export. In the study, the effects of immigrants are found to occur due to their cost reducing effect instead of the preference information effect. The cost reducing effect is that immigrants reduce the cost of trade, because they have information about the origin country's production and market features. The preference information effect is that immigrants have information about their citizens' preferences. By using this information, they can obtain benefit from host country's opportunities and at the

same time increase the foreign trade of host country. Their results suggest that immigrant effect on foreign trade arises due to the cost reducing effect as the immigrant effect is smaller on import.

Another study about the relation between immigration and foreign trade is Hutchinson and Dunlevy (2006) concerns the American foreign trade between 1870-1910. Results of the study suggest that there is a significant effect of immigrants on the export and import of the host country. Even though the size of the effect varies under different specific commodities or origin countries, the relation is still found to be significant.

Lewer and Van den Berg (2009) find that immigration induces and promotes the foreign trade between host and origin country. Lewer (2009), suggests that the migration induces foreign direct investments from host country to origin country, new trade links are created between two countries and lastly, income level in the host country rises. Besides, Lewer (2009) and Lewer (2011) find that immigration is favourable for hosting country.

In a recent study, Gümüş (2015) investigates the effect of Turkish immigrants on the bilateral foreign trade between UK and Turkey. According to the findings of the study, there is a significant relation between Turkish immigration and foreign trade of UK. The findings suggest that there is an inducement effect caused from the Turkish immigrants on both export and import between departure country and hosting country.

To sum up, the effects of immigrants on different fundamental economic indicators have been studied by several researchers using different methodologies so far. As it can be seen, studies have reached different results. These differences may have arisen due to the differences in concerned regions, migration types and employed methodologies. Even though the empirical results differ across studies, in almost all of the studies the presence of immigrants is found to affect economy. Since the refugee influx from Syria is an example of forced migration and it grew up rapidly, I will use difference-in-differences methodology similar to the previous studies as Akgündüz et al. (2015); Balkan and Tumen (2016); Ceritoglu et al. (2017); Tumen (2016).

CHAPTER 3

EMPIRICAL MODEL

3.1. ESTIMATION METHODOLOGY

This study investigates the effects of Syrian refugee inflow on regional macroeconomic indicators. To do so, difference-in-differences (DID) estimation methodology is used. The DID methodology is widely used in empirical analyses. It is an econometric methodology which is used to investigate and analyse the causal effects. It is well suited to investigate the effects of a policy change or incidents affecting a limited region. But the scope of application can be extended. Lechner (2011) DID estimation methodology is used to examine trade liberalization effect on per capita income Slaughter (2001); to investigate the effect of agricultural policies on employment Petrick and Zier (2011) or understand the effects of charges on road accidents Li, Graham, and Majumdar (2012).

DID estimation methodology is based on the idea of taking difference of two similar groups' reaction to an intervention or change. Therefore, this methodology needs two similar groups: one of them is exposed to an intervention and the other is not. The methodology can be formulated as:

$$D = \alpha_0 + \alpha_1 G + \alpha_2 T + \alpha_3 (G \times T) + \epsilon$$

where “ D ” is dependent variable, “ G ” is binary variable for groups which takes value 1 if the observation belongs to the intervention group, “ T ” is binary variable for time which takes value 1 if the observation belongs to the period after-intervention, “ $(G \times T)$ ” is the interaction variable which takes value 1 if the observation belongs to intervention group and after-intervention period at the same time. This formulization gives us four different groups of observations.

Those are, intervention group before-intervention (D_{10}), intervention group after-intervention (D_{11}), non-intervention group before-intervention (D_{00}), non-intervention group after-intervention (D_{01}). Either taking difference first with respect to groups and with respect to time later, or with respect to time first and with respect to groups later gives the same result. To show it mathematically;

$$(D_{11} - D_{10}) - (D_{01} - D_{00}) = D_{11} - D_{10} - D_{01} + D_{00}$$

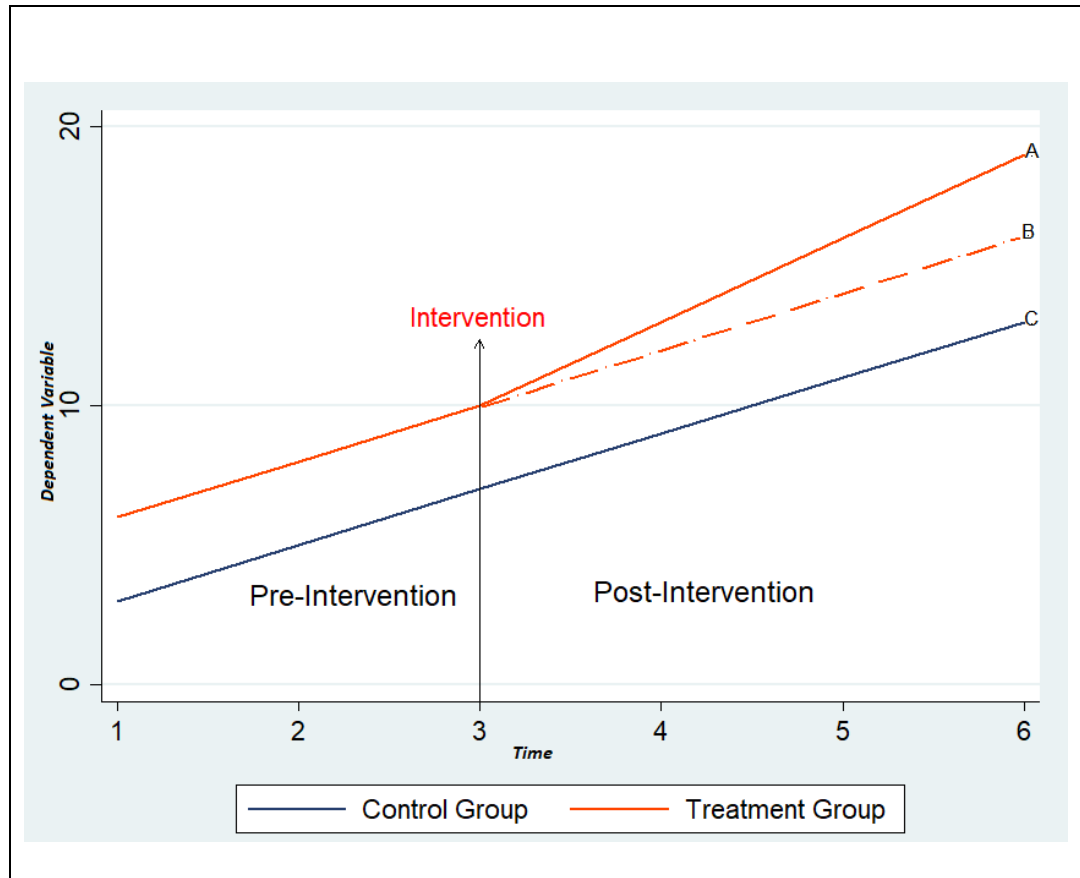
where $(D_{11} - D_{10})$ is the difference of intervention on intervention group and $(D_{01} - D_{00})$ is the difference of intervention on non-intervention group. Subtracting these two terms gives the intervention effect by comparing two groups on the intervention aspect. Besides, the model can be constructed as follows;

$$(D_{11} - D_{01}) - (D_{10} - D_{00}) = D_{11} - D_{01} - D_{10} + D_{00}$$

where $(D_{11} - D_{01})$ is the difference of groups after intervention and $(D_{10} - D_{00})$ is the difference of groups before intervention. Subtracting these two terms gives the group reactions to intervention by comparing two time periods on the intervention group aspect. We obtained the same mathematical results in both models. Based on this conclusion, it can be said that taking differences of groups with respect to time; or taking differences of post-intervention and pre-intervention with respect to groups will yield the same result.

Figure 11 represent the idea of DID estimation methodology's graphically. Here, it is important to notice that this method can be applied when the trends of both groups before the intervention are parallel.

Figure 11: The Visualization of Difference in Differences Estimation Methodology.



Source: Own plotted.

When an intervention, policy application or comparable incident takes place, DID methodology is useful to capture the effect of the incident. As we can see in Figure 11, before the intervention two groups have parallel trends. That is, these two groups are similar to each other. But after the intervention, the usual path of treatment group changes and it ends up at point A instead of B. The dashed dot line represents the path of treatment group that would have taken place if the intervention did not happen. The observed difference between two groups is the difference between points A and C while the effect of intervention is the difference between points A and B. Aim of this methodology is to gauge the difference between points A and B.

3.2. DATA

In this study the effects of refugees on price level, unemployment and foreign trade will be examined. This section will provide detailed information about the data of each of these variables.

3.2.1. Refugee Data

As mentioned in section 1.3, at the beginning of the Syrian refugee inflow they were settled at the refugee camps in near cities of Syrian border of the Turkey. But through time as the number of refugees increased, they have spread to other cities in Turkey.

Table 4 presents the data showing the number of refugees in the provinces of treatment region at the end of year 2017. When we consider the total number of Syrian refugees in Turkey, it can be seen that at the end of year 2017 about 62 percent of the refugees were settled in the region which is the concern of this study. The number of total refugees at that date was 3.426.786 and 2.105.631 of them were settled in the treatment region. Looking at the ratios, it can be observed that 10,62 percent of refugees were in Adana-Mersin, 14,89 percent were in Gaziantep-Adıyaman-Kilis, 17,69 percent were in Hatay-Kahramanmaraş-Osmaniye, 14,44 percent were in Şanlıurfa-Diyarbakır and 3,80 percent were in Mardin-Batman-Şırnak-Siirt provinces.

Table 4: Number of Refugees in the Provinces of Treatment Region at the End of Year 2017.

Region	Refugees	Total Refugees	Ratio
Adana, Mersin-TR62	363905	3426786	10,62%
Gaziantep, Adıyaman, Kilis-TRC1	510363	3426786	14,89%
Hatay, Kahramanmaraş, Osmaniye-TR63	606273	3426786	17,69%
Mardin, Batman, Şırnak, Siirt-TRC3	130153	3426786	3,80%
Şanlıurfa, Diyarbakır-TRC2	494937	3426786	14,44%
Total	2105631	3426786	61,45%

Source: DGMM²

At first look, considering Mardin-Batman-Şırnak-Siirt provinces in the treatment group might be seen as a wrong choice but when we look up the refugee-

² The data presented in this table obtained from DGMM with official application.

population ratios, we observe that it is above 5 percent. (see Table 5). Although, there is no strict consensus about the ratio of refugees to population, it would not be surprising to observe a higher statistical significance for the effects if the ratio is higher than a certain level. But since we aim to investigate the effects of refugees using an empirical methodology, the statistical significance of the effect would be higher if the ratio was higher than a certain level.

Table 5 represents the ratio of refugees to native population in the regions of concern at the end of year 2017. The aforementioned situation can be seen here clearly. When we look at the ratios, first we observe that the refugee-native ratio is more than 5 percent in all of the treatment regions. The lowest ratio in treatment group is of Mardin-Batman-Şırnak-Siirt province with 5,85 percent. The highest ratio in control group is of Malatya-Elazığ-Bingöl-Tunceli province with 2,10 percent. All the ratios in other control groups are under 1 percent. These data represent the related values at the end of year 2017. The settlement concentration pattern of refugees among these cities is observed to be similar since the beginning of the period that refugees spread out of temporary camps. From this point of view, the determination of treatment and control groups gets easier to agree on.

Table 5: Ratio of Refugees to Natives in Regions of Concern at the End of Year 2017

Region	Refugees	Population	Ratio (%)
Adana-Mersin	363905	4010406	9,074019
Gaziantep-Adıyaman-Kilis	510363	2756910	18,51214
Hatay-Kahramanmaraş-Osmaniye	606273	3230573	18,76673
Şanlıurfa-Diyarbakır	494937	3685654	13,42874
Mardin-Batman-Şırnak-Siirt	130153	2222601	5,855887
Ağrı-Kars-Iğdır-Ardahan	1545	1115810	0,138464
Erzurum-Erzincan-Bayburt	1146	1072404	0,106863
Malatya-Elazığ-Bingöl-Tunceli	36276	1726199	2,101496
Van-Muş-Bitlis-Hakkari	10262	2128670	0,482085

Source: DGMM³; TURKSTAT, Population Statistics

³ The data presented in this table has been demanded and obtained from DGMM with official application.

In this framework, the regions where the refugee-native ratio is higher than 5 percent is considered as the treatment group; and where the related ratio is lower than 5 percent is considered as the control group. In treatment group, there are 14 cities of 5 NUTS2 level regions. These cities are Adana, Mersin, Hatay, Kahramanmaraş, Osmaniye, Gaziantep, Adıyaman, Kilis, Şanlıurfa, Diyarbakır, Mardin, Batman, Şırnak, Siirt. When we turn to the other group named as “Control Group” there are 15 cities of 4 NUTS2 level regions. These cities are Ağrı, Kars, Iğdır, Ardahan, Erzurum, Erzincan, Bayburt, Malatya, Elazığ, Bingöl, Tunceli, Van, Muş, Bitlis, Hakkari. The DID methodology requires two different periods as well as two different regions. The determination of pre- and post- migration periods differs in the previous literature. When we look at the migration process, it can be seen that the number of refugees is limited at the beginning of the migration. In this study it is accepted that the pre-migration period ends at year 2013; it means that the first year that will be admitted as post-migration period is 2013. Thus, year 2012 is taken as the pre-migration period.

Regarding the refugee data and related independent variables in this study; “Mig” which represents migration binary variable, will take value “0” at years 2009-2012 and “1” at years 2013-2017; “Den” which represents the region binary variable, will take value “0” at control regions (Ağrı-Kars-Iğdır-Ardahan, Erzurum-Erzincan-Bayburt, Malatya-Elazığ-Bingöl-Tunceli, Van-Muş-Bitlis-Hakkari) and “1” at treatment regions (Adana-Mersin, Gaziantep-Adıyaman-Kilis, Hatay-Kahramanmaraş-Osmaniye, Mardin-Batman-Şırnak-Siirt, Şanlıurfa-Diyarbakır).

3.2.2. Price Level

The refugee inflow leads to an increase in the number of individuals living in the region, corollary an increase in the demand for goods and services. Economic theory suggests that when the demand for a normal good increases, the price of it increases as well. The aim of including price level in this study is to understand whether there is an indeed significant effect of refugees on the price movements. To do so, the consumer price index (CPI) will be used. Generally, consumer price index (CPI) is used to calculate inflation rate. The relation between CPI and inflation rate is derived from the following equation;

$$INFL_t = \frac{CPI_t - CPI_{t-1}}{CPI_{t-1}} * 100$$

The inflation is expected to be affected as a result of the change in the number of consumers due to the refugee inflow and the following increase in the population. However, as Tumen (2016) suggests the inflow of refugees may cause a decline in the general price level. This decline may occur as Syrian refugees who are employed informally reducing the production costs for producers. Also, the refugees try to spend the least amount of money for a good or service. To do so, they spend more time to search than natives. This attitude of refugees may lead sellers to reduce the prices to attract more buyers.

In this study, CPI of 3 subgroup from 2009 to 2017 for the selected and mentioned 9 regions are used to investigate the effect of refugees on the price level: CPI of the “food and non-alcoholic beverages”, CPI of the “clothing and shoes” and the “real rent” CPI.

Difference-in-differences methodology (DID) will be used to examine the effect of refugee inflow. To avoid any econometric problems as stationarity, the first differences of logarithms of the series will be used. Differencing is employed in many of the studies in the underlying literature Balkan and Tumen (2016); Ceritoglu et al. (2017); Lach (2007); Tumen (2016).

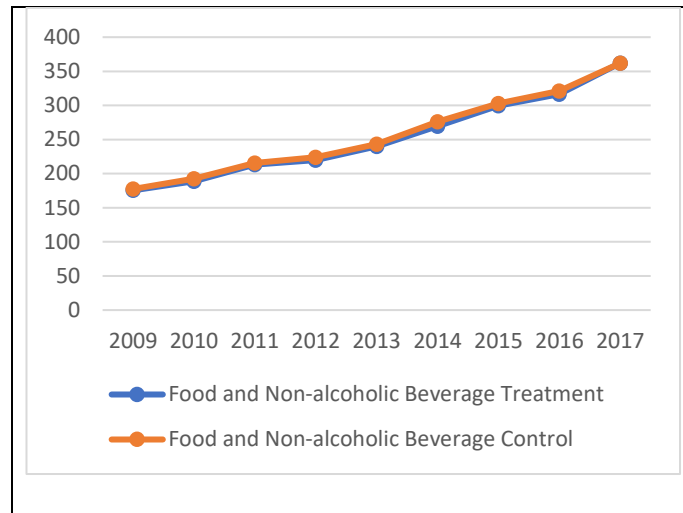
In this framework, the model is as follows:

$$d\ln FND_{r,t} = \beta_0 + \beta_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

Where “*FND*” is “Food and Non-alcoholic Beverage” Consumer Price Index, “*Mig×Den*” is the interaction of binary variables “*Mig*” and “*Den*” which takes value 1 if the observation belongs to after migration and the treatment region respectively; takes 0 otherwise. The interaction term “*Mig×Den*” takes value 1 if the observation belongs to after migration and treatment region at the same time;

0 otherwise. “ f_r ” and “ f_t ” are included to capture the region and time fixed effects. Sub letters “ r ” and “ t ” denotes the region and year. The notation “ dln ” is first difference of natural logarithmic form.

Figure 12: Food and Non-alcoholic Beverages Consumer Price Index for Treatment and Control Groups



Source: TURKSTAT, Regional Statistics⁴

Figure 12 shows the average consumer price index of the food and non-alcoholic beverage for treatment and control groups between 2009 and 2017. As it can be clearly seen from the figure, there is a similar trend in CPI for two groups. This is important as it is necessary to have similar trends before the incident happens in order to apply DID methodology.

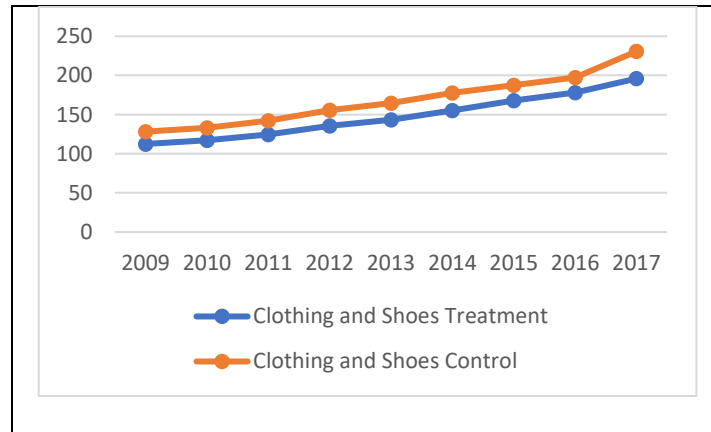
The other CPI series evaluated to capture the effect of refugees on the price level is “Clothing and Shoes” consumer price index. Since the methodology is the same as used in food and non-alcoholic beverages CPI, I used first differenced natural logarithmic form of the CPI as well. The model is as follows:

$$dlnCNS_{r,t} = \alpha_0 + \alpha_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

⁴ The CPI data is obtained from Turkish Statistical Institute and it is publicly available.

Where “*CNS*” indicates the “Clothing and Shoes” CPI, “*Mig×Den*” is the interaction of binary variables “*Mig*” and “*Den*” which takes value 1 if the observation belongs to after migration and the treatment region respectively; takes 0 otherwise. The interaction term “*Mig×Den*” takes value 1 if the observation belongs to after migration and treatment region at the same time; 0 otherwise. “ f_r ” and “ f_t ” are included to catch the region and time fixed effects. Sub letters “ r ” and “ t ” denotes the region and year. The notation “*dln*” is first difference of natural logarithmic form.

Figure 13: Clothing and Shoes Consumer Price Index for Treatment and Control Groups



Source: TURKSTAT, Regional Statistics⁵

Figure 13 shows the average consumer price index of the clothing and shoes for treatment and control groups between 2009 and 2017. As we can see from Figure 13, there is a similar trend in the index for two groups again.

Last CPI that I will evaluate is the “Real Rent” CPI. The model is as follows:

$$dlnRent_{r,t} = \delta_0 + \delta_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

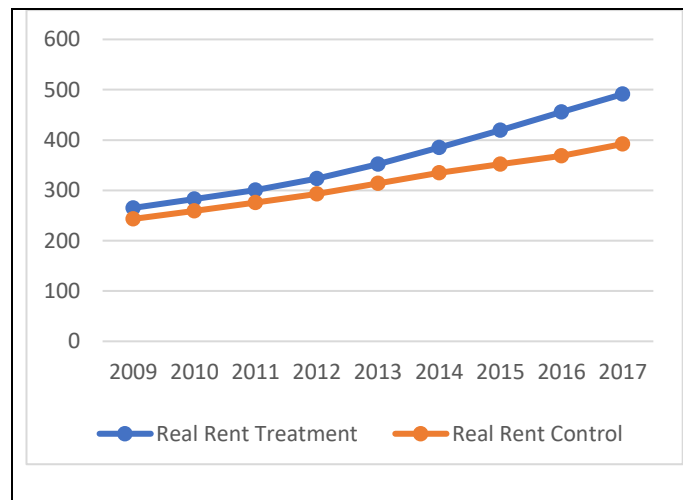
Where “*Rent*” indicates the “Real Rent” CPI, “*Mig×Den*” is the interaction of binary variables “*Mig*” and “*Den*” which takes value 1 if the observation belongs to after

⁵ The CPI data is obtained from Turkish Statistical Institute and it is publicly available.

migration and the treatment region respectively; takes 0 otherwise. The interaction term “ $Mig \times Den$ ” takes value 1 if the observation belongs to after migration and treatment region at the same time; 0 otherwise. “ f_r ” and “ f_t ” are included to catch the region and time fixed effects. Sub letters “ r ” and “ t ” denotes the region and year. The notation “ dln ” is first difference of natural logarithmic form.

Figure 14 shows the “Real Rent” CPI for treatment and control group. Contrary to the previous CPI indicators, Real Rent series have a divergent trend after 2012. Actually, this is a good indicator that the DID methodology is well suited to apply. Because, the divergent trend after intervention in Figure 14 is very similar to Figure 11 in which the difference in differences methodology explained visually.

Figure 14: Real Rent Consumer Price Index for Treatment and Control Groups



Source: TURKSTAT, Regional Statistics⁶

These CPI series are chosen as the refugee inflow means an increase in the population. To survive and shelter refugees need these particular consumption goods and services. Thus, it seems reasonable to expect a significant effect of refugees on these variables in the related region where the refugees mostly settled.

3.2.3. Employment

⁶ The CPI data is obtained from Turkish Statistical Institute and it is publicly available.

I am going to analyse the effect of refugees on employment using the series of unemployment rate and labour force participation rate. I am going to use these variables separately depending on the education level of the natives. There are 4 groups but as the refugees are mainly composed of low skilled labour force, I will evaluate the first 3 groups which are “no literacy”, “primary”, “high school or equivalent” education groups. Data includes the period between years 2009 and 2017. For each education level, the following model will be used.

$$UR1_{r,t} = \varphi_0 + \varphi_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

$$LP1_{r,t} = \rho_0 + \rho_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

These equations are set up for the lowest education group, “no literacy”. The variable “*UR1*” represents the unemployment rate of no literacy group and “*LP1*” represents the labour force participation rate of “no literacy” group. Region and time fixed effects represented by “*f_r*” and “*f_t*” respectively.

To avoid any econometric problems, all education level groups formulized separately. Therefore, the models that are used for “primary” education level will be;

$$UR2_{r,t} = \theta_0 + \theta_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

$$LP2_{r,t} = \sigma_0 + \sigma_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

where “*UR2*” and “*LP2*” are unemployment rate and labour force participation rate for “primary” education group respectively.

Similarly, the formulization for “high school or equivalent” education level is as follows;

$$UR3_{r,t} = \tau_0 + \tau_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

$$LP3_{r,t} = \omega_0 + \omega_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

where “UR3” and “LP3” are unemployment rate and labour force participation rate for “high school or equivalent” education level respectively.

Table 6 presents the unemployment rate for education group “no literacy” of regions.

Table 6: Regional Unemployment Rate for Education Group “No Literacy”

	Adana-Mersin	Gaziantep-Adiyaman-Kilis	Hatay-Kahramanmaraş-Osmaniye	Mardin-Batman-Şırnak-Siirt	Şanlıurfa-Diyarbakır	Ağrı-Kars-Iğdır-Ardahan	Erzurum-Erzincan-Bayburt	Malatya-Elazığ-Bingöl-Tunceli	Van-Muş-Bitlis-Hakkari
2009	20,6	10,8	11,9	8,9	15,4	4,5	2,3	5,1	8,2
2010	13,7	6,3	7,1	10,1	10,6	3,8	2,0	3,3	7,7
2011	6,1	10,5	4,2	12,2	7,0	4,1	1,6	3,5	3,2
2012	8,3	7,1	3,8	26,4	4,7	1,9	1,2	0,9	2,4
2013	9,6	2,2	7,1	19,0	12,2	2,2	0,7	1,1	2,4
2014	4,7	4,3	18,1	18,3	9,9	0,4	2,4	0,8	2,2
2015	5,7	5,2	14,0	17,3	6,8	1,0	0,7	0,3	2,4
2016	4,6	9,8	9,4	19,3	9,0	2,0	3,5	2,0	2,8
2017	3,7	11,9	5,9	24,1	5,0	1,3	1,5	2,8	4,3

Source: TURKSTAT, Regional Statistics⁷

The data in Table 6 presents the regional unemployment rates for the lowest skill group in labour force. In this group, individuals are not able to read or write. They have not completed any formal education level.

The Table 7 presents the unemployment rate for education group “primary” in the related regions.

⁷ The data which represented in this table is obtained from Turkish Statistical Institute and it is publicly available. The numbers show the percentage rates.

Table 7: Regional Unemployment Rate for Education Group "Primary"

	Adana-Mersin	Gaziantep-Adiyaman-Kilis	Hatay-Kahramanmaraş-Osmaniye	Mardin-Batman-Şirnak-Siirt	Şanlıurfa-Diyarbakır	Ağrı-Kars-Iğdır-Ardahan	Erzurum-Erzincan-Bayburt	Malatya-Elazığ-Bingöl-Tunceli	Van-Muş-Bitlis-Hakkari
2009	20,6	18,9	18,4	16,3	21,6	11,0	5,7	15,5	19,4
2010	15,3	13,3	13,6	11,7	15,4	12,2	5,2	11,2	20,7
2011	9,4	15,5	11,5	13,0	9,7	11,6	5,9	9,9	14,1
2012	8,8	12,5	10,1	25,0	8,1	8,1	6,0	8,8	9,7
2013	11,5	7,6	12,3	25,3	19,3	7,2	6,3	6,4	12,8
2014	8,8	8,0	15,1	26,1	18,7	3,6	7,5	7,4	14,4
2015	8,1	10,8	16,3	25,5	19,3	3,9	6,0	8,3	10,8
2016	8,7	13,9	14,3	29,8	18,2	4,6	4,5	7,5	9,8
2017	9,0	14,4	9,8	28,1	13,3	5,0	4,2	4,8	13,1

Source: TURKSTAT, Regional Statistics⁸

Individuals in primary education group have higher education level than no literacy group. They have completed their primary school education; therefore this group is named as primary.

The Table 8 presents the unemployment rate for education group "High School or Equivalent" in the respective regions. Individuals in high school or equivalent education group have higher education level than primary group. They have completed their high school education which is the level before under graduation; therefore, this group is named as high school or equivalent. They can be considered as semi-skilled labour force.

⁸ The data which represented in this table is obtained from Turkish Statistical Institute and it is publicly available. The numbers show the percentage rates.

Table 8: Regional Unemployment Rate for Education Group "High School or Equivalent"

	Adana-Mersin	Gaziantep-Adiyaman-Kilis	Hatay-Kahramanmaraş-Osmaniye	Mardin-Batman-Şirnak-Siirt	Şanlıurfa-Diyarbakır	Ağrı-Kars-İğdir-Ardahan	Erzurum-Erzincan-Bayburt	Malatya-Elağ-Bingöl-Tunceli	Van-Muş-Bitlis-Hakkari
2009	26,6	15,3	21,2	17,2	17,1	11,0	14,5	24,4	18,4
2010	21,7	12,2	17,7	15,8	11,4	10,7	11,0	17,0	19,7
2011	15,6	14,3	16,5	13,4	6,2	10,7	9,4	13,5	16,9
2012	14,7	11,0	13,7	16,4	6,6	8,4	8,6	9,7	12,9
2013	16,6	7,8	12,6	15,2	14,3	10,0	8,4	11,2	12,7
2014	14,2	9,9	14,2	20,4	18,8	5,6	9,5	9,6	19,5
2015	12,9	9,2	15,6	22,2	18,5	5,7	7,1	8,8	12,6
2016	12,8	14,4	16,1	29,9	20,3	5,6	5,5	11,6	12,9
2017	12,4	15,3	14,8	26,1	19,6	7,0	7,5	8,2	16,7

Source: TURKSTAT, Regional Statistics⁹

3.2.4. Foreign Trade

To investigate the refugees' effect on regional foreign trade export and import ratio in total GDP of regions are used. Turkish Statistical Institute provides export and import amounts in all nominal US Dollars, EU Euro and Turkish Lira currencies. However, the regional GDP data is only available in Turkish Lira. Performing the empirical analysis using the series in Turkish Lira will not provide reliable results because the Turkey suffers unstable increasing exchange rates for couple of years. But fortunately, TURKSTAT provides GDP per capita data in current level US Dollars for regions. Using this data, we can obtain the total GDP level of regions in US Dollars. To do so, some calculations must be made. The necessary population data is, again, available in TURKSTAT database. The method of calculation is dividing export and import amounts to the respective regional GDP values, thereby a ratio can be obtained. This ratio shows the share of export or import in the total production of regions. A significant change in these indicators will let one to make further comments about the effects of refugees on regional economic growth.

⁹ The data which represented in this table is obtained from Turkish Statistical Institute and it is publicly available. The numbers show the percentage rates.

The models to investigate effects of refugees on export are as follows;

$$I) \quad GDP_{r,t} = GDP \text{ per capita}_{r,t} \times Population_{r,t}$$

$$II) \quad ratexp_{r,t} = Export_{r,t}/GDP_{r,t}$$

$$III) \quad ratexp_{r,t} = \gamma_0 + \gamma_1(Mig_t \times Den_r) + f_t + f_r + \varepsilon_{r,t}$$

$$r = 1, \dots, 9 ; t = 2009, \dots, 2017$$

where “*GDP per capita*”, “*GDP*” and “*Export*” are in current US Dollars and denote the variables respectively by their names. “*ratexp*” indicates the share of export amount in regional GDP. Sub letters “*r*” and “*t*” denotes the region and year respectively.

Similarly, the modelling for investigating refugee effects on import is as follows;

$$I) \quad GDP_{r,t} = GDP \text{ per capita}_{r,t} \times Population_{r,t}$$

$$II) \quad ratimp_{r,t} = Import_{r,t}/GDP_{r,t}$$

$$III) \quad ratimp_{r,t} = \mu_0 + \mu_1(Mig_t \times Den_r) + f_t + f_r + \varepsilon_{r,t}$$

$$r = 1, \dots, 9 ; t = 2009, \dots, 2017$$

where “*GDP per capita*”, “*GDP*” and “*Import*” are in current US Dollars and denote the variables respectively by their names. “*ratimp*” indicates the share of import amount in regional GDP. Sub letters “*r*” and “*t*” denotes the region and year respectively.

3.3. EMPIRICAL RESULTS

The influx of Syrian refugees has many effects on the host countries' economic, social or political processes. The purpose of the study is to investigate the effects of refugees on some macroeconomic variables which are crucial for the native economy. In this context, I am going to analyse the effects of refugees on the different price levels, employment and foreign trade in Turkey. In the following sections, the empirical results are going to be presented and discussed.

3.3.1 Effects on Prices

In this section, refugees' effects on price level are going to be investigated using different CPI levels of the regions. To make such an analysis, DID estimation methodology is employed. The estimation results that are presented in Table 9 shows the DID estimation results for refugee effect on regional food and non-alcoholic beverages CPI.

Table 9: DID Estimation Results for Refugees' Effects on Regional CPI of Food and Non-alcoholic Beverages.

$d\ln FND_{r,t} = \beta_0 + \beta_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$		
Parameter	β_0	β_1
Coefficient	0.0783***	0.0064
Standard Error	(0.0059)	(0.0058)
<small>*=(p<0.10); **=(p<0.05); ***=(p<0.01)</small>		

According to the findings of the estimation, there is no statistically significant effects of refugees on food and non-alcoholic beverage prices. However, Balkan and Tumen (2016) find that Syrian refugees' inflow leads to a decline in the CPIs. The main reason to obtain an insignificant effect in this study might be that fact that as time passes refugees adapted to conditions in Turkey. Specifically, they seek for a job, send their children to school, establish business. Therefore, after a while the particular effects of refugees on the price level of some certain goods might have disappeared.

Table 10 represents DID estimation results of the effects of refugees on regional clothing and shoes CPI. According to this result, again, we observe that the effects of refugees on the prices of clothing and shoes prices are statistically insignificant.

Table 10: DID Estimation Results for Refugees' Effects on Regional CPI of Clothing and Shoes.

$$d\ln CNS_{r,t} = \alpha_0 + \alpha_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

Parameter	α_0	α_1
Coefficient	0.0398***	-0.0022
Standard Error	(0.0128)	(0.0127)

*($p < 0.10$); **($p < 0.05$); ***($p < 0.01$)

The results up to now show that refugees' effect on the prices of fundamental consumption goods is not statistically significant. However, results in Table 11 suggest that there is a statistically significant effect of refugees on real rent prices. The results show that refugees increase the change in real rent consumer price index by 2.05 percent.

Table 11: DID Estimation Results for Refugees' Effects on Regional CPI of Real Rent

$$d\ln Rent_{r,t} = \delta_0 + \delta_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

Parameter	δ_0	δ_1
Coefficient	0.0615***	0.0205**
Standard Error	0.0080	0.0080

*($p < 0.10$); **($p < 0.05$); ***($p < 0.01$)

To sum up, it is found that there is not statistically significant impact of refugees on the price levels of food and non-alcoholic beverages and clothing and shoes.

However, estimation results show that the effect of refugees on real rent prices is statistically significant and it has been found to be 2.05 percent.

3.3.2. Effects on Employment

In this section, the effects of refugees on the unemployment rate and the labour force participation rate are going to be analysed. To do so, DID estimation methodology is applied. Employment data is available for different levels of education. To make a reliable interpretation, for each education level a separate analysis has been made.

The results that are presented in Table 12 shows the DID estimation results for effect of refugees on regional unemployment rate of education group “no literacy”.

Table 12: DID Estimation Results for Refugees’ Effects on Regional Unemployment Rate for Education Group “No Literacy”

$UR1_{r,t} = \varphi_0 + \varphi_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$		
Parameter	φ_0	φ_1
Coefficient	11.03***	1.64
Standard Error	(1.7542)	(1.6745)
*=(p<0.10); **=(p<0.05); ***=(p<0.01)		

According to the estimation results, there is no statistically significant effect of refugees on the employment of education group “no literacy” meaning unskilled labour.

Next, we examine the effects of refugees on labour force participation rate. Table 13 represents the results of estimation for refugees’ effects on regional labour force participation rate for education group “no literacy”. The results show that refugees’ effect is statistically significant at 10 percent significance level.

This result imply that the presence of refugees negatively affects the labour supply decision of natives who are in the education group “no literacy”. The

estimation results suggest that labour force participation of natives declined by 2.82 percent due to the refugee inflow. This result shows that some of the natives stopped searching for a job due to the refugee inflow.

Table 13: DID Estimation Results for Refugees' Effects on Regional Labour Force Participation Rate for Education Group "No Literacy"

$$LP1_{r,t} = \rho_0 + \rho_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

Parameter	ρ_0	ρ_1
Coefficient	17.45***	-2.82*
Standard Error	(1.6995)	(1.6223)

*(p<0.10); **=(p<0.05); ***=(p<0.01)

When we consider the results of the estimation for unemployment rate and labour force participation rate together, obtaining no significant refugee effect on unemployment rate does not imply that there is not any prominent effect of refugees on unemployment. As Ceritoglu et al. (2017) suggest that the main employment effect of refugees can be observed in the informal employment sector and thereby an analysis using unemployment rate directly might not provide meaningful results. Because, the unemployment rate data does not involve the informal sector employment.

Table 14: DID Estimation Results for Refugees' Effects on Regional Unemployment Rate for Education Group "Primary"

$$UR2_{r,t} = \theta_0 + \theta_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$$

Parameter	θ_0	θ_1
Coefficient	13.93***	4.78***
Standard Error	(1.7227)	(1.6445)

*(p<0.10); **=(p<0.05); ***=(p<0.01)

Table 14 presents the estimation results for the effects of refugees on unemployment rate for education group "primary". According to the estimation results, there is a statistically significant effect of refugees on "primary" education

group at 1 percent significance level. Specifically, in the regions where the refugees are predominantly settled the unemployment rate of natives in education group “primary” increased by 4.78 percent.

Table 15 shows the estimation results for the effects of refugees on labour force participation rate for education group “primary”. Estimation results suggest that there is not a statistically significant effect of refugee influx on the labour force participation rate for education group “Primary”.

Table 15: DID Estimation Results for Refugees’ Effects on Regional Labour Force Participation Rate for Education Group “Primary”

$LP2_{r,t} = \sigma_0 + \sigma_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$		
Parameter	σ_0	σ_1
Coefficient	48.55***	0.55
Standard Error	(1.5008)	(1.4326)
*=(p<0.10); **=(p<0.05); ***=(p<0.01)		

To summarize, the effect of refugee influx is found to be more evident in the education group “primary” than the “no literacy” education group. At regions where the refugees are settled predominantly, the unemployment rate of natives with primary education level increased by 4.78 percent while no statistically significant effect is observed on labour force participation rate of this group.

The reason behind this result may be that when the natives who are in primary education group become unemployed, they keep looking for a job. The key point here is that the natives who had been previously employed in an informal job, have kept looking for an informal job. Therefore, labour force participation rate of this group is not affected by the refugee influx. However, the natives who had been previously employed in a formal job, have increased the unemployment rate when they become unemployed because of the refugee influx. Therefore, the unemployment rate of primary education group is found to be increased.

The last education group going to be analysed is “High School or Equivalent” education group. Table 16 represents the estimation results of effects of refugees on regional unemployment rate for education group “high school or equivalent”. Since this education group forms the semi-skilled labour force, their reaction to being replaced by a refugee is expected to be different than the previous two education groups.

According to the estimation results, presence of refugees increased the unemployment rate of education group “high school or equivalent” by approximately 4.70 percent. The results are highly significant.

Table 16: DID Estimation Results for Refugees’ Effects on Regional Unemployment Rate for Education Group “High School or Equivalent”

$UR3_{r,t} = \tau_0 + \tau_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$		
Parameter	τ_0	τ_1
Coefficient	19.79***	4.69***
Standard Error	(1.6174)	(1.5440)
*=(p<0.10); **=(p<0.05); ***=(p<0.01)		

Refugee influx may affect employment through labour force participation rate. Table 17 represents the estimation results for effects of refugees on regional labour force participation rate for education group “high school or equivalent”. When we examine the results, it is seen that refugees have significant impact on labour supply decision process of the natives. Statistically significant results suggest that labour force participation rate increased by 3.06 percent in the regions where the refugees mostly settled.

As the natives in this education group is more skilled than the previous two groups, the natives who had worked in an informal job and replaced by refugees now decided to search for a formal job instead of an informal job. Because the refugees constitute a low-cost labour force and they are consented to work for

wages that the natives would not be. This conclusion is in line with the results in Tumen (2016).

Table 17: DID Estimation Results for Refugees' Effects on Regional Labour Force Participation Rate for Education Group "High School or Equivalent"

$LP3_{r,t} = \omega_0 + \omega_1(Mig_t \times Den_r) + f_r + f_t + \varepsilon_{r,t}$		
Parameter	ω_0	ω_1
Coefficient	61.59***	3.06**
Standard Error	(1.4509)	(1.3850)
*=(p<0.10); **=(p<0.05); ***=(p<0.01)		

To sum up, the effects of refugees are found to be significant on the employment of natives in the regions where the refugees are settled predominantly. The results differ across the education level of the natives. Besides, the effect on no literacy education group is a smaller increase in the unemployment rate than in the other groups. However, the main effect is observed on the labour force participation rate. The unemployed natives in this education group decided to leave the labour force instead of staying and searching for a formal job. Besides, in primary education group the unemployed natives did not leave the labour force thus the unemployment rate rose significantly. And lastly, in high school or equivalent education group the unemployment rate had risen but at the same time, the labour force participation rate had risen. This result implies that refugees led to the unemployment of natives in both informal and formal sectors. Previously informally employed natives started to search for a formal job and this led to an increase in the labour force participation rate. Previously formally employed natives who had been replaced by informally working refugees, did not leave the labour force and this resulted an increase in the unemployment rate.

Overall, the effect of refugees on the employment of natives is negative. Different education groups suffered in different ways: some of them decided to leave the labour force while some of them stayed unemployed.

3.3.3. Effects on Foreign Trade

In this section, the effects of refugees on the ratios of export and import of regions to regional GDP will be evaluated. To make this analysis, DID estimation methodology will be employed again. Table 18 represents the estimation results for the effects of refugees on regional export share in GDP.

Table 18: DID Estimation Results for Refugees' Effects on Regional Export Share in GDP.

Parameter	γ_0	γ_1
Coefficient	8.29***	1.53*
Standard Error	(0.8225)	(0.7851)
*=($p < 0.10$); **=($p < 0.05$); ***=($p < 0.01$)		

According to the estimation results, in the regions where the refugees settled predominantly, export/GDP ratio increased significantly. Specifically, presence of the refugees caused to an increase in the export share of GDP by 1.53 percent. This finding is keeping with the previous studies in the related literature Gümüş (2015); Hutchinson and Dunlevy (2006).

The reason behind this impact may be that the refugees have knowledge about their country's and adjacent countries' market structure, consumption habits and consumer preferences. Therefore, the refugees who have the opportunity to use the old linkages which they already have, established new links originated from the host country, Turkey. This creates a mutual advantage. While they get into commercial activities with their old partners, they also create an increase in the production and export opportunities in Turkey.

Refugee influx may affect import share of GDP as well. Table 19 represents the estimation results for refugees' effects on regional import share in GDP.

Table 19: DID Estimation Results for Refugees' Effects on Regional Import Share in GDP.

$$ratimp_{r,t} = \mu_0 + \mu_1(Mig_t \times Den_r) + f_t + f_r + \varepsilon_{r,t}$$

Parameter	μ_0	μ_1
Coefficient	9.16***	-0.54
Standard Error	(0.7908)	(0.7549)

*=(p<0.10); **=(p<0.05); ***=(p<0.01)

Different from their effects on the export share, their effects on the import share in GDP found to be statistically insignificant. Consequently, regarding the effects of refugees on the foreign trade of the host country, it is found that presence of refugees has a statistically significant effect on export while has not any significant impact on import. The positive and significant effect on exports shows that refugee influx is favourable for Turkey's foreign trade. The insignificant effects on import may arise because the Syrian refugees in Turkey have migrated unwillingly and since they were not allowed to work their priority is to sustain their subsistence. Therefore, they do not prefer to import goods from their origin country. Because it is costlier to import than purchasing the domestic products. Therefore, they avoid consuming origin country products thus they do not affect import of host country. These findings are in line with Lach (2007) and Stahl (1989) who find migrants spend more time on searching to find cheapest product.

As a summary, in this section the effects of refugees on some fundamental economic indicators are examined on the regional level. The empirical findings differ across indicators. It has been found that, the effect of refugees on "Food and Non-alcoholic Beverages" and "Clothing and Shoes" prices are statistically insignificant while the impact on "Real Rent" prices is statistically significant and positive. The main effect of refugees on employment has been found negative. Even though the effects observed for different indicators of labour market under different education levels are different, all effects seem to be disadvantageous to natives. More specifically, as the education level of natives becomes higher, they stay in to search of a job when they get unemployed. Regarding the effects of

refugees on foreign trade, only the impact of refugees on export/GDP ratio is found positive and significant which is a favourable result for the host country.

CONCLUSION

The conflict in Syria leading to a massive migration of Syrians affected the host countries in social, political and economic aspects. Turkey is the country that accommodates the majority of the Syrian refugees. In this study, the effects of refugees on some fundamental economic indicators are analysed and evaluated using DID methodology. These macroeconomic indicators are price level, employment and foreign trade. In this framework, CPIs are analysed to investigate the effects of refugees on inflation; unemployment rate and labour force participation rate are analysed to investigate the refugees' effect on labour market and natives' employment; the export and import share in GDP are analysed to investigate the effects of refugees on foreign trade.

The concentration of the refugees differs across regions and provinces. Therefore, to perform the empirical analyses, difference in differences estimation methodology is employed. DID methodology requires two groups which one of them is treatment group and the other is control group. The treatment group contains the 5 NUTS2 level regions which are Adana-Mersin, Gaziantep-Adiyaman-Kilis, Hatay-Kahramanmaraş-Osmaniye, Şanlıurfa-Diyarbakır, Mardin-Batman-Şırnak-Siirt provinces. The control group contains the 4 NUTS2 level regions which are Ağrı-Kars-Iğdır-Ardahan, Malatya-Elazığ-Bingöl-Tunceli, Erzurum-Erzincan-Bayburt, Van-Muş-Bitlis-Hakkari provinces.

Inflationary effects of refugees are analysed using 3 different item level CPIs which are "Food and Non-alcoholic Beverage", "Clothing and Shoes", "Real Rent". To make a reliable analysis, all these three variables are used in first differenced natural logarithmic form. The results differ across item sets. The estimation results for Food and Non-alcoholic Beverages prices are found statistically insignificant. The estimation results for Clothing and Shoes prices are also found statistically insignificant. However, in previous studies Balkan and Tumen (2016); Tumen (2016) effects of refugees on prices found statistically significant. The insignificant effects in contrast to the previous studies may arise

due to the fact that even the number of refugees dramatically increased through time, they are getting used to the daily life in Turkey. Therefore, the effect of the migration originated population shock on fundamental consumption items might have disappeared.

For real rent prices, the results are found to be statistically significant as in Tumen (2016). According to the estimation results the refugee influx caused to an increase in the rent prices. Specifically, rent prices rose 2.05 percent at the regions where the refugee-native ratio is higher than a certain level. However, some studies as Saiz (2003) have found a negative impact of immigrants on rental prices. Regarding these contradictory results about the effects of refugees on rental prices, it can be said that as time passes, the adaptation of refugees is likely to reduce the impact on rental prices.

The contradictory results on prices in this study might also have arisen due to the difference in the properties of items. Refugees are adapted to the local economy may not lead to a significant increase in the food and clothing prices. However, as their immigration leads to a population shock the rental prices may significantly increase.

The context of this study includes the labour market effects of the migration. Employment has a crucial importance in an economy to be strong and sustained. The main consensus in the previous literature is that the refugee inflow causes a labour supply shock and increases the unemployment rate. The number of refugees was limited at the beginning but at year 2014 and after, there is an increasing trend. At first two years of the inflow, refugees were settled in temporary camps. With the increasing number of refugees, Syrians spread into the country and since they were no longer staying at the camps, they needed to sustain themselves. However, the most important point about the refugees' subsistence is that they were not allowed to work. At year 2016, the government set some regulations about refugees' employment. They can work officially if the employer fulfils the necessary conditions. The importance of the employment effect comes from the fact that they are forming a low-cost labour force which reduces the production costs and increases the profit. This might be an

opportunity. However, still there are costs that the natives in the hosting country have to afford.

We may not observe the effect of refugees on labour markets directly using the unemployment rate but when we consider unemployment and labour force participation rates together, we can interpret the result more reliably. Because, even though they are allowed to work officially under some conditions, still the majority of refugees are employed in unofficial jobs. Labour market effects of refugees are analysed using 3 different education levels and 2 different indicator levels for each education level. Indicators chosen are unemployment rate and labour force participation rate. The education levels are No Literacy, Primary, High School or Equivalent. Results differ across the education levels. The estimation results on the first education group “No Literacy” are not quite clear. The results regarding the refugee effect on unemployment rate is found statistically insignificant but the refugee effect on labour force participation rate is statistically significant at 10 percent significance level. According to the results, refugees caused to a decline by 2.82 percent in the labour force participation of natives. The reason might be that some of the discharged natives decided to leave the labour force instead of searching for another job.

The other group analysed is “Primary” education group. Estimation results for this group are also ambiguous because the effect on unemployment rate result is statistically significant, but effect on labour force participation rate is not. According to the estimation results, refugees’ presence caused to an increase in the unemployment rate of natives by 4.78 percent. This consequence may arise as the discharged natives decided not to leave the labour force and kept searching for another job. The natives who are previously employed in informal jobs decided to leave the labour force.

The last group analysed is “High School or Equivalent” education group. In this group both unemployment rate and labour force participation rate estimations are found to be statistically significant. According to the results, refugees caused to an increase in the unemployment rate of the natives while caused to an increase in the labour force participation rate. The magnitude of the impact of the refugees

on unemployment rate is approximately 4.70 percent increase. That is, at the regions where the refugees are highly settled, the unemployment rate increased by 4.70 percent. Besides, the labour force participation rate also increased. The ratio increased by 3.06 percent, meaning that at the regions where refugees are settled predominantly, the labour force participation increased by 3.06 percent. These results can be interpreted as the natives were seriously affected by the refugee inflow. The ones who previously employed in a formal job, replaced by refugees, have kept searching for a formal job and the ones who previously employed in an informal job, replaced by refugees, also have started to search for a formal job. The labour market results show that the natives have been affected seriously yet depending on their education level some of them have continued to search for another job while some others decided to leave the labour force.

To overcome the negative effects of refugees on labour markets some policy changes can be applied. For example, incentive payments and implementations may reduce the unemployment rate up to a point. However, to obtain low unemployment rate Turkey needs to make structural regulations on labour market. For example, allowing refugees to work officially under same conditions with natives and set some strict restrictions against employing refugees informally would reduce the desire to employ refugees informally. Corollary, this regulation would reduce the unemployment of natives.

Finally, the effects of refugees on export and import shares of GDP are analysed. To obtain these ratios, total export and import amounts of the related regions have been divided by the total GDP of the same regions. The estimation results on the export share of GDP are found to be statistically significant. According to the results, export share of the regions where the refugees are settled predominantly increased by 1.53 percent. This result is compatible with the main consensus in the previous literature Blanes-Cristobal (2008); Gümüş (2015); Hutchinson and Dunlevy (2006); Lewer (2011); Lewer and Van den Berg (2009). Also, the previous studies emphasize the bilateral trade aspect of migration but in this specific case Turkey has another opportunity. More specifically, the expected effects of Syrian refugees on the regional foreign trade of Turkey is not

limited with only the country of origin but also covers the countries which have similar cultural features and geographical adjacent. Syrian refugees are familiar with the Arab countries' culture, preferences and market structure. Therefore, in the long term, the level of export to these regions is likely to increase by a significant amount. However, the effect of refugee influx on the import share of GDP is not significant. Since the refugees in Turkey are not willingly moved from their country, it is an expected result. Most of them left their assets behind and rushed into neighbour countries to save their lives. This situation caused to force them to adapt the host country's conditions. But in the long term, it is more likely to observe a significant effect on import. As Gould (1991) suggest, immigrant preferences directly affect the import sector. Therefore, as the refugees obtain a higher level of wealth, they will tend to consume home-country products rather than consuming host-country made substitute products.

As a conclusion, the empirical analyses in this study show that there are important macroeconomic effects of refugees on all these fundamental indicators. The effects on the price levels are generally found insignificant in this study different than previous studies Aldawsari (2018); Balkan and Tumen (2016); Tumen (2016). However, the effects on rental prices are observed significant and positive. The results show that the impact of the population shock remains effective but tends to vanish.

The effects on labour market are found significant and unfavourable for all education groups. As the refugees are mostly employed in informal jobs, they constitute low cost labour force and increase unemployment. To prevent negative effects of refugees on labour market, the government may set some new regulations against informal employment of refugees.

The effects of refugees are found significant for export and insignificant for import share. Refugee originated positive effect on the export share arose due to the increase in export to the departed country. This finding is in line with the previous studies as Blanes-Cristobal (2008); Gould (1991); Gümüş (2015); Hutchinson and Dunlevy (2006). Overall, it is seen that the refugee influx brought many

economic problems and the presence of refugees requires some regulations in all economic fields.

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APPENDIX 1. ETHICS COMMISSION FORM

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APPENDIX 2. ORIGINALITY REPORT

<http://www.sosyalbilimler.hacettepe.edu.tr/formlar.shtml>

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