FEM43-05

FEMISE RESEARCH PAPERS

The Long-Term Impact of Syrian Refugees on Turkish Economy : An Input-Output Simulation

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September 2019

Ce rapport a été réalisé avec le soutien financier de l'Union Européenne dans le contexte du projet UE-FEMISE sur: "Support to economic research, studies and dialogue of the Euro-Mediterranean Partnership". Le contenu du rapport relève de la seule responsabilité des auteurs et ne peut en aucun cas être considéré comme reflétant l'opinion de l'Union Européenne.

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EU-FEMISE PROJECT
"Support to economic research, studies and dialogue of the Euro - Mediterranean Partnership".

The Long-Term Impact of Syrian Refugees on Turkish Economy: An Input-Output Simulation

Universidad Autónoma de Madrid

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Introduction

Following the eruption of the Syrian conflict in March 2011, the Syrian crisis has displaced more than 5.2 million refugees into Turkey, Lebanon, Jordan, Iraq and Egypt. Since then, Turkey has become a major transit and destination country for these refugees. According to the World Bank (2017), the country currently hosts the largest refugee population in the world. Based on data from the Directorate of General Migration Management (DGMM 2017a), the number of Syrian refugees registered under temporary protection in Turkey was around 3.38 million as of mid-December 2017, and the nation also accommodates about 300,000 refugees from other countries.

In this report we present the results of a simulation exercises aimed at assessing the economic impact of refugees on the Turkish economy over the short, medium and long terms. The value added by the text can be summarised by the following key contributions:

- Focus on a middle-income labour-abundant hosting country: Although migration-driven impact exercises can commonly be found for well-developed hosting countries with labour supply shortages, they are not so typical for middle-income/in transition and labour-abundant receiving countries.
- Focus on forced migration: While a vast amount of literature is extant regarding labour and voluntary migration's impact on receiving countries, less attention has been paid to forced migration and even less to "double-forced" migrants.
- Focus on the interesting case study of Turkey: Syrian immigration into Turkey does not represent a standard south–south migration episode but rather is a particular case with interesting circumstances. Turkey is definitively *not* an underdeveloped country but rather is a transit country that has become a host by means of a particular agreement, the "EU–Turkey deal", which came into force in March 2016 and by which it expected to receive significant financial compensation.
- Focus on the impact on the global economy: While the focus is on economic growth (GDP), consideration is also paid to the main side-effects in terms of the labour market using an input–output approach that explicitly considers sectors' interrelations.

From a policy-oriented perspective, the understanding of medium- and long-term positive effects could help counterbalance the narrow and negative short-term vision of public opinion on the refugees' impact, turning "crisis-cost approach" into "opportunity-window idea". Moreover, the valuation of different scenarios for 2017, 2023 and 2028 will assist policymakers in crafting a coherently designed integration roadmap for future refugees seeking a more benign impact.

The remainder of the report is structured in three main sections. In the first, we describe the research context and relevant existing literature. In the second, we illustrate the simulation process and results for each stage. In the third, we summarise and comment upon the main findings.

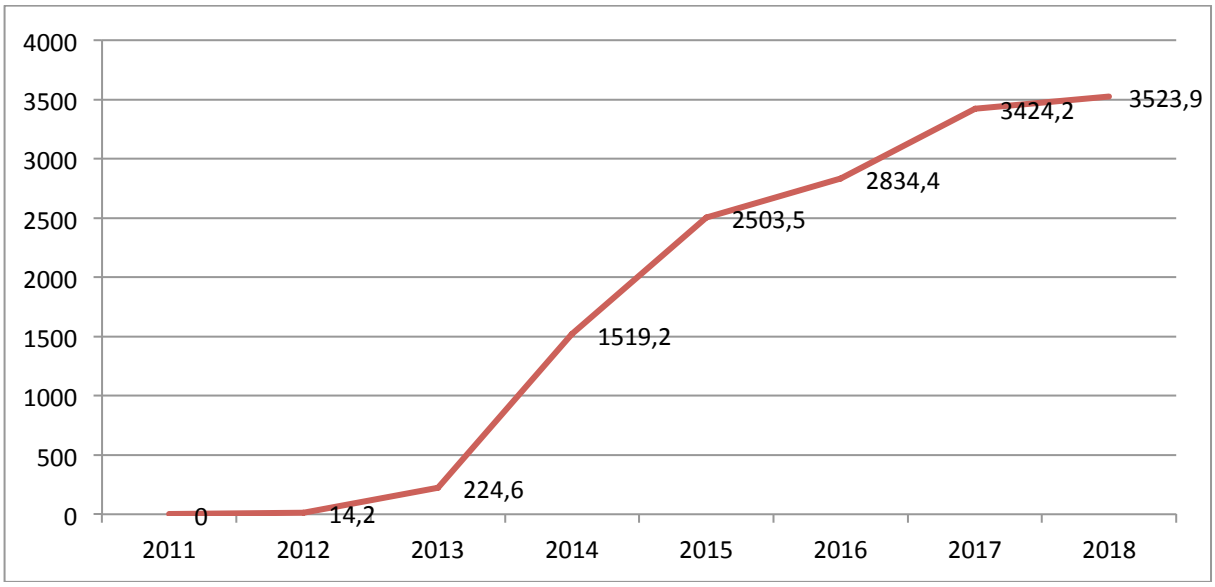
Part I

SYRIAN REFUGEES IN TURKEY

I.A.- Population and Demographics

Following the outburst of the Syrian Conflict in March 2011, the Syria crisis has displaced more than 5.2 million Syrian refugees into Turkey, Lebanon, Jordan, Iraq and Egypt. Since then,Turkey has become a major transit and destination country for Syrian refugees. According to theWorld Bank (WB), Turkey currently hosts the largest refugee population in the world (World Bank, 2017). Based on the data of Directorate General Migration Management (DGMM) the number of Syrian refugees registered under temporary protection is around 3.38 million as of mid-December 2017. Turkey also accommodates about 300,000 refugees from other countries (DGMM, 2017a).

Figure I.1: Number of Syrian refugees under temporary protection in Turkey (thousandS)



Source: DGMM, 2018a.

Since the outbreak of crisis in 2011, Turkey has allowed Syrian refugees into the country based on the Turkish government's "open door" policy. The number of Syrian refugees increased more than fifteen fold during the 2013-2017 period.

Table I.1. Demographic Structure of the Syrian Refugees in Turkey (2018)

Age	Male, %	Female, %
0-4	6.9	6.3
5-11	12.5	11.7
12-17	4.5	3.7
18-59	28.7	22.4
60+	1.6	1.7

Source: UNCHR, 2018.

Table I.2. Number of the Syrian Refugees Based on the Age and Gender in Turkey, 2018

Age	Male	Female	Total
0-4	239943	221938	461881
5-9	246563	231110	477673
10-14	196476	181275	377751
15-18	157378	128207	285585
19-24	314294	224141	538435
25-29	198176	144101	342277
30-34	166536	124499	291035
35-39	117255	92682	209937
40-44	78818	71103	149921
45-49	59511	55340	114851
50-54	48020	45895	93915
55-59	32155	32042	64197
60-64	23198	23664	46862
65-69	15043	15204	30247
70-74	8415	9334	17749
75-79	4798	5772	10570
80-84	2713	3478	6191
85-89	1418	1770	3188
90+	748	968	1716

Source: DGMM, 2018b.

I.B.- Integration Policies

At the beginning of the Syrian influx crisis, Turkey's initial response was based on the short-term emergency planning with the goal of providing shelter and food for the refugees. Syrian refugees in Turkey were officially received as "guests" and the given the temporary sheltering status. Turkey has been working on harmonisation of migration policy with that of EU for a long time. Migration policy has become a priority since the Syrian crises and Turkey has focused on building the legal and institutional infrastructure of migration management (Bayaner et.al., 2016).

Since the country is now hosting more than 3.5 million refugees, Turkey stands in the centre of international negotiations and agreements about how to handle the situation. According to the "EU-Turkey deal" which went into force in March 2016, Turkey committed to closing borders to refugee on their way to Europe and also receiving those being sent back from Turkey. Therefore, it has been understood that a significant number of Syrian refugees will stay permanently in Turkey, making their integration into society a pressing issue (Knappert et.al., 2017).

Migrant integration includes access to labor market, health and education service, social inclusion and also active citizenship in hosting country (EUROSTAT, 2016). It can be said that the EU-Turkey Agreement contributed to developing integration policy in Turkey. The Turkish parliament approved the entry into force of the provisions for third-country nationals in the EU-Turkey Readmission Agreement (EC, 2016c). Moreover, the government approved extending work and residence permission for foreigners. Finally, the Turkish government announced its intention to grant citizenship to Syrian refugees. Although the issue of granting

citizenship has created heated debates in the country, this proposition constitutes a new and important step in Turkey's integration policy (Bayaner et.al., 2016). DGMM data show that the number of Syrian refugees who obtained residence permits reached from 31,715 to 49,983 in 2014-2017 period (DGMM, 2018a).

Registered refugees have, in principle, access to public services, including education and healthcare. However, for many, access to these basic facilities is often limited for various reasons, including problems in registering with local authorities and the language barrier.Turkish government provides occasional assistance in the form of cash or in kind distributions of food, coal and clothing items for refugees' families. Moreover, Turkish Red Crescent (TÜRK KIZILAYI), started to give 100 TRL per person under the Social Adjustment Assistance Program for Refugees). Approximately 1 million people have received Red Crescent Debit Cards in a year in the context of Social Harmonization Program (SUY) initiated to financially support refugees in Turkey, mainly Syrians. Refugees in Turkey now hold on to life with around 640 million liras of financial aid (TÜRK KIZILAYI, 2017).

I.C.- Earnings, Social Aid and Expenditure

Despite the hundreds of thousands of refugees who are estimated to work in the textile industry, only 13,298 refugees were granted work permits by the end of 2016, of which only approximately 2,000 were given for workers in the industrial sectors, including the textile-apparel industry; the rest were given for workers in the service sector (Korkmaz, 2017). Actually, the number of Syrian refugees employed informally is estimated at around 650,000 (INGEV, 2017). Most Syrian refugees are working in the informal sector under exploitative conditions, meaning long working hours, unsafe conditions, lack of guaranteed payment, and low wages. Child labour is also still a huge problem (Oxfam, 2015; Kanat &Üstün, 2015). In a survey conducted by AFAD in 2013, the average income of working Syrians in Turkey was 236 USD, roughly half of the national minimum wage for that year (Kaymaz and Kadkoy, 2016). For example, the daily wage of a Turkish construction worker is 100 TRL, whereas they pay the refugee or the displaced worker 50–40 TRL for the same kind of job (Baban *et.al*., 2017).

Table I.3. Monthly Income Earned by Syrians, USD

16 % of households	400 or more
34 % of households	250-400
22 % of households	150-250
9 % of households	50-150
1 % of households	1- 50
18 % of households	Zero income

Source: UNCHR, 2015.

The number of the Syrians as formal labour force is increasing but still the number of working permission is at quite low level (See Table 3).

Table I.4: The Sectoral Distribution of Working Permission Which Is Given to Those Who Are Citizens of Syria (2011-2014).

Sectors	2011	***Share in Total, %***	2012	***Share in Total, %***	2013	***Share in Total, %***	2014	***Share in Total, %***	Total for Sectors	***Share in Total, %***
Agriculture	-	***0***	-	***0***	3	***0.3***	12	***0.4***	15	***0.4***

Industry	20	***19***	69	***29.9***	257	***32.2***	834	***32.7***	1180	***32***
Building	5	***4.7***	10	***4.3***	31	***3.9***	117	***4.6***	163	***4.4***
Service	80	***76.1***	152	***65.8***	506	***63.5***	1590	***62.2***	2328	***63.2***
General Total	105		231		797		2553		3686	

Source: Gerşil and Temel, 2016.

Most of Syrian refugees in working age (95%) are employees without being registered. The sector that Syrian refugees (old people, women and children) work intensively as informal is agriculture. Moreover, other important sectors which refugees work unregisteredly are building and textile ateliers that they opened on their own (Gerşil and Temel, 2016).

Rate of getting any social benefit, on a regular or irregular basis, is only 13%. It means that **87% of the Syrians is getting no social aid** at all. This rate is even below 7% in the West (5% in İstanbul), and significantly higher in the East Region (20%).

Table I.5. Distribution of Social Aid Provided to Refugees

Aid Type	Percentage (%)
Turkish Kızılay Card (which has 100 TL per month)	66
Non-monetary-food etc.	17
In cash	12
Turkish Language Education	5
Other	9

Source: INGEV, 2017.

Turkish Kizılay takes far away on top with largest social aid share in the list. Currently 9% of the Syrian refugees are living out of the camps relaying on owns Kızılay Card. This corresponds to **about 270 thousand urban refugees.** Within 13% of the refugees that state getting aid on regular or irregular base, 66% of them state using Kızılay Card (INGEV).

World Food Programme collected data from June and December 2015 by a field survey. A total of 1,562 households were interviewed in four provinces, namely Gaziantep, Hatay, Kilis, and Sanliurfa. Households were selected randomly from the Kizilay (Turkish Kizilay) registration list that include households that are eligible and non-eligible for WFP food assistance. According to the field survey, Syrian household spent on average 180 TL per capita per month (median=153 TL). The per capita expenditure is significantly low among the food poor households with 64 TL on average (median=74 TL), followed by the poor households with the average of 178 TL (median=164 TL), whereas the non-poor spend 548 TL (median=457 TL). The major household expenditure is spent on food, followed by rent and utilities - gas, water, and electricity. The proportion spent on food is similar across the wealth groups at 35-36 percent, while the share of rent and utility is higher among the poorer households: more than half of the household expenditure is spent on rent and utilities among the food poor households, whereas the rate is thirty-three percent among the non-poor households (WFP, 2016).

Table I.6. Distribution of Expenditures of Syrian Refugees (As average percentage)

Expenditure type	Share in total, %
Food	33-36
Rent	22-33
Gas	3-5

Water&Electricity	8-12
Health-Hygiene	4-9
Transportation	1-2
Tobacco	1-2

Source: WFP, 2016.

Hosting Syrian refugees brought burden on public expenditures in Turkey. President Erdogan said "Turkey had spent $30[1] billion for Syrian Refugees" within its borders" which accounts for some 4 percent of Turkey's GDP in 2016. Of this amount, only $418[2] million of support came from the international community just in 2015. Moreover, EU released fund around 1.4 billion Euro in 2016-2017 (EC, 2017).

Turkey is struggling to show its expenses for basic needs of Syrians. It is stated that the problem is that each ministry has spent from the their budget and the total calculation of expenses has become difficult to obtain. More than $12 billion of total expenditure for Syrains came from government budget and remaining came from NGOs and municipalities in Turkey. It is estimated that the cost one Syrian refugee (covering the food, water and education) in Jordan is approx. $3,000. However, cost of the same services for Syrians in Germany or Austria will be around $30,000. When compared to Germany, this cost will be lower in Turkey (Yılmaz, 2017).

Refugee influx into Turkey had an impact on increased prices of food, rent and housing. Therefore, the inflation rate has considerably risen during 2014-2017 period. The entry of Refugees into the labour market increased the unemployment rate across the country, notably in southern Turkey. Some studies examined the effects of Syrian refugees on the economy. For example, Humanitarian Development Foundation (INGEV) and IPSOS (a research company) carried out a fieldwork in 2017, including 10 cities hosting 79 % of refugees-İstanbul, Şanlıurfa, Hatay, Gaziantep, Adana, Mersin, Kilis, Mardin, Bursa, İzmir -and total of 1282 face-to face interviews. Research showed that, while some 52 percent of the Syrian refugees said they were planning to build their future in Turkey and 74 percent of them wants to acquire Turkish citizenship, 42 percent of Syrian refugees were planning to move to European countries. Field survey pointed out that the monthly household consumption expenditure of a Syrian family is 867 Turkish Liras, with 140 liras allocated on average for each person. Moreover, nine out of 10 respondents said they did not receive any social aid.

According to the field survey, some 13 percent of Syrian refugees receive social aid at least once during their time in Turkey, while 6 percent of them are receiving regular social aid from the government. Survey also showed that only 31 percent of Syrian refugees are actively taking part in the labour market, with 17 percent of them working under a Turkish employer. Five percent of them are working with Syrian employers and 5 percent of the respondents said they were working on their own. Interestingly, half of the Syrian respondent said they were not working or seeking jobs, but 24 percent of Syrians were seeking jobs in Turkey, the field survey showed.

Main source of income for Syrian refugees in Turkey is their wage earnings by working (85%). Contrary to what is supposed to be, majority of the Syrian refugees are not making a living with non-monetary public support or cash aid provided by the institutions. The social aid payment is the regular income sources of only 6% of the households. Important differences are observed among the regions. Average household size of Syrian refugees is 6.2; average

[1]http://www.yenicaggazetesi.com.tr/erdogan-suriyelilere-30-milyar-dolar-harcadik-167796h.htm.
[2]http://www.newsweek.com/high-cost-turkey-syrian-civil-war-403535.

number of income earners per Syrian household is only 1.4. Education levels of Syrian refugees are significantly low. 31.3% of the refugees aged 15 and over has no formal education. Although rate of higher education is relatively lower, 21% of the refugees is high school graduate at the least (INGEV,2017).

I.D.- Health and Education

Officially Syrian refugees have access to Turkish health facilities and education, but many refugees are living in impoverished conditions. Health services provided to Syrian refugees are basically described by Temporary Protection Regulation and Social Insurance and Universal Health Insurance Law (Mardin, 2017). To improve access to preventive and other health care, the Turkish government has established 99 dedicated health centres for refugees in 21 provinces. As of 31 August 2017, about 1,296,219 Syrian refugees received inpatient care, more than 1,086,706 patients had operations, there were almost 266,957 births, and over 30 million consultations took place (Republic of Turkey, Ministry of Health, 2018).

Table I.7: Health Service provided for Syrian Refugees, 29 April 2011-31 August 2017

Service Type	Number
Outpatient Care	30,545,884
Inpatient Care	1,296,219
Operative Surgery	1,086,706
Number of Birth	266,957
Vaccination	1100

Source: Repuclic of Turkey, Ministry of Helath, 2018.

Education of children is another important issue because more than 1.3 million Syrian refugees are aged 15 and nearly 800,000 are under 24 (DGMM, 2017a). Turkish Ministry of National Education has adopted two key education models on the subject. One of the models is the Ministry's Temporary Training Centres (TTC) where the education curriculum in Syria is in Arabic. The second model is the public school system of Turkey;however, here, the language barrier is the biggest problem (Foundation for Political,Economic and Social Research [SETA], 2016).All registered Syrians can enrol in state schools free of charge. There are over 1.1 million registered Syrian refugee school-age children, of which more than 459,000 enrolled in school in 2017. The majority of them in TTCs (293,039 students) and around 166,482 students enrolled in state schools (DGMM, 2017b).

I.E.- Investment

Syrian refugees are becoming an economic actor in Turkey not only in terms of their labour supply but also their entrepreneurial skills. (Ozpinar *et al*, 2015).The number of companies opened by Syrians increased by around 168 per cent between 2014 and 2016 (TOBB, 2017). At the end of 2017, the number of the Syrian companies reached around 6,311 firms and the total amount of capital of these firms was around 930 million TL in 2013-2017. Out of 7,316 foreign capital companies registered in 2017, 1202 belong to Syrians (TOBB, 2017). Share of the Syrians both in number of the firms and total amount of capital has increased during the 2013-2017 period.

Table I.8. The number of the Syrian firms and amount of capital (Million Turkish Lira)

Year	Joint-stock company	Total amount of capital of Syrians (1000TL)	Limited company	Total amount of capital of Syrians (1000 TL)
2013	20	4,481.5	469	70,328.4
Total	880	702,980.7	3271	515,426.3
Share in total	(2.3%)	(0.64 %)	(14.3 %)	(13.6 %)
2014	35	14,998.0	1222	203,745.2
Total	824	640,015.9	4259	594,060.2
Share in total	(4.2 %)	(2.3%)	(28.7 %)	(34.3 %)
2015	27	7,060.5	1572	226,460.6
Total	760	444,578.0	4244	573,005.0
Share in total	3.6 %	(1.59 %)	(37 %)	(39.5%)
2016	53	9920,0	1711	236,948.0
Total	667	358,113.5	4126	549,123.5
Share in total	(7.95 %)	(2.8 %)	(41.5 %)	(43.2 %)
2017	26	7,906.300	1176	171,126.0
Total	1062	4,821,452.2	6254	790,266.8
Share in total	(2.4%)	(2.8 %)	(18.8 %)	(21.7 %)

Source: TOBB, 2013, TOBB, 2014, TOBB, 2016,TOBB, 2017

Majority of Syrian firms (60 per cent) were located in Istanbul. Despite the government granted work permission for Syrian refugees, transition from informal market to formal labour market remained slower than expected. With the granting of work permit of Turkish government, an enterprise can employ Syrians up to 10 % of its work force. Moreover enterprises have an incentive to do so because they save 20 % per worker on health insurance, which is covered by the Turkish government for all Syrian employees (Baban et. al., 2017).

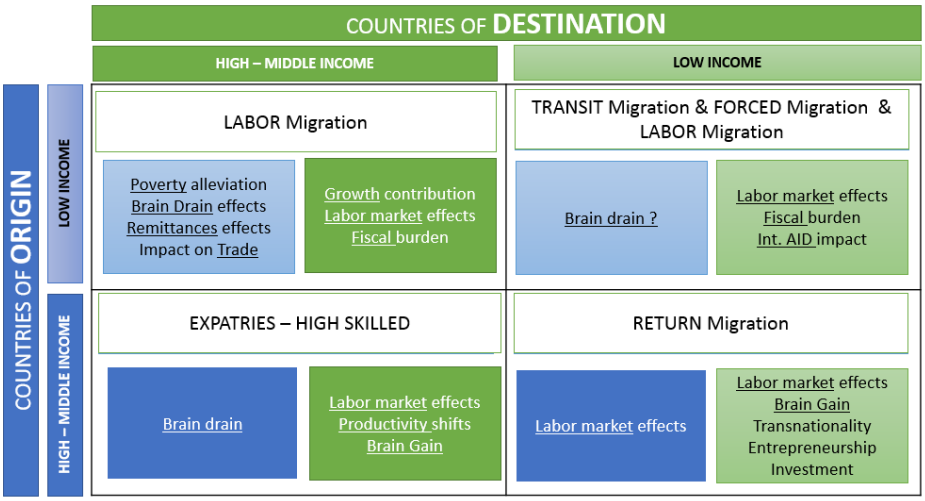
Part II

THE IMPACT OF FORCED MIGRATION IN HOSTING ECONOMIES: A LITERATURE REVIEW with special attention to Syrian Refugees[3] in Turkey

II.A.- RESEARCH CONTEXT AND LITERATURE REVIEW. The special case of "double-forced" migration in the research field of international migration's economic impact

Emigration and immigration flows are intimately connected with the economic development of both origin and destination countries, and the economic effects of inflows and outflows at both sides are numerous, multifaceted and complex. Based on the income level of origin and destination areas, migration is normally conceptualised as labour migration, transit migration, high-skilled migration or return migration (among other categories). For each "migration category", the researcher's interest is then focused on different facets according to the attention paid to the origin or destination regions: contribution to economic growth, impact on labour market, fiscal burden, brain drain or brain gain, effects of remittances, side-effects on trade and so on. Given that research is mainly undertaken in well-developed economies, we can much more easily find studies in the field of labour migration and its impact on rich countries, while – considering that 80% of migration comes from developing countries (OECD 2016) – we also very frequently come across reports on matters such as poverty alleviation, remittance effects or brain drain.

Figure II.1: simplified classification of research topics by level of income at origin and destination countries.



Source: Own elaboration

[3] *We will use the term "refugees" for the shake of simplicity but in the case of Syrian immigrants, the term is not appropriate considering that most of Syrian immigrants do not have the legal refugee status. Turkey is a signatory to the 1951 Convention, but under a principle of geographical limitation, the country limits asylum claims to European citizens but not to people from "third countries". This means that Syrian citizens are not eligible to apply for asylum to the Government of Turkey. The Law on Foreigners and International Protection, which came into force in April 2014 provides a status of "temporary protection" with a legal permit to reside temporarily in Turkey (apart from the option that every person have to apply directly to the United Nations High Commissioner for Refugees – NHCR- as an asylum seeker).*

Even if the case of developing countries' receiving migrants from other developing countries is not in the spotlight, the analysis of labour immigration into "emigrant economies"[4] is not new and gathered significant attention some decades ago, especially after the end of the Cold War for some geographical areas in transition, such as Eastern Europe or Asia (Aydemir and Kirdar 2017), or for the singular case of expatriates' return from former colonies upon their independence. Recently, some interesting research programs have been launched[5] for the specific case of labour migration into developing countries, and remarkable publications have also recently been released (OECD 2017).[6]

We may easily guess that all we know about the effects of labour immigration on developed countries cannot be transplanted easily to underdeveloped economies as hosting countries. On the one side, the differences are enormous in relation to economic structure, policies and labour market institutions (informality, segmentation, mobility and so on). Second, despite some relevant efforts[7] (Böhme & Kups 2017), the term *low-income* remains merely a tag, although the within-heterogeneity among less developed economies is so huge that the inference of wide-ranging conclusions has become highly complex.

Beyond the difference between a developed and undeveloped host country, things become even more complicated when we move from labour migration to forced migration. By "forced" migration we mainly refer to emigrants, who are mostly refugees or asylum seekers compelled to exit their countries, crossing the borders of neighbour nations and remaining there, settling temporarily into transit countries or reaching a more distant nation as their "final" destination.[8]

Sometimes forced migrants can make explicit and selective choices about their preferred country of destination based on similar criteria to those of labour migrants, including closeness, cultural ties, economic opportunities, ease of attaining legal status and the existence of well-established communities from their home country. We mainly refer to individual asylum seekers, who normally choose a well-developed country as their final stop. In these cases, even if certain differences exist between forced and voluntary migration, we have reason to believe that the distinction between the two is not crucial in terms of understanding the economic impact on host economies. Because of the recent upsurge of forced migration across the world, which is unprecedented in size, recent reports on the effects of this involuntary migration on well-developed host economies are relatively easy to find (Mayda et al. 2017, European Commission 2016, IMF 2016, Capps and Newland 2015, Peri and Yasenov 2015), as are survey articles (Ruiz and Vargas-Silva 2013).

According to the orthodox labour economy, which is used intensively for the study of voluntary migration, the impact of refugees on the labour market depends, as always, on the

[4]. Using the term employed by Seccombe (1986).

[5]. Assessing the economic contribution of labour migration in developing countries as countries of destination, cofinanced by the European Commission and launched by the OECD Development Centre and the International Labour Organisation (ILO) in 2004 (http://www.oecd.org/dev/migration-development/eclm.htm).

[6]. It is worth mentioning that 29.6% of migration flows have nondeveloped countries as a final destination, according to the third edition of the World Bank's *Migration and Remittances Factbook 2016*.

[7]. Biavaschi et al. (2018) for South Africa; Gindling (2009) for Costa Rica; Őzden and Wagner (2014); Narayanan and Lai (2005) and Abdul-Rahman et al. (2012) for Malaysia.

[8]. A more formal definition comes from the IOM: a migratory movement in which an element of coercion exists, including threats to life and livelihood, whether arising from natural or manmade causes (e.g., movements of refugees and internally displaced persons as well as people displaced by natural or environmental disasters, chemical or nuclear disasters, famine or development projects).

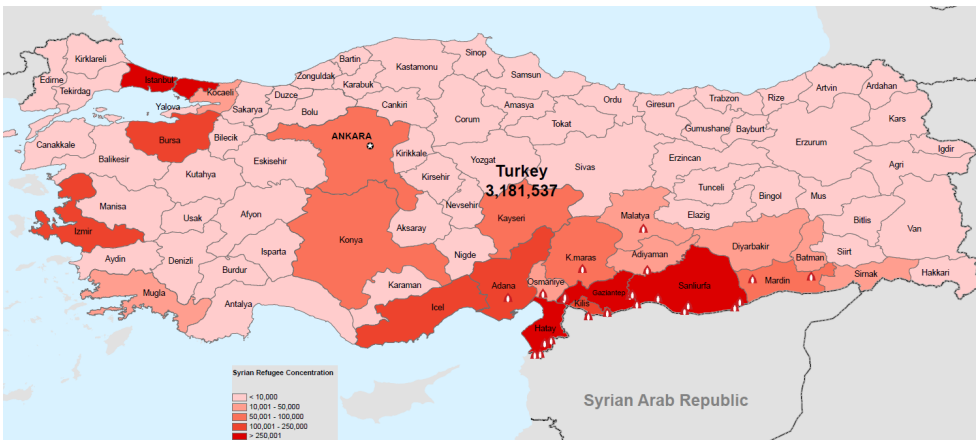
complementarity or substitutability between refugees' and native workers' skills: in short, some native workers may lose, but others may benefit. Apart from pure labour market effects, the influx of refugees has other important economic side-effects that tend to be featured in classical migration economics studies: changes in production patterns, firms' adopting alternative production techniques, natives' outflows to other labour markets and investment by natives in education and occupational upgrading, among others (Mayda et al. 2017).*

Sometimes, especially in the case of sudden and/or massive outflows, forced migrants cannot make any choice, or if they can, they are unable to reach their intended destination, getting stuck in neighbouring or transit countries, either because of a lack of resources or because of other restrictions linked to legal constraints (such as the provisions of the Dublin Regulation for European countries). **We may then consider a double-forced migration: They are forcibly displaced and then forced to stay somewhere they did not expect.** Episodes of this double-forced and massive immigration into less developed countries are relatively common. In these cases, understanding the economic impact of immigration becomes a much more peculiar exercise, with some crucial specificities.

- The main difference is that **forced massive immigration can be experienced by poor and weak economies**. In contrast, economic and forced migrations on an individual basis are normally conditioned and driven by existing (or at least perceived) economic opportunities, and even when family reunification follows, it is also normally conditioned by the economic success of previous migrants. (The legal requirements for family reunification are normally linked to proof of economic means to cover living and accommodation expenses.)

- Regional concentration of economic migrants is normally equalised with economic regional structure, and opportunities and spatial mobility tend to be high; in contrast, **forced massive immigration can easily be concentrated** (or be forced to concentrate) in certain areas or cities, and mobility is also frequently constrained. The following image illustrates the case of Syrian refugees in Turkey, where extreme concentrations can be found in the Turkey–Syria border regions or in other transit regions en route to other European countries.

Figure II.2: Geographical distribution of Syrian refugees in Turkey.



Source: UNHCR (2017a).

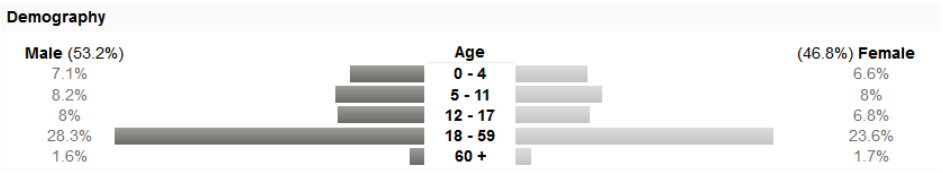
- Although the majority[9] of refugees live in private accommodation in urban areas (UNHCR 2017a), a special mention must be made of the particular case of **refugees living in camps** (mostly in rural areas) in the context of massive forced migration, an extraordinary situation in which the standard approach to economic interaction with the host population is useless.

- **With forced migration, legal status is different** from other types of regular migration, which brings different requirements for gaining a work permit or accessing public benefits, particular conditions for renewing residence permits or asking for family reunification, and other important issues that condition refugees' way of life and its economic implications. Moreover, when an influx of refugees is sudden and massive, certain regulatory changes frequently take place [10] to avoid uncontrolled and disproportioned side-effects conditioning the socioeconomic impact on immigrants.

- **The average composition of forced migration may present some demographic and socioeconomic differences when compared to economic migration**. For instance, forced migration may also include middle- or even upper-class persons, including highly educated business- and professional persons such as doctors, lawyers and professors.

  Additionally, economic migration is mostly concentrated on the labour age range. By contrast, *children,* youths and old persons constitute a large percentage of displaced populations worldwide. According to the UNHCR (2016b), children below 18 years of age constituted about half of the refugee population in 2016. For the Syrian–Turkish case, 45% of refugees are below 18 and around 3.5% are elderly people (60+).

Figure II.3: Age and gender distribution of Syrian refugees.



Source: UNHCR (2017c).

- A very interesting and useful technical advantage in the case of forced migration is that, according to mainstream literature, immigration is generally voluntary and thus identification strategies for causal analysis must accommodate endogeneity or selection bias; for the case of forced/non-voluntary migration, this technical problem may not be so important, leading to quasi-experimental designs such as those of Tumen (2016) or Ceritoglu et al. (2017).*

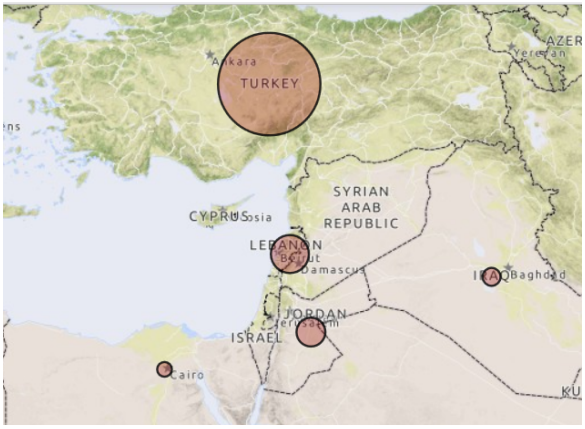
[9]. In the Syrian–Turkish case, less than 10% of refugees live in camps, according to the 2016 Government Annual Migration Report.

[10]. For instance, Syrian refugees were not allowed to work in Turkey until January 2016. In the UK, asylum seekers are not allowed to work unless they have been waiting for a response to their asylum claim for 12 months. Even then they are allowed to work only in occupations featured on the government's "shortage occupations" list.

II.B.- LITERATURE REVIEW. Recent studies of massive forced immigration and its economic impact in Turkey

At the beginning of 2018, the number of Syrian refugees registered by UNHCR was about 5.5 million. Around 62% of these are settled in Turkey, and we have reason to believe that a relevant share of them are forced migrants who wanted to migrate onwards but were forced to stay in Turkey or were even returned from the third country on their journey to other European destinations pursuant to the EU–Turkey 2016 agreement.[11] Actually, according to the field survey conducted by Kuschminder and Koser (2016), 80% of Syrian refugees settled in Greece and Turkey were planning to migrate onwards. Similarly, Ipsos Research Company and the Human Development Foundation (INGEV 2017) carried out fieldwork in 2017[12] showing that although some 52% of the Syrian refugees said that they were planning to build their future in Turkey and 74% wanted to acquire Turkish citizenship, 42% were planning to move to European countries. Moreover, we must also remember that the temporary subsidiary protection obtained by Syrian refugees prevents them from applying for asylum in a third country, limiting their mobility. Clearly, this episode constitutes a perfect example of double-forced massive immigration in a middle-income country.

Figure II.4: Distribution of Syrian refugees in the Mediterranean area.



Source: UNHCR (2017c).

Technically speaking, as pointed out by Akgündüz, van den Berg, and Hassink (2015), migration caused by the Syrian civil war in Turkey presents some interesting differences compared to other cases, with studies also focusing on forced migration waves. First, Syrian migrants fled to Turkey at a dramatic speed; second, Syrians were not selected or self-selected into migration; and third, the migrants are unevenly distributed geographically (both in refugee camps and elsewhere). These three features help researchers cope with bias selection problems in the identification by using the diff-in-diff approach or equivalent strategies. A strikingly interesting advantage of this immigration crisis–based analysis is that official statistics do not count Syrian refugees, so even if the lack of data is invariably an analytical handicap, data are not polluted when we aim to explore the effects of immigration on natives. This statistical characteristic provides a quasi-experimental framework with which to compare the pre- and post-effects of Syrian refugees on different economic variables such as salaries, unemployment and the value added by just the native population.

[11]. To stem the flow of migrants crossing into Europe, the EU signed a deal with Turkey (the EU–Turkey Statement of March 18, 2016) that aims to return to Turkey migrants who do not have an asylum claim.
[12]. Including 10 cities hosting 79% of refugees—Istanbul, Şanlıurfa, Hatay, Gaziantep, Adana, Mersin, Kilis, Mardin, Bursa and İzmir—and a total of 1,282 face-to-face interviews.

Tumen (2016) estimated the impact of Syrian refugees on labour markets, consumer prices and housing rents associated with the "initial shock"[13] caused by the refugee inflow. The author used labour market outcomes' micro-data in a diff-in-diff model approach for a group of treatment regions versus control areas, comparing pre- and post-refugee periods. The results for the labour market matched the standard mixed results, depending on the complementarity or substitutability between refugees' and native workers' skills: reduction of the likelihood of getting a job for natives in the informal labour market (where immigrants may compete with natives) and a small increase in the employment-to-population ratio in the formal labour market (where immigrants are poor substitutes). The impact on the informal labour market can be explained by two factors: first, informality is huge in the refugee-receiving regions (50% before the inflows started), and second, Syrian refugees were not granted official work permits during the period under study. Overall, the author did not identify any significant effect of the refugee inflows on the wage earnings of the native individuals, either for formal or informal workers. The effect on prices was found to be negative, especially for the case of informal labour-intensive sectors, which happens to be in line with the negative supply-side price effect reported by Zachariadis (2012).[14] Finally, the author reports an important increase in housing rents, especially for high-quality rental units. According to the author, this conclusion could be explained by an increase of residential segregation, which suggests that the refugee wave has increased the demand for better and safer neighbourhoods, especially among natives.

The work of Ceritoglu et al. (2017) is merely a much more detailed version of Tumen's (2016) IZA paper, with the addition of some robustness checks and some important reasoning for the modelling settings and identification strategy, but without any additional findings.

Akgündüz, van den Berg, and Hassink (2015) also used a diff-in-diff approach with aggregated data for 26 provinces to study how the Syrian refugee influx in Turkey had affected food and housing prices, employment rates and internal migration. In this case, identification strategy and exogeneity issues were addressed by comparing refugee camp areas (as treatment) with the remaining regions of Turkey (as the control group) during the first years of the Syrian influx into Turkey (2012 and/or 2013 as treatment years and previous years as controls). In contrast with Tumen (2016) or Ceritoglu et al. (2017), they found a significant increase in food and housing prices in regions hosting refugees, which neglected any supply-side price-negative effect but was consistent with the theoretical framework whereby higher demand leads to higher inflation. Moreover, they did not identify any employment effects for natives. As possible explanations, and following Borjas (2006), the authors suggested that the lack of effects on employment may be partly explained by the negative effect on net migration – that is, a decline in the internal mobility of Turks towards main hosting regions.

Del Carpio and Wagner (2015) is perhaps one of the most well-known papers on the effects of Syrian immigration into Turkey. Technically speaking, the authors opted for an IV specification using subregional data and instrumenting refugees by distance between subregions and origin governorates in Syria. Their results showed large-scale displacement of natives in the informal

[13]. Described by the author as the "rapid and massive movement toward the nearest neighbor during 2012 and 2013".

[14]. Initially, we would expect a positive effect on prices as immigration increases overall demand, but Zachariadis reported that the composition of demand (because of immigrant consumption) can change in a manner that negates any positive price effects. Additionally, we may find a second supply-side negative price effect because of lower prices or services produced by immigrants caused by a downward pressure on production costs for items more intensive in immigrant labour.

labour sector of around six natives for every ten refugees, irrespective of gender, age and education. Additionally, they reported increases in formal employment for the Turkish,[15] which is consistent with occupational upgrading whereby lower production costs expand output and increase the demand for formal workers. This large displacement effect is in contrast with much of the voluntary immigration literature and, as an explanation, the authors suggested two particular characteristics of the Syrian refugees' wave into Turkey that may explain this greater short-term impact: it was relatively sudden and not driven by the availability of jobs in Turkey.

Kuyumcu and Kösematoğlu (2017) attempted to explore the economic impact of Syrians on growth, the labour market, trade and factor markets. The text is merely descriptive, and the authors illustrated their conclusions with simple comparisons of some macroeconomic magnitudes before and after the refugee upsurge that cannot be considered factual findings. For the GDP growth, the labour market and the trade side-effects, the article does not provide any specific methodology to account for the economic impact, offering only various opinions and conclusions, whether positive or negative, from other papers. A similar critique can be made of the Cato Institute (2016) report, which only offers some very basic macro-data differences, supposedly related to the refugee influx but without any empirical support or evidence.

Other interesting studies are not focused mainly on labour market effects or inflation. For example, Ozpinar, Basihos, and Kulaksiz (2015) examined investment and trade relations with Syria after the refugee influx. Their findings illustrate that Syrian refugees are becoming economic actors in Turkey in terms not only of their labour supply but also of their entrepreneurial skills. In effect, the number of companies opened by Syrians increased by around 168% between 2014 and 2016 (TOBB 2017). At the end of 2016, the number of Syrian companies reached around 4,793 firms, and the total amount of capital of these businesses was around 247 million TL. Out of 4,793 foreign capital companies registered in 2016, 1,764 belonged to Syrians (TOBB 2017). The Syrians' share, both in number of firms and in total capital, increased during 2014–2016.

[15]. Though only for men who had not completed high school education.

Part III

ECONOMIC IMPACT OF THE SYRIAN REFUGEES ON TURKEY. Methodology and Simulation Results

III.A.- METHODOLOGY

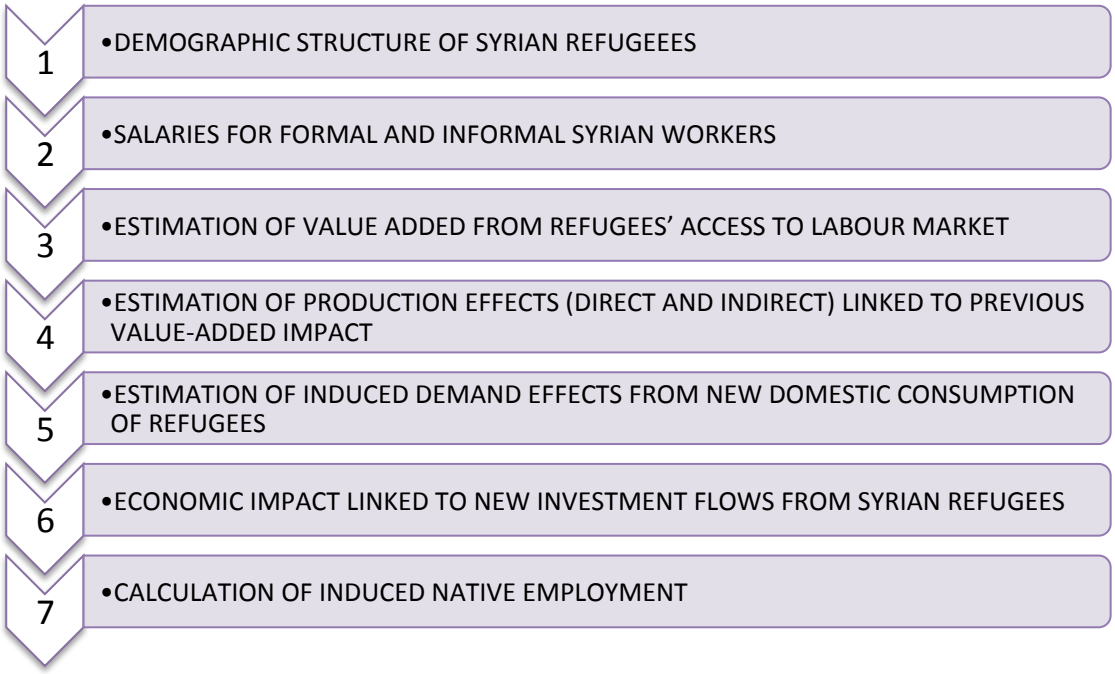
The simulation exercise proposed in this research is focused on the economic impact of two main "inputs" in the Turkish economic system:

1) The effect of the refugees' access to the Turkish labour market.
2) The effect of the new investment generated by Syrians' capital through saving within the country.

Under this framework, an input–output approach (IO) is used to estimate the global effect of both inputs in the economy, distinguishing two separate components: the production effect and the induced demand effect. By using this methodological approach, we are explicitly considering the intersectoral linkages of the Turkish economy, enabling us to expand the focus of a classic impact study (see Arce and Mahia 2013 and 2014 for details). In effect, the standard estimation of these impacts is conducted within a narrow framework, assuming that the value-added aggregated impact can be assessed by computing wages paid in the economy to these new foreign workers. Unfortunately, this approach does not take into account the crucial effects on the rest of the interlinked economic activities (and even, inside the value-added rubric, the effect of new salaries over the operating surplus, production taxes and subsidies). In this sense, we are able to capture the "second derivatives" of this complex process or, using input–output (IO) jargon, direct and indirect effects.

The simulation process follows the structure summarised in the following figure. The aims, calculations and hypotheses considered at each step will be detailed concisely in a specific subsequent subsection for each stage.

Figure III.1: Simulation process.



Before describing the simulation process and main results, we must first clarify a critical assumption considered under our IO structure. In this first exercise, we are assuming no negative net side effects for native workers (neither in employment levels nor in salaries) because of the incorporation of Syrian refugees into the Turkish labour market. This assumption is not perfectly clear in the literature of recent years. The net effects remain unclear and are commonly described as a combination of some negative effects for the informal labour market and positive ones for the formal side (see Tumen 2016; Akgündüz, van den Berg, and Hassink 2015; and Del Carpio and Wagner 2015, among others).

a. DEMOGRAPHIC STRUCTURE OF SYRIAN REFUGEES IN TURKEY

According to official DGMM (2018) statistics, the number of Syrian refugees, as of December 31, 2017, was approximately 3,350,000 persons, distributed by age and gender as shown in Table 1.

Although the distribution of activity rate is not crucial to our simulation scheme, we have tried to be consistent with different data sources, such as the official data of ACNUR and the INGEV&IPSOS Survey (2017). INGEV&IPSOS (2017) carried out a survey that estimated a global 35% occupation rate among Syrian refugees. Considering slightly different percentages across different ages, the simulation input, in terms of new employment, could be summarised through the following figures:

Table III.1: Simulation Inputs: Population and Employment

	Age Structure (%)		# Refugees		Occupation Rate (%) [(1)]		# Employed	
Age	Male	Female	Male	Female	Male	Female	Male	Female
0–4	6.9	6.3	244,950	223,650	–	–	–	–
5–11	12.5	11.7	443,750	415,350	–	–	–	–
12–17	4.5	3.7	159,750	131,350	*4*	*4*	*6,390*	*5,254*

18–59	28.7	22.4	1,018,850	795,200	*34*	*34*	*346,409*	*270,368*
60+	1.6	1.7	56,800	60,350	*23*	*23*	*13,064*	*13,881*
Total	54.2	45.8	1,924,100	1,625,900	*34*	*33*	*365,863*	*289,503*

Source: IPSOS Survey (2017) and authors' assumptions (in italics).

(1) Employment / Total population

According to these figures, the total number of **Syrian refugees as new workers in the Turkish labour market in 2017 could be about 655,000 persons** (most in the 18- to 60-year-old age group).

For the long term, we must make several assumptions:

- New inflows and/or return flows of Syrian population. Given the complexity of the Syrian conflict and its recent evolution, we are fairly unlikely to see any prompt solution that could generate a massive return of refugees to their homeland during the next few years. Considering some return flows on the one hand, and some new inflows on the other, we deem it reasonable to consider a conservative scenario whereby we assume **a net zero entry–exit balance. For the activity rate, we will consider a moderate increase.** Because Syrians live mostly in the southeast region of Turkey, we took as references the NUTS-2 provinces and the TRC 3 Region activity rate's recent progress (5% increase in the region during the 2007–2017 period, based on the TurkStat database). According to this reference, we assume that the activity rate will be around 21% in the five-year horizon and 23.5% in the ten-year horizon.
- Changes in the demographic structure and level of Syrian employment. **Even if net flows remain insignificant during the simulation period, we may assume the natural evolution of the current Syrian population in Turkey**. That simply means that we need to adjust the volume of people in each age bracket according to each future simulation period. Such a demographic adjustment has a highly important impact on simulation results for 2023 and 2028, because although half of Syrian refugees were younger than 18 in 2017, as time passes by, they will progressively move into older age brackets with high activity rates, upon which the volume of the active Syrian population and employment will increase vigorously. In fact, keeping the occupation rate unchanged (see Table 1), the volume of Syrian workers in Turkey would increase from 655,000 persons in 2017 to 777,000, reaching approximately 1,000,000 by 2028. Although this increase may appear enormous, on an annual basis, it is equivalent to a 4% rise for each year during the period 2017–2028, a growth rate that is consistent with Turkish data; in Turkey, the average of the TRC2 and TRC3 (NUTS-2 level) working-age (15+) and labour force population increased by 40 and 38% during 2004–2013, or roughly 4% and 3.8% annually.

b. SALARIES FOR FORMAL AND INFORMAL SYRIAN WORKERS

To estimate the direct production effect component of the value added, we start by computing, for migrant workers, the compensation of employees for every year and sector. For that purpose, available data on earnings of regular migrants across the different sectors are collected and a hypothesis regarding the wages of irregular migrants is assumed.

Once again, the lack of official and accurate data imposes the need for some assumptions for the time period covered, and the use of indirect information from field works such as the INGEV&IPSOS Survey (2017) and from several governmental sources. For example, DGMM (2016) reported the total number of work permits on an annual basis and by nationality.

Additionally, the Ministry of Labour and Social Security (CSGB) publishes the number of work permits of foreigners, in terms of both sector distribution and nationality (Turk KIZILAYI 2018 and TBMM 2018).

According to INGEV&IPSOS (2017), refugees work mainly in the textile, manufacturing and services sectors. Gerşil and Temel (2016) also reported the sectoral distribution of foreign workers. Considering this partial information, we assume the following sectoral distribution for Syrian workers in the Turkish labour market for 2018:

Table III.2: Number of Syrian workers by economic activity (2017)

	% Workers	Formal 10%	Informal 90%	Total 100%
A. Agriculture, Forestry and Fishing	25%	16,384	147,457	163,841
B. Mining and Quarrying	1%	328	2,949	3,277
C. Manufacturing	20%	13,107	117,966	131,073
DE. Electricity, Gas, Steam, Air Conditioning Supply, Water Supply and Sewerage, and so on	1%	655	5,898	6,554
F. Construction	14%	9,175	82,576	91,751
G. Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	20%	13,107	117,966	131,073
H. Transport and Storage	2%	1,311	11,797	13,107
I. Accommodation and Food Service Activities	5%	3,277	29,491	32,768
J. Information and Communication	1%	655	5,898	6,554
K. Financial and Insurance Activities	1%	655	5,898	6,554
L. Real Estate Activities	1%	655	5,898	6,554
M. Professional, Scientific and Technical Activities	1%	328	2,949	3,277
N. Administrative and Support Service Activities	1%	655	5,898	6,554
O. Public Administration and Defence; Compulsory Social Security	0%	0	0	0
P. Education	1%	655	5,898	6,554
Q. Human Health and Social Work Activities	1%	655	5,898	6,554
R. Arts, Entertainment and Recreation	1%	655	5,898	6,554
STU. Other Social, Community and Personal Service Activities	5%	3,277	29,491	32,768
Total	**100%**	**65,537**	**589,829**	**655,366**

Source: Authors' estimates

In the previous figures, **we have assumed 10% versus 90% distribution for formal/informal employment,** again taking into account the data from the INGEV&IPSOS (2017) field work. Of employees, 34% are unregistered and 4% are working in the agricultural sector (10% are paid workers). The proportion of paid workers in nonagricultural sectors is 60%. The majority of Syrian refugees have low education levels and work in labour-intensive sectors with high informality; we assume that labour mobility will be insignificant for the next decade and therefore presuppose that the formal versus informal proportion of Syrian workers will remain around 10/90 in 2023 and 15/85 in 2028.

For the calculation of salaries, the basic assumption is that Syrians workers will be paid as unskilled Turkish employees during the entire simulation period (2017–2028); accordingly, we have collected official data on salary per person for elementary occupations across different

sectors. Apart from considering wages for elementary occupations, we have made two additional adjustments:

- A penalty of 25% for wages paid to informal workers compared to the formal labour market
- An additional wage penalty of 5% for Syrian workers in either the formal or informal labour market, based on a lack of labour integration

Considering these two adjustments, our initial assumption is that Syrian workers would earn **75% of Turkish unskilled workers' salaries in 2017 and 85% in 2023, progressively converging to 100%** for the end of the simulation period (2028). Under this framework, **we estimate the following figures for the Syrian salaries in each sector**:

Table III.3: New salaries by economic activity (2017)

Yearly wage per person (Turkish liras – 2012 IO table basis)

	Formal Labour Market	Informal Labour Market
A. Agriculture, Forestry and Fishing	380	288
B. Mining and Quarrying	24,044	18,223
C. Manufacturing	11,033	8,362
DE. Electricity, Gas, Steam, Air Conditioning Supply, Water Supply and Sewerage, and so on.	15,202	11,521
F. Construction	8,035	6,090
G. Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	8,013	6,073
H. Transport and Storage	12,147	9,206
I. Accommodation and Food Service Activities	8,314	6,301
J. Information and Communication	13,315	10,091
K. Financial and Insurance Activities	20,927	15,861
L. Real Estate Activities	3,827	2,900
M. Professional, Scientific and Technical Activities	5,970	4,525
N. Administrative and Support Service Activities	9,167	6,947
O. Public Administration and Defence; Compulsory Social Security	–	–
P. Education	11,819	8,957
Q. Human Health and Social Work Activities	9,777	7,410
R. Arts, Entertainment and Recreation	13,.657	10,351
STU. Other Social, Community and Personal Service Activities	5,408	4,098
Total	380	288

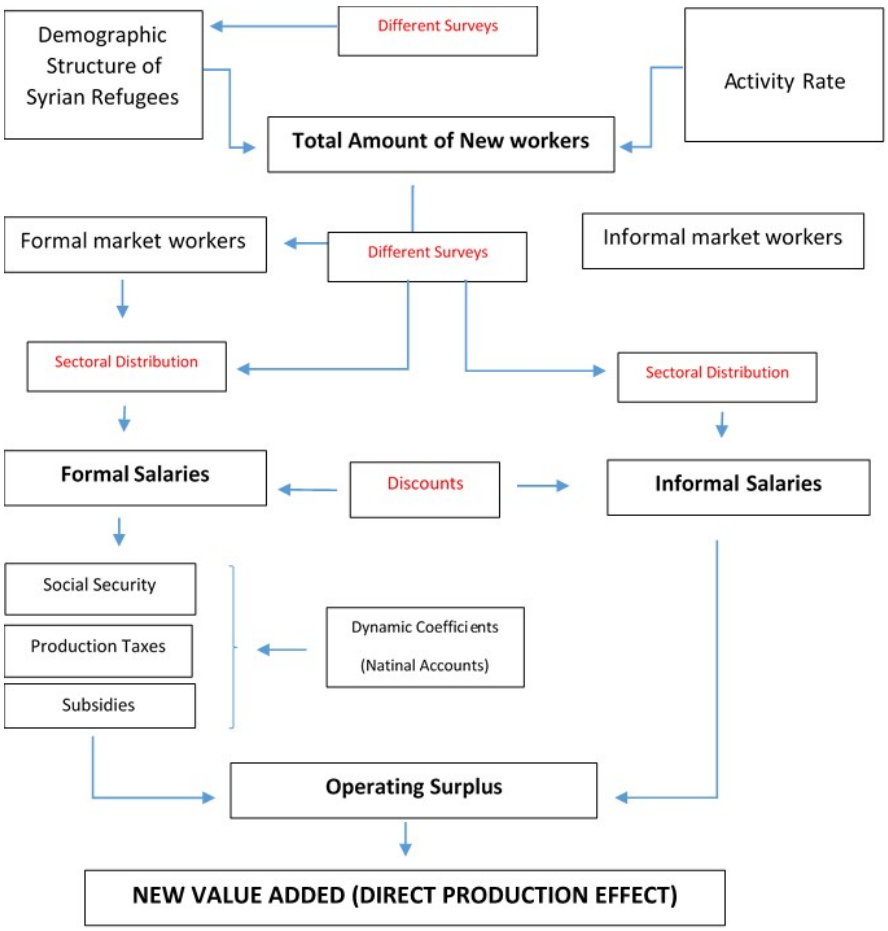
Source: Own calculations from primary sources and hypotheses described in the preceding text.

Considering the number of occupants in each sector and the previous figures for salaries per person, we can then compute the total compensation of employees across different sectors (taking the figures from the 2012 IO table as our base reference), to be used as a first input for the estimation of direct new value added to the Turkish economy according to the Leontief/Ghosh methodology.

c. ESTIMATION OF PRODUCTION EFFECTS (DIRECT AND INDIRECT) LINKED TO PREVIOUS VALUE-ADDED IMPACT

Following the simulation logic, we can now obtain the total new value added by the Syrian workers. At this stage, our main concern is to estimate the impact of the new salaries in the economy in terms of the other components of the value added: taxes/subsidies, social security expenditures and, finally, new operating surplus. Under this framework, we will apply the dynamic coefficients of each of these magnitudes, from both the IO structure and recent information from National Accounts. For each of the economic activities on a 10 branches disaggregation basis, the National Accounts statistics offer more up-to-date information thanks to its quarterly nature as well as the time series evolution over the last decade. Therefore, using these data, we can employ a simple regression model to estimate the evolution over the next few years (simply by taking into account the trend).

Figure III.2: Value-added estimation process.



Source: Authors (in red, simulation assumptions).

Using the yearly data from National Accounts, we compute the aggregate ratio relating to the compensation of employees (COE) and gross operating surplus (GOS) across every sector:

$$Coef\_GOS_{st} = \frac{GOS_{st}}{COE_{st}} \qquad [1]$$

From this result, we can obtain the migrant worker-related effect on gross operating surplus ($GOSM_{st}$):

$$GOSM_{st} = Coef\_GOS_{st} * COEM_{st} \quad [2]$$

Following an identical procedure, the taxes less subsidies ($TLSM_{st}$) on production and imports is also derived:

$$Coef\_TLS_{st} = \frac{TLS_{st}}{COE_{st}} \quad [3]$$

$$TLSM_{st} = Coef\_TLS_{st} * COEM_{st} \quad [4]$$

Summing up compensations, operating surplus and net taxes, we obtain the direct production effect:

$$VADPEM_{st} = COEM_{st} + GOSM_{st} + TLSM_{st} \quad [5]$$

d. PRODUCTION EFFECTS OF THIS NEW VALUE ADDED (DYNAMIC GHOSH MODEL)

At this stage of the simulation exercise, we do not need to include more assumptions. The Ghosh model will be applied using its well-known expressions.

To obtain the total production effect (TPEM), we must compute the effect caused by sector interrelationships in the economy, using the Ghosh equation from an IO scheme:

$$TPEM_t = VADPEM_t (I - D)^{-1} + \left[(TR + M + VAT)D\right](I - D)^{-1} \quad [6]$$

where VADPEMt is the (Sx1) vector containing sector VADPEMst values, D is the matrix of the IO distribution coefficients and TR, M and VAT are, respectively, the transfers, imports and taxes vectors from the selected IO table.[16] Finally, we translate the effective production effect TPEMt into a total production effect on value added using the IO ratio between VA and effective production (P) for each sector:

$$Coef\_VA_s = \frac{VA_s}{P_s} \quad [7]$$

$$VATPEM_{st} = Coef\_VA_s * TPEM_{st} \quad [8]$$

e. INDUCED DEMAND EFFECTS OF DOMESTIC CONSUMPTION OF REFUGEES (DYNAMIC LEONTIEF MODEL)

Once the "production effect" has been estimated, we measure the so-called induced demand effect, derived from the private consumption of migrant workers. We can then use the Leontief model to connect the aggregate migrant earnings for every year's $COEM_t$ with the final demand vector in the IO system.

The first step is to compute the migrants' consumption disposable yield for each year (CDY_t) by deducing from total earnings, fiscal pressure (FP_t) and the saving and remittance rate $(SRR)_t$:

$$CDY_t = COEM_t (1 - FP_t - SRR_t) \quad [9]$$

[16]. Distribution coefficients represent the proportion of final production for each sector that is bought for the other sectors.

According to OECD statistics on "average personal income tax on gross labour income"[17] for 2017, the average wage tax percentage is around 20% for salaries below 60% of the national wage average. Considering that refugees are supposed to earn even less than their native counterparts (as most of them work in low-skill jobs for minimum salaries and mostly in the informal market), we will arbitrary assume a very low fiscal pressure percentage of around 10%. We will also assume a very low saving and remittance rate of around 2%.

Then we simply estimate the consumption vector by branches by considering a given consumption basket for migrant population and thus filling the demand IO column (Sx1) vector FD_t. We finally apply the classical IO equilibrium equation known as "Leontief's inverse" to get the total induced demand effect vector ($TIDEM_t$):

$$\mathrm{TIDEM}_t = (\mathrm{I} - \mathrm{A})^{-1}\mathrm{FD}_t \qquad [10]$$

where A is the technical coefficient matrix. Once again, to translate this effective production impact into value-added terms, we use the IO ratio between VA and effective production (P) for each sector:

$$\mathrm{Coef\_VA}_s = \frac{\mathrm{VA}_s}{\mathrm{P}_s} \qquad [11]$$

$$\mathrm{VATIDEM}_{st} = \mathrm{Coef\_VA}_s * \mathrm{TPEM}_{st} \qquad [12]$$

To compute the employment creation for each year and sector ($EMTIDEM_{st}$) linked to this value-added total induced effect, we use the sector ratios obtained from annual National Accounts:

$$\mathrm{Coef\_Emp}_{st} = \frac{\mathrm{Empl}_{st}}{\mathrm{VA}_{st}} \qquad [13]$$

$$\mathrm{EMTIDEM}_{st} = \mathrm{Coef\_Emp}_{st} \cdot \mathrm{VATPEM}_{st} \qquad [14]$$

f. ECONOMIC IMPACT OF SYRIAN REFUGEES INVESTMENT (LEONTIEF MODEL)

According to available information (TOBB 2018), Syrian refugees have dramatically increased levels of investment in Turkey during recent years. Capital inflows from Syria can be estimated at around 179,032 million Turkish liras, representing around 0.5% of gross fixed capital formation.

For the next 5 years, we will assume that the share of Syrian investment in relation to national investment will remain at around 0.5 % during the entire simulation period, growing at the same rate than Turkish GDP.[18]

For the distribution of investment across different economic branches, we have simply followed the 2012 IO table of gross capital formation distribution. The final figures are illustrated in Table 4:

[17]. OECD online tax database, July 2017.

[18]. We assume an annual GDP growth of 4.5% for the first five years (2018–2022) and of 4% for the next five (2023–2028).

Table III.4. New investment in Turkey coming from Syrian refugees (2017)

(Thousands of Turkish liras – 2012 IO table basis)

Economic activity	**2017**
A. Agriculture, Forestry And Fishing	1,210,000
B. Mining And Quarrying	75,000
C. Manufacturing	21,422,000
DE. Electricity, Gas, Steam, Air Conditioning Supply, Water Supply And Sewerage Etc	515,000
F. Construction	32,526,100
G. Wholesale And Retail Trade; Repair Of Motor Vehicles And Motorcycles	82,430,950
H. Transport And Storage	2,574,200
I. Accommodation And Food Service Activities	3,236,850
J. Information And Communication	2,860,800
K. Financial And Insurance Activities	500,000
L. Real Estate Activities	17,305,700
M. Professional, Scientific And Technical Activities	4,107,300
N. Administrative And Support Service Activities	5,923,400
O. Public Administration And Defence; Compulsory Social Security	0
P. Education	1,535,000
Q. Human Health And Social Work Activities	650,000
R. Arts, Entertainment And Recreation	5,000
STU. Other Social, Community And Personal Service Activities	2,155,000
Total	**179,032,300**

Source: Own calculations from primary sources and the hypotheses described in the preceding text.

g. NATIVE EMPLOYMENT GENERATION

The last step in the simulation consists of a simple calculation of native employment induced from the activity, consumption and investment of Syrian refugees.

To obtain a reasonable estimation of native employment generation, we start by considering the employment creation linked with the indirect production effect and indirect induced demand effect. Then we simply consider that new employment will be occupied by natives in the same proportion as currently (between 95% and 100%, depending on the sector). We need to clarify that the hypothesis assumed is a very simplistic one, because given the regional concentration of refuges, it is more than probable that a high share of the new indirect employment could be also occupied by other migrants; if so, our figures for induced native employment could be biased upwards.

III.A.- SIMULATION RESULTS[19]

a. Annual Results for 2017

- **The total value-added impact** generated by the occupations of Syrian refugees in the Turkish economy was an estimated 27.2 billion TL at the end of 2017, representing 1.96% of total Turkish GDP.
- **Production effect** is estimated at 1.51% of GDP for 2017. This impact supposes an increase in production of 30.59 billion TL across different sectors, generating 20.9 billion TL of value added.
    - This production effect is primary linked to the dynamics directly induced by the employment of 655,366 Syrians in the labour market; this direct effect is estimated at 1% of GDP for 2017.
    - This direct effect spreads through the whole economy, stimulating an indirect production effect estimated at 0.5% of GDP.
    - This indirect production effect generates new native employment estimated at around 57,900 persons for 2017.
- **Induced demand effect** accounts for the rest of global impact, for 0.45% of GDP in 2017. This induced demand effect implies new production estimated at around 11.7 billion TL, generating 6.2 billion TL in value added.
    - This induced demand effect is essentially produced by direct consumption and investment of Syrian population; the direct effect is estimated at 0.3% of GDP for 2017.
    - This direct demand effect spreads through the whole economy, stimulating an indirect demand effect estimated at 0.12% of GDP for 2017.
    - This indirect demand effect generates new native employment estimated at around 74,500 persons for 2017.
- All in all, **native employment induced by Syrian economic integration** (from both production and demand effects) was an estimated 132,454 persons in 2017.

- The direct impact of Syrian economic integration **is spread unevenly across different sectors**, reflecting the greater or lesser presence of Syrian workers in the production effect and specific consumption and investment patterns.

    - The manufacturing, energy, construction, transport/storage and services sectors experience significant value-added impact from Syrian workers in terms of the production effect.
    - From the demand side, the wholesale and retail trade, real estate activities, manufacturing and energy sectors experience the greatest impacts from Syrian demand/consumption.
    - The impact on native employment is especially relevant for the agricultural, manufacturing, wholesale and trade, construction, accommodation and food services sectors.
    - Tables A.1–A.9 (see annex) provide detailed information about impact on different branches, both for direct and indirect production and induced demand effects.

- Details provided by the simulation schema support the idea that enhancing employment opportunities for refugees by improving their education and skills, promoting

[19]. Results in billions of TL, expressed as 2012 equivalent prices.

entrepreneurial capacity and providing work permits in well-targeted sectors will further increase refugees' contribution to economic growth.

- The following sectors should be chosen to create new employment opportunities for Syrian refugees: manufacturing, energy, construction, transport and storage, and service.
- From the demand side, the following sectors should promote investment opportunities: wholesale and retail trade, real estate activities, manufacturing and energy.

-

b. Mid- and Long-Term Impact

- According to the set of hypotheses described in the main section of the report, the impact of Syrian economic integration will moderately increase during the first five years and will accelerate between 2023 and 2028 in response to the growth pattern of Syrian working-age population and employment.
- Working-age population[20] will increase 15% between 2017 and 2023 and then step up an additional 33% between 2023 and 2028. In proportion to this working-age population, total Syrian employment is projected to grow at an annual 3.5% during the first five years and at 5.5% annually between 2023 and 2028.
- At the end of the simulation period, the number of Syrian workers is projected to be around 1,000,000.
- According to this growth pattern of Syrian employees, the annual economic impact of Syrian integration will double, from 1.96% of GDP in 2017 to 4.05% of GDP in 2028.
- Induced native employment generated by Syrian integration is projected to reach a total of 265,000 Turkish employees at the end of the simulation period.

Table III.5: SUMMARY OF SIMULATION RESULTS
By year and source of impact

	2017	2023	2028
REFUGEES in the Labour Market	**655,366**	**777,060**	**1,013,703**
PRODUCTION EFFECT (Ghosh Model)			
Production (Thous. Turkish Liras)	30,591,356	42,081,176	63,684,955
Value Added (Thous. Turkish Liras)	20,974,215	28,851,930	43,664,032
% over Value Added	1.51%	2.08%	3.15%
Direct Effect (%)	1.03%	1.42%	2.15%
Indirect Effect (%)	0.48%	0.66%	1.00%
Induced Employment of Natives (Accumulated)	57,919	79,266	118,778
INDUCED DEMAND EFFECT (Leontief Model)			
Production (Thous. Turkish Liras)	11,720,194	16,038,275	23,573,486
Value Added (Thous. Turkish Liras)	6,178,267	8,458,736	12,438.,37
% over Value Added	0.45%	0.61%	0.90%
Direct Effect (%)	0.32%	0.44%	0.65%
Indirect Effect (%)	0.12%	0.17%	0.25%
Induced Employment of Natives (Accumulated)	74,535	101,311	147,213
TOTAL EFFECT (Production + Induced Demand)			

[20]. 18 years old or older.

Production (Thous. Turkish Liras)	42,311,549	58,119,452	87,258,441
Value Added (Thous. Turkish Liras)	27,152,482	37,310,665	56,102,269
% over Value Added	1.96%	2.69%	4.05%
Direct Effect (%)	136%	1.86%	2.80%
Indirect Effect (%)	0.60%	0.83%	1.25%
Induced Employment of Natives (Accumulated)	132,454	180,577	265,991

Source: Own elaboration.

EXECUTIVE SUMMARY

Turkey has been exposed to the most intensive refugee influx ever seen since the beginning of the Syrian civil war in 2011. After the Syrian conflict which has turned into the refugee crisis in March 2011, more than 5.2 million Syrian refugees has been displaced into Turkey, Lebanon, Jordan, Iraq and Egypt. With over the 3.5 million refugees, Turkey currently hosts the largest refugee population in the world. Turkey has faced the challenge how to handle the refugee crisis. The agreement between EU and Turkey which came in force in March 2016 declares that Turkey will commit to close borders to refugees going to Europe and also to guarantee receiving those back into Turkey.

In this context, Turkey's integration policies of refugees are under continuous examination either in relation to the integration costs of migrants and in terms of their economic contribution. **The main purpose of the research project is to simulate the medium and long-term aggregated economic impact of refugees in Turkey by using an input-output analysis.** The scenarios for 2017, 2023 and 2028 are expected to enable a coherent design of an integration road map for refugees to analyze future impacts in a broader perspective. From a policy-oriented perspective, the understanding of medium- and long-term positive effects could help counterbalance the narrow and negative short-term vision of public opinion on the refugees' impact, turning "crisis-cost approach" into "opportunity-window idea". Moreover, the valuation of different scenarios for 2017, 2023 and 2028 will assist policymakers in crafting a coherently designed integration roadmap for future refugees seeking a more benign impact.

The research has some interesting distinctive features. Its focus on a middle-income labor abundant hosting country is not very usual in the field of research about the effects of migration on a hosting economy. The interest of Turkey, as a transit country, as a bridge between east and west, is also a very particular case of interest and does not exactly match the typical paradigm north to south migration. Besides, the double forced migration (forced to leave Syria and forced to stay in Turkey) has not been frequently observed.

The main source of Syrian refugees' income in Turkey consists on their wages (85 percent of their total earnings). The rate of getting any social benefit, on a regular or irregular basis, is only 13 percent which means that 87 percent of the Syrians is still not receiving social aid.

Based on the official resources and research reports, the number of Syrian refugees employed informally is estimated at around 650,000 (around 40 percent of Syrian active

population residing in Turkey. Most Syrian are working in the informal sector under exploitative conditions, meaning long working hours, unsafe conditions, lack of guaranteed payment, and low wages. In a survey conducted by AFAD in 2013, **the average income of working Syrians in Turkey was 236 USD, roughly half of the national minimum wage for that year**. Although the number of working permission is quite low, part of Syrians employees are formal workers employed in the service sector followed by industry, construction and agriculture. Entrepreneurial capacity of Syrian refugees in Turkey can be represented by the share of Syrian firms and amount of their capital in the total number of firms and amount of capital respectively. Between 2013 and 2017, average share of joint-stock companies of Syrian refugees is 4.08 percent in total foreign joint-stock companies and the share of limited companies is also 28.06 percent in the total. Share of the Syrians both in terms of number of firms and total amount of capital has increased during the 2013-2017 period.

An input–output approach (IO) is used to estimate the economic contribution of Syrian refugees linked to (1) their access to Turkish labour market and (2) the new investment generated by Syrians' capital through saving within the country. This methodological approach allows to compute the production effect and the induced demand effect. By using this methodological approach, we are explicitly considering the intersectoral linkages of the Turkish economy, enabling us to expand the focus of a classic impact study.

Results for 2017 (short term impact)

- **The total value-added impact** generated by the occupations of Syrian refugees in the Turkish economy was an estimated 27.2 billion TL at the end of 2017, representing 1.96% of total Turkish GDP.
- **Production effect** is estimated at 1.51% of GDP for 2017. This impact supposes an increase in production of 30.59 billion TL across different sectors, generating 20.9 billion TL of value added.
- **Induced demand effect** accounts for the rest of global impact, for 0.45% of GDP in 2017. This induced demand effect implies new production estimated at around 11.7 billion TL, generating 6.2 billion TL in value added. This induced demand effect is essentially produced by direct consumption and investment of Syrian population; the direct effect is estimated at 0.3% of GDP for 2017.
- All in all, **native employment induced by Syrian economic integration** (from both production and demand effects) was an estimated 132,454 persons in 2017.
- The direct impact of Syrian economic integration **is spread unevenly across different sectors**, reflecting the greater or lesser presence of Syrian workers in the production effect and specific consumption and investment patterns.
- Details provided by the simulation schema support the idea that enhancing employment opportunities for refugees by improving their education and skills, promoting entrepreneurial capacity and providing work permits in well-targeted sectors will further increase refugees' contribution to economic growth.

Mid- and Long-Term Impact

- According to the set of hypotheses described in the main section of the report, **the impact of Syrian economic integration will moderately increase during the first five years** and will accelerate between 2023 and 2028 in response to the growth pattern of Syrian working-age population and employment.
- Working-age population[21] will increase 15% between 2017 and 2023 and then step up an additional 33% between 2023 and 2028. In proportion to this working-age population, total Syrian employment is projected to grow at an annual 3.5% during the first five years and at 5.5% annually between 2023 and 2028.
- **At the end of the simulation period, the number of Syrian workers is projected to be around 1,000,000.**
- **According to this growth pattern of Syrian employees, the annual economic impact of Syrian integration will double, from 1.96% of GDP in 2017 to 4.05% of GDP in 2028.**
- Induced native employment generated by Syrian integration is projected to reach a total of 265,000 Turkish employees at the end of the simulation period.

[21]. 18 years old or older.

Annex (Detailed Simulation Results Tables)

Table A.1. Production Effect 2017

SECTOR / BRANCH	Supply (Production) IMPACT					
	Production	Value Added				Induced Native Employment
	Turkish Liras	Turkish Liras	Impact in %			
			Total	Direct	Indirect	
A. (Primary Sector) (1)	2,547,784	2,265,972	2.0%	1.5%	0.5%	14,473
B. (Mining And Quarrying)	349,401	298,057	1.6%	1.2%	0.4%	282
C. (Manufacturing)	10,552,098	5,379,588	2.1%	1.3%	0.8%	10,799
DE. (Energy) (2)	1,548,670	690,678	1.8%	1.0%	0.8%	467
F. (Construction)	4,479,642	3,103,906	2.8%	2.0%	0.8%	4,994
G. (Wholesale And Retail Trade) (3)	3,581,985	3,200,545	1.8%	1.5%	0.3%	7,093
H. (Transport And Storage)	1,849,725	1,273,724	1.0%	0.5%	0.5%	2,423
I. (Accommodation And Food Service Activities)	974,117	751,038	1.8%	1.2%	0.6%	3,723
J. (Information And Communication)	457,743	380,748	0.9%	0.6%	0.3%	406
K. (Financial And Insurance Activities)	429,356	363,474	0.8%	0.5%	0.3%	433
L. (Real Estate Activities)	1,654,680	1,594,513	1.1%	0.9%	0.2%	317
M. (Professional, Scientific And Technical Activities)	245,293	169,258	0.4%	0.1%	0.3%	1,246
N. (Administrative And Support Service Activities)	323,641	246,751	0.6%	0.3%	0.3%	2,558
O. (Public Administration And Defence)	309,327	199,742	0.3%	0.0%	0.3%	2,975
P. (Education)	175,306	160,390	0.3%	0.1%	0.1%	1,514
Q. (Human Health And Social Work Activities)	334,564	223,372	0.5%	0.2%	0.4%	2,131
R. (Arts, Entertainment And Recreation)	335,294	299,176	2.3%	1.9%	0.4%	300
STU. (Other Social, Community And Personal Services)	442,730	373,284	2.2%	1.8%	0.5%	1,784
TOTAL	**30,591,356**	**20,974,215**	**1.5%**	**1.03%**	**0.48%**	**57,919**

Table A.2. Induced Demand Effect 2017

SECTOR / BRANCH	Supply (Production) IMPACT					
	Production	Value Added				Induced Native Employment
	Turkish Liras	Turkish Liras	Impact in %			
			Total	Direct	Indirect	
A. (Primary Sector) (1)	81,094	48,149	0.0%	0.0%	0.0%	2,252
B. (Mining And Quarrying)	400,761	69,564	0.4%	0.0%	0.4%	1,456
C. (Manufacturing)	1,118,121	230,929	0.1%	0.0%	0.1%	5,723
DE. (Energy) (2)	1,813,075	405,819	1.0%	0.5%	0.5%	2,801
F. (Construction)	172,280	64,230	0.1%	0.0%	0.1%	1,015
G. (Wholesale And Retail Trade) (3)	3,138,487	1,889,994	1.1%	1.0%	0.1%	36,655
H. (Transport And Storage)	659,996	307,245	0.2%	0.1%	0.2%	2,708
I. (Accommodation And Food Service Activities)	61,237	30,189	0.1%	0.0%	0.1%	957
J. (Information And Communication)	147,250	86,107	0.2%	0.0%	0.2%	481
K. (Financial And Insurance Activities)	198,683	118,362	0.3%	0.0%	0.3%	751
L. (Real Estate Activities)	2,745,427	2,230,293	1.6%	1.4%	0.2%	3,189
M. (Professional, Scientific And Technical Activities)	217,706	130,633	0.3%	0.0%	0.3%	2,199
N. (Administrative And Support Service Activities)	207,668	127,919	0.3%	0.0%	0.3%	3,777
O. (Public Administration And Defence)	13,111	8,283	0.0%	0.0%	0.0%	195
P. (Education)	5,533	4,643	0.0%	0.0%	0.0%	104
Q. (Human Health And Social Work Activities)	714,335	412,379	1.0%	0.9%	0.1%	9,791
R. (Arts, Entertainment And Recreation)	6,013	3,542	0.0%	0.0%	0.0%	34
STU. (Other Social, Community And Personal Services)	19,417	9,987	0.1%	0.0%	0.1%	447
TOTAL	**11,720,194**	**6,178,267**	**0.4%**	**0.3%**	**0.1%**	**74,535**

Table A.3. Total Effect 2017 (A.1+A.2)

SECTOR / BRANCH	Supply (Production) IMPACT					
	Production	Value Added				Induced Native Employment
	Turkish Liras	Turkish Liras	Impact in %			
			Total	Direct	Indirect	
A. (Primary Sector) (1)	2,628,878	2,314,121	2.0%	1.5%	0.5%	16,725
B. (Mining And Quarrying)	750,162	367,621	1.9%	1.2%	0.8%	1,738
C. (Manufacturing)	11,670,219	5,610,517	2.2%	1.3%	0.9%	16,523
DE. (Energy) (2)	3,361,745	1,096,497	2.8%	1.5%	1.3%	3,268
F. (Construction)	4,651,922	3,168,136	2.8%	2.0%	0.8%	6,009
G. (Wholesale And Retail Trade) (3)	6,720,472	5,090,540	2.9%	2.5%	0.4%	43,749
H. (Transport And Storage)	2,509,721	1,580,969	1.2%	0.6%	0.6%	5,132
I. (Accommodation And Food Service Activities)	1,035,354	781,227	1.8%	1.2%	0.6%	4,681
J. (Information And Communication)	604,993	466,855	1.1%	0.6%	0.5%	887
K. (Financial And Insurance Activities)	628,039	481,836	1.1%	0.5%	0.5%	1,184
L. (Real Estate Activities)	4,400,107	3,824,806	2.7%	2.4%	0.4%	3,506
M. (Professional, Scientific And Technical Activities)	462,999	299,891	0.7%	0.1%	0.6%	3,445
N. (Administrative And Support Service Activities)	531,309	374,670	0.9%	0.3%	0.6%	6,335
O. (Public Administration And Defence)	322,438	208,025	0.4%	0.0%	0.4%	3,170
P. (Education)	180,838	165,033	0.3%	0.1%	0.1%	1,618
Q. (Human Health And Social Work Activities)	1,048,900	635,752	1.5%	1.1%	0.4%	11,922
R. (Arts, Entertainment And Recreation)	341,307	302,717	2.3%	1.9%	0.4%	333
STU. (Other Social, Community And Personal Services)	462,147	383,270	2.3%	1.8%	0.5%	2,231
TOTAL	**42,311,549**	**27,152,482**	**2.0%**	**1.4%**	**0.6%**	**132,454**

Table A.4. Production Effect 2023

SECTOR / BRANCH	Supply (Production) IMPACT					
	Production	Value Added				Induced Native Employment
	Turkish Liras	Turkish Liras	Impact in %			
			Total	Direct	Indirect	
A. (Primary Sector) (1)	3,504,707	3,117,049	2.7%	2.1%	0.6%	19,791
B. (Mining And Quarrying)	480,632	410,005	2.2%	1.6%	0.6%	386
C. (Manufacturing)	14,515,366	7,400,110	2.9%	1.8%	1.1%	14,778
DE. (Energy) (2)	2,130,336	950,090	2.5%	1.4%	1.1%	639
F. (Construction)	6,162,152	4,269,703	3.8%	2.8%	1.0%	6,805
G. (Wholesale And Retail Trade) (3)	4,927,345	4,402,639	2.5%	2.1%	0.5%	9,689
H. (Transport And Storage)	2,544,464	1,752,122	1.4%	0.7%	0.6%	3,326
I. (Accommodation And Food Service Activities)	1,339,986	1,033,121	2.4%	1.6%	0.8%	5,099
J. (Information And Communication)	629,667	523,754	1.3%	0.8%	0.4%	556
K. (Financial And Insurance Activities)	590,618	499,991	1.1%	0.7%	0.3%	593
L. (Real Estate Activities)	2,276,162	2,193,396	1.6%	1.3%	0.3%	433
M. (Professional, Scientific And Technical Activities)	337,423	232,829	0.5%	0.1%	0.4%	1,712
N. (Administrative And Support Service Activities)	445,197	339,428	0.8%	0.3%	0.5%	3,515
O. (Public Administration And Defence)	425,507	274,763	0.5%	0.0%	0.5%	4,092
P. (Education)	241,149	220,631	0.4%	0.2%	0.2%	2,081
Q. (Human Health And Social Work Activities)	460,224	307,269	0.7%	0.2%	0.5%	2,928
R. (Arts, Entertainment And Recreation)	461,227	411,543	3.1%	2.5%	0.6%	408
STU. (Other Social, Community And Personal Services)	609,016	513,486	3.1%	2.4%	0.6%	2,435
TOTAL	**42,081,176**	**28,851,930**	**2.1%**	**1.42%**	**0.66%**	**79,266**

Table A.5. Induced Demand Effect 2023

SECTOR / BRANCH	Supply (Production) IMPACT					
	Production	Value Added				Induced Native Employment
	Turkish Liras	Turkish Liras	Impact in %			
			Total	Direct	Indirect	
A. (Primary Sector) (1)	109,946	65,280	0.1%	0.0%	0.1%	3,036
B. (Mining And Quarrying)	549,679	95,413	0.5%	0.0%	0.5%	1,987
C. (Manufacturing)	1,520,255	313,983	0.1%	0.0%	0.1%	7,741
DE. (Energy) (2)	2,491,543	557,680	1.4%	0.7%	0.7%	3,829
F. (Construction)	226,653	84,502	0.1%	0.0%	0.1%	1,322
G. (Wholesale And Retail Trade) (3)	4,294,252	2,585,996	1.5%	1.4%	0.1%	49,800
H. (Transport And Storage)	903,645	420,670	0.3%	0.1%	0.2%	3,700
I. (Accommodation And Food Service Activities)	82,926	40,881	0.1%	0.0%	0.1%	1,291
J. (Information And Communication)	200,364	117,166	0.3%	0.0%	0.3%	650
K. (Financial And Insurance Activities)	271,877	161,966	0.4%	0.0%	0.4%	1,024
L. (Real Estate Activities)	3,770,282	3,062,852	2.2%	2.0%	0.2%	4,353
M. (Professional, Scientific And Technical Activities)	292,877	175,739	0.4%	0.0%	0.4%	2,956
N. (Administrative And Support Service Activities)	283,291	174,502	0.4%	0.0%	0.4%	5,148
O. (Public Administration And Defence)	16,487	10,416	0.0%	0.0%	0.0%	246
P. (Education)	7,534	6,322	0.0%	0.0%	0.0%	141
Q. (Human Health And Social Work Activities)	982,459	567,165	1.4%	1.3%	0.1%	13,449
R. (Arts, Entertainment And Recreation)	8,194	4,826	0.0%	0.0%	0.0%	46
STU. (Other Social, Community And Personal Services)	26,012	13,378	0.1%	0.0%	0.1%	594
TOTAL	**16,038,275**	**8,458,736**	**0.6%**	**0.4%**	**0.2%**	**101,311**

Table A.6. Total Effect 2023 (A.4+A.5)

SECTOR / BRANCH	Supply (Production) IMPACT					
	Production	Value Added				Induced Native Employment
	Turkish Liras	Turkish Liras	Impact in %			
			Total	Direct	Indirect	
A. (Primary Sector) (1)	3,614,653	3,182,329	2.8%	2.1%	0.7%	22,827
B. (Mining And Quarrying)	1,030,311	505,418	2.7%	1.6%	1.1%	2,373
C. (Manufacturing)	16,035,620	7,714,093	3.0%	1.8%	1.3%	22,519
DE. (Energy) (2)	4,621,880	1,507,770	3.9%	2.1%	1.8%	4,468
F. (Construction)	6,388,805	4,354,205	3.9%	2.8%	1.1%	8,127
G. (Wholesale And Retail Trade) (3)	9,221,597	6,988,635	4.0%	3.4%	0.6%	59,489
H. (Transport And Storage)	3,448,109	2,172,792	1.7%	0.8%	0.8%	7,026
I. (Accommodation And Food Service Activities)	1,422,912	1,074,002	2.5%	1.6%	0.9%	6,390
J. (Information And Communication)	830,031	640,920	1.5%	0.9%	0.7%	1,206
K. (Financial And Insurance Activities)	862,495	661,958	1.4%	0.7%	0.7%	1,617
L. (Real Estate Activities)	6,046,444	5,256,248	3.8%	3.3%	0.5%	4,786
M. (Professional, Scientific And Technical Activities)	630,300	408,569	0.9%	0.2%	0.8%	4,668
N. (Administrative And Support Service Activities)	728,488	513,929	1.2%	0.3%	0.9%	8,663
O. (Public Administration And Defence)	441,994	285,178	0.5%	0.0%	0.5%	4,337
P. (Education)	248,683	226,953	0.4%	0.2%	0.2%	2,222
Q. (Human Health And Social Work Activities)	1,442,683	874,433	2.1%	1.5%	0.6%	16,377
R. (Arts, Entertainment And Recreation)	469,421	416,369	3.1%	2.5%	0.6%	454
STU. (Other Social, Community And Personal Services)	635,027	526,864	3.2%	2.4%	0.7%	3,028
TOTAL	**58,119,452**	**37,310,665**	**2.7%**	**1.9%**	**0.8%**	**180,577**

Table A.7. Production Effect 2028

SECTOR / BRANCH	Supply (Production) IMPACT					
	Production	Value Added				Induced Native Employment
	Turkish Liras	Turkish Liras	Impact in %			
			Total	Direct	Indirect	
A. (Primary Sector) (1)	5,303,966	4,717,290	4.1%	3.2%	0.9%	29,610
B. (Mining And Quarrying)	727,381	620,494	3.3%	2.4%	0.9%	578
C. (Manufacturing)	21,967,314	11,199,204	4.4%	2.7%	1.7%	22,140
DE. (Energy) (2)	3,224,015	1,437,851	3.7%	2.1%	1.6%	957
F. (Construction)	9,325,699	6,461,698	5.8%	4.2%	1.6%	10,111
G. (Wholesale And Retail Trade) (3)	7,456,962	6,662,882	3.8%	3.1%	0.7%	14,463
H. (Transport And Storage)	3,850,750	2,651,633	2.0%	1.1%	1.0%	5,011
I. (Accommodation And Food Service Activities)	2,027,912	1,563,508	3.7%	2.5%	1.2%	7,649
J. (Information And Communication)	952,927	792,641	1.9%	1.3%	0.6%	833
K. (Financial And Insurance Activities)	893,832	756,679	1.7%	1.1%	0.5%	890
L. (Real Estate Activities)	3,444,706	3,319,450	2.4%	2.0%	0.4%	648
M. (Professional, Scientific And Technical Activities)	510,650	352,360	0.8%	0.2%	0.6%	2,586
N. (Administrative And Support Service Activities)	673,754	513,684	1.2%	0.5%	0.7%	5,310
O. (Public Administration And Defence)	643,955	415,821	0.7%	0.0%	0.7%	6,192
P. (Education)	364,951	333,899	0.6%	0.3%	0.3%	3,144
Q. (Human Health And Social Work Activities)	696,495	465,016	1.1%	0.3%	0.8%	4,421
R. (Arts, Entertainment And Recreation)	698,013	622,823	4.7%	3.9%	0.8%	607
STU. (Other Social, Community And Personal Services)	921,674	777,101	4.7%	3.7%	1.0%	3,628
TOTAL	**63,684,955**	**43,664,032**	**3.2%**	**2.15%**	**1.00%**	**118,778**

Table A.8. Induced Demand Effect 2028

SECTOR / BRANCH	Supply (Production) IMPACT					
	Production	Value Added				Induced Native Employment
	Turkish Liras	Turkish Liras	Impact in %			
			Total	Direct	Indirect	
A. (Primary Sector) (1)	160,293	95,173	0.1%	0.0%	0.1%	4,375
B. (Mining And Quarrying)	809,545	140,521	0.7%	0.0%	0.7%	2,897
C. (Manufacturing)	2,221,992	458,915	0.2%	0.0%	0.2%	11,200
DE. (Energy) (2)	3,675,496	822,683	2.1%	1.1%	1.0%	5,593
F. (Construction)	321,535	119,876	0.1%	0.0%	0.1%	1,842
G. (Wholesale And Retail Trade) (3)	6,311,106	3,800,543	2.2%	2.0%	0.2%	72,191
H. (Transport And Storage)	1,328,822	618,601	0.5%	0.2%	0.3%	5,417
I. (Accommodation And Food Service Activities)	120,774	59,539	0.1%	0.0%	0.1%	1,863
J. (Information And Communication)	293,052	171,367	0.4%	0.0%	0.4%	941
K. (Financial And Insurance Activities)	399,603	238,057	0.5%	0.0%	0.5%	1,492
L. (Real Estate Activities)	5,558,693	4,515,697	3.2%	2.9%	0.3%	6,344
M. (Professional, Scientific And Technical Activities)	424,053	254,451	0.6%	0.0%	0.6%	4,273
N. (Administrative And Support Service Activities)	415,256	255,789	0.6%	0.0%	0.6%	7,531
O. (Public Administration And Defence)	22,377	14,137	0.0%	0.0%	0.0%	333
P. (Education)	11,028	9,253	0.0%	0.0%	0.0%	206
Q. (Human Health And Social Work Activities)	1,450,344	837,271	2.0%	1.9%	0.1%	19,807
R. (Arts, Entertainment And Recreation)	11,998	7,066	0.1%	0.0%	0.1%	65
STU. (Other Social, Community And Personal Services)	37,520	19,297	0.1%	0.0%	0.1%	843
TOTAL	**23,573,486**	**12,438,237**	**0.9%**	**0.6%**	**0.2%**	**147,213**

Table A.9. Total Effect 2028 (A.7+A.8)

SECTOR / BRANCH	Supply (Production) IMPACT					
	Production	Value Added				Induced Native Employment
	Turkish Liras	Turkish Liras	Impact in %			
			Total	Direct	Indirect	
A. (Primary Sector) (1)	5,464,258	4,812,463	4.2%	3.2%	1.0%	33,985
B. (Mining And Quarrying)	1,536,925	761,015	4.0%	2.4%	1.6%	3,475
C. (Manufacturing)	24,189,306	11,658,118	4.6%	2.7%	1.9%	33,340
DE. (Energy) (2)	6,899,511	2,260,533	5.8%	3.2%	2.7%	6,550
F. (Construction)	9,647,235	6,581,575	5.9%	4.2%	1.7%	11,953
G. (Wholesale And Retail Trade) (3)	13,768,068	10,463,425	6.0%	5.1%	0.9%	86,653
H. (Transport And Storage)	5,179,572	3,270,233	2.5%	1.3%	1.3%	10,428
I. (Accommodation And Food Service Activities)	2,148,686	1,623,048	3.8%	2.5%	1.3%	9,513
J. (Information And Communication)	1,245,979	964,007	2.3%	1.3%	1.0%	1,774
K. (Financial And Insurance Activities)	1,293,434	994,736	2.2%	1.1%	1.0%	2,382
L. (Real Estate Activities)	9,003,399	7,835,147	5.6%	4.9%	0.7%	6,992
M. (Professional, Scientific And Technical Activities)	934,703	606,811	1.4%	0.2%	1.2%	6,860
N. (Administrative And Support Service Activities)	1,089,009	769,473	1.8%	0.5%	1.3%	12,840
O. (Public Administration And Defence)	666,332	429,958	0.7%	0.0%	0.7%	6,526
P. (Education)	375,978	343,153	0.6%	0.3%	0.3%	3,349
Q. (Human Health And Social Work Activities)	2,146,839	1,302,286	3.1%	2.2%	0.9%	24,228
R. (Arts, Entertainment And Recreation)	710,012	629,889	4.8%	3.9%	0.9%	672
STU. (Other Social, Community And Personal Services)	959,194	796,398	4.8%	3.7%	1.1%	4,471
TOTAL	**87,258,441**	**56,102,269**	**4.0%**	**2.8%**	**1.2%**	**265,991**

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