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The short and long-term impact of Syrian refugees on the Turkish economy: a simulation approach

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ABSTRACT

This article presents the results of a simulation on the short-, medium- and long-term aggregated economic contribution of Syrian refugees on the Turkish economy. The simulation is focused on two sources of impact: refugees' access to the Turkish labor market and the investment flow generated by Syrians inside the country. An input–output approach is used to compute economic effects considering the intersectoral linkages of the Turkish economy, thereby expanding the focus of a classic impact study. Our results show a positive economic impact of Syrian refugees of around 2 percent of GDP in the short term and 4 percent in the long term. Syrian immigration in Turkey is becoming a factor of economic dynamism that not only benefits the Syrian community itself but also the Turkish host communities. The direct and indirect contribution in terms of production and demand is very relevant and, properly channeled and promoted, can become a relative advantage for the country and not a burden of care.


KEYWORDS Turkish economy; Syrian refugees; migration; economic impact of migration

Introduction

Since March 2011, the on-going conflict in Syria 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,¹ Turkey currently hosts the largest refugee population in the world. Based on data from the Directorate General for Migration Management,² the number of Syrian refugees registered under temporary protection in Turkey was around 3.4 million as of mid-December 2017, and the nation also accommodates about 300,000 refugees from other countries.

In this article, we present the results of a simulation exercise aimed at assessing the economic impact of refugees on the Turkish economy over the short,

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medium and long terms. The value added by the article can be summarized by the following key contributions:

- Focus on a middle-income labor-abundant hosting country: Although migration-driven impact exercises can commonly be found for well-developed hosting countries with labor supply shortages, it is not so typical for middle-income/in transition and labor-abundant receiving countries.
- Focus on forced migration: While a vast amount of literature is extant regarding labor 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 labor 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 would assist policymakers in crafting a coherently designed integration roadmap for future refugees seeking a more benign impact.

The remainder of the article 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. In the third, we summarize results and derive policy implications.

Research context: 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. The economic effects of inflows and outflows on both sides are numerous, multifaceted, and complex. Based on the income level of origin and destination areas,

migration is normally conceptualized as labor 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 labor 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 labor migration and its impact on rich countries, while – considering that 80 percent of migration comes from developing countries³ – we also very frequently come across reports on matters such as poverty alleviation, remittance effects or brain drain.

Even if the case of developing countries' reception of migrants from other developing countries is not in the spotlight, the analysis of labor immigration into 'emigrant economies'⁴ is not new. It 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,⁵ or for the singular case of expatriates' return from former colonies upon their independence. Recently, some interesting research programs have been launched⁶ for the specific case of labor migration into developing countries, and remarkable publications have also recently been released.⁷

We may easily guess that all we know about the effects of labor 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 labor market institutions (informality, segmentation, mobility and so on). Second, despite some relevant efforts,⁸ 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 labor 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 neighbor nations and remaining there, settling temporarily into transit countries or reaching a more distant nation as their 'final' destination. Sometimes forced migrants can make explicit and selective choices about their preferred country of destination based on similar criteria to those of labor 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,⁹ as are survey articles.¹⁰

According to the orthodox labor economy, which is used intensively for the study of voluntary migration, the impact of refugees on the labor market depends, as always, on the complementarity or substitutability between refugees' and native workers' skills: in short, some native workers may lose, but others may benefit. Apart from pure labor 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 labor markets and investment by natives in education and occupational upgrading, among others.¹¹

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 neighboring 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). Furthermore, regional concentration of economic migrants is normally equalized 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.

Although the majority¹² of refugees live in private accommodation in urban areas,¹³ 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 place¹⁴ 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 labor age range. By contrast, children, youths and old persons constitute a large percentage of displaced populations worldwide. According to the UNHCR,¹⁵ children below 18 years of age constituted about half of the refugee population in 2016. For the Syrian-Turkish case, 45 percent of refugees are below 18 and around 3.5 percent are elderly people (60+).

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.¹⁶

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. Approximately 62 percent 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.¹⁷ According to results of a field survey conducted in 2016,¹⁸ 80 percent of Syrian refugees settled in Greece and Turkey were planning to migrate onwards. Similarly, the Turkish Human Development Foundation (INGEV) and Ipsos Research¹⁹ carried out fieldwork in 2017²⁰ showing that although some 52 percent of the Syrian refugees said that they were planning to build their future in Turkey and 74 percent wanted to acquire Turkish citizenship, 42 percent 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.

Technically speaking, migration caused by the Syrian civil war in Turkey presents some interesting differences compared to other cases that also focus on forced migration waves.²¹ 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 a 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 or value added.

In a recent paper,²² Semih Tumen estimated the impact of Syrian refugees on labor markets, consumer prices and housing rents associated with the 'initial shock'²³ caused by the refugee inflow. The author used labor 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 labor 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 labor market (where immigrants may compete with natives) and a small increase in the employment-to-population ratio in the formal labor market (where immigrants are poor substitutes). The impact on the informal labor market can be explained by two factors: first, informality is huge in the refugee-receiving regions (50 percent 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 labor-intensive sectors, which happens to be in line with the negative supply-side price effect reported by other authors.²⁴ Tumen does report an important increase in housing rents, especially for high-quality rental units.²⁵ Tumen suggests that 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 neighborhoods, especially among natives. A later work from Ceritoglu et al.²⁶ is a much more detailed version of Tumen's paper, with the addition of some robustness checks and some important reasoning

for the modeling settings and identification strategy, but without any additional findings.

Akgündüz et al also used a similar 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.²⁷ 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 the findings of Tumen or Ceritoglu et al., this set of authors 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,²⁸ they 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.

The work by Del Carpio and Wagner is perhaps one of the most well-known papers on the effects of Syrian immigration into Turkey.²⁹ Technically speaking, the authors opted for an instrumental variables specification using sub regional data and instrumenting refugees by distance between sub regions and origin governorates in Syria. Their results showed large-scale displacement of natives in the informal labor sector of around six natives for every ten refugees, irrespective of gender, age and education. Additionally, they reported increases in formal employment for the native Turkish citizens,³⁰ 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 attempted to explore the economic impact of Syrians on growth, the labor market, trade and factors markets.³¹ 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 labor 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 a Cato Institute report,³² 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 labor market effects or inflation. For example, Ozpinar, Basihos, and Kulaksiz examined investment and trade relations with Syria after the refugee influx.³³ Their findings illustrate that Syrian refugees are becoming economic actors in Turkey in terms not only of their labor supply but also of their entrepreneurial skills. In effect, the number of companies opened by Syrians increased by 168 percent between 2014 and 2016.³⁴ 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 according to this same source. The Syrians' share, both in number of firms and in total capital, increased during 2014–2016.

Economic impact of Syrian refugees in Turkey: simulation data and methodology

The simulation exercise proposed in this research is focused on the economic impact of two main 'inputs' in the Turkish economic system: the effect of the refugees' access to the Turkish labor market and the effect of the new investment generated by Syrians' capital through saving within the country.

Under this framework, an input–output approach 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. 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 jargon, direct and indirect effects.

The simulation process follows the structure summarized in [Figure 1](#). The aims, calculations and hypotheses considered at each step will be detailed concisely in a specific subsequent subsection for each stage.

Before describing the simulation process and main results, we must first clarify some critical assumptions and caveats of an input–output simulation structure.

- The exercise whose results are presented in this text is essentially a simulation exercise that should not be confused with a prediction in the strict

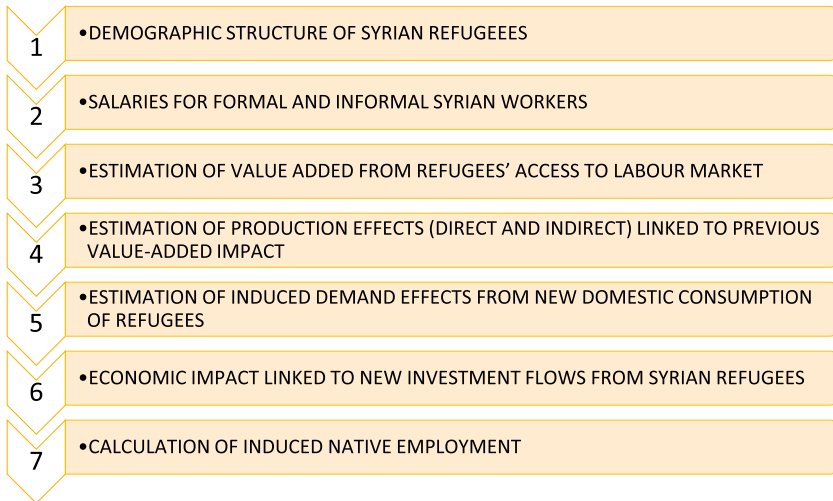


Figure 1. Simulation process.

sense. The difference lies in the level of uncertainty assumed in the analysis framework. Any simulation is essentially conditional on the design of the most likely scenario(s). In the context of a simulation, the future framework is not defined with certainty and, therefore, it is necessary to support it with hypotheses that, although supported by indirect data and evidence, cannot be considered risk-free.

- Thus, throughout the text, the reader will observe that some calculations are only estimates based on the scarce information available or simply assumptions that the authors believe are consistent with the evidence or data available. When we have had to risk an estimate, we have always used a prudent criterion, always assuming a principle of maximum plausibility.
- One important assumption for this first exercise is to presuppose 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 labor market. This assumption is not perfectly clear in the literature of recent years and, in this regard, the results obtained in this exercise should be considered with caution. The net effects remain unclear and are commonly described as a combination of some negative effects for the informal labor market and positive ones for the formal side.³⁵

Demographic structure of Syrian refugees in Turkey

According to official statistics,³⁶ 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

Table 1. Simulation inputs: population and employment.

Age	Age structure (%)		# Refugees		Occupation rate (%) ⁽¹⁾		# Employed	
	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: INGEV and Ipsos Survey (2017) and authors' assumptions (in italics). (1) Employment / Total population

activity rate is not crucial to our simulation scheme, we have tried to be consistent with different data sources, such as the INGEV and Ipsos Survey³⁷ that estimated a 35 percent occupation rate among Syrian refugees. Considering slightly different percentages across different ages, the simulation input, in terms of new employment in the Turkish labor 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 percent increase in the region during the 2007–2017 period, based on TurkStat data). According to this reference, we assume that the activity rate will be around 21 percent in the five-year horizon and 23.5 percent 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 percent 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 labor force population increased by 40 and 38 percent during 2004–2013, or roughly 4 and 3.8 percent annually.

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 for the time period covered imposes the need for some assumptions along with the use of indirect information from field work such as the INGEV and Ipsos Survey³⁸ and from several governmental sources. For example, the Turkish Directorate General for Management (DGMM) reported the total number of work permits on an annual basis and by nationality.³⁹ Additionally, the Ministry of Labor and Social Security publishes the number of work permits of foreigners, in terms of both sector distribution and nationality.⁴⁰

According to INGEV and Ipsos, refugees work mainly in the textile, manufacturing and services sectors.⁴¹ Other studies add some extra information about the sectoral distribution of foreign workers.⁴² Considering this partial information, we assume the following sectoral distribution for Syrian workers in the Turkish labor market for 2018 as seen in [Table 2](#).

In this table, we have assumed 10 versus 90 percent distribution for formal/informal employment, again taking into account the data from the previously mentioned INGEV and Ipsos field work. Among employees, 34 percent are unregistered and 4 percent are working in the agricultural sector (10 percent are paid workers). The proportion of paid workers in non-agricultural sectors is 60 percent. The majority of Syrian refugees have low education levels and work in labor-intensive sectors with high informality. We assume that labor 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

Table 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.

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

Considering these two adjustments, our initial assumption is that Syrian workers would earn 75 percent of Turkish unskilled workers' salaries in 2017 and 85 percent in 2023, progressively converging to 100 percent for the end of the simulation period (2028). Under this framework, we estimate the following figures for the Syrian salaries in each sector, as seen in [Table 3](#).

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 input-output 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.

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

	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

Note: Yearly wage per person (Turkish liras – 2012 Input–Output table basis).

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

Estimation of production effects

We will not include in this article technical details on how to use the input-output simulation methodology which can be, however, be consulted in other previous publications by authors of this same text.⁴³ In general terms, our main goal at this stage is to use data from the input-output tables to calculate the impact of the new salaries in the economy in terms of the other components: taxes/subsidies, social security expenditures and, finally, new operating surplus.

At this stage of the simulation exercise, where we do not need to include any more assumptions, a Standard Ghosh model⁴⁴ is applied to obtain the total production effect caused, by sector interrelationships in each sector and in the total economy. Once the production effect has been estimated, we can then calculate the so-called induced demand effect, derived from the private consumption of migrant workers. We can then use the standard Leontief model to connect the aggregate migrant earnings with the final demand vector in the input-output system.

According to OECD statistics on average personal income tax on gross labor income for 2017,⁴⁵ the average wage tax percentage is around 20 percent for salaries below 60 percent 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 arbitrarily assume a very low fiscal pressure

percentage of around 10 percent. We will also assume a very low saving and remittance rate of around 2 percent.

Then we simply estimate the consumption vector by branches by considering a given consumption basket for migrant population and apply the classical input-output equilibrium equation known as ‘Leontief’s inverse’ to get the total induced demand effect. Finally, we compute the employment creation for each year and sector linked to this value-added total induced effect.

Economic impact of refugees’ investment

According to available information, Syrian refugees have dramatically increased levels of investment in Turkey during recent years.⁴⁶ Capital inflows from Syria can be estimated at around 179,032 million Turkish liras, representing around 0.5 percent 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 percent during the entire simulation period, growing at the same rate as Turkish GDP.⁴⁷ For the distribution of investment across different economic branches, we have simply followed the 2012 input-output table of gross capital formation distribution. The final figures are illustrated in Table 4.

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

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

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

Note: Thousands of Turkish liras – 2012 Input–Output table basis.

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

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 percent, depending on the sector). We need to clarify that the hypothesis assumed is a very simplistic one, because given the regional concentration of refugees, 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.

Simulation results⁴⁸

Short term (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 percent of total Turkish GDP. Production effect is estimated at 1.51 percent 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 labor market; this direct effect is estimated at 1 percent of GDP for 2017. This direct effect spreads through the whole economy, stimulating an indirect production effect estimated at 0.5 percent 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 percent 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 percent of GDP for 2017. This direct demand effect spreads through the whole economy, stimulating an indirect demand effect estimated at 0.12 percent 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 A1–A9 (see statistical 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 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.

Mid- and long-term simulation results

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 population⁴⁹ will increase 15 percent between 2017 and 2023 and then step up an additional 33 percent between 2023 and 2028. In proportion to this working-age population, total Syrian employment is projected to grow at an annual 3.5 percent during the first five years and at 5.5 percent 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 percent of GDP in 2017–4.05 percent 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 5).

Policy implications

The simulation exercise presented in this article is essentially of a technical nature and it is therefore neither straightforward nor immediate to translate results into policy recommendations. The usefulness of projects of this type is, however, to convey to policymakers a message based on scientific reflection, free of prejudice, which can be used to support decision-making and to

Table 5. Summary of simulation results.

	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)			
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

Note: By year and source of impact.

Source: Own elaboration.

counterbalance the negative opinion on the burden of hosting this huge number of refugees.

In this sense, it is especially relevant to observe how Syrian immigration in Turkey is becoming a factor of economic dynamism that not only benefits the Syrian community itself but, above all, the Turkish host communities. The direct and indirect contribution in terms of production and demand is very relevant and, properly channeled and promoted, can become a relative advantage for the country and not a burden of care.

The enormous resources needed for initial aid are inevitable, as is the inevitable emergence of conflicts between natives and immigrants in a situation of relative scarcity. However, with the help of outside actors such as the European Union and proper medium-term planning that takes into account the positive effects of a genuine labor participation of Syrian refugees in Turkey, a future of true socio-economic integration is possible with minimal friction.

According to the previous results, it seems sensible to promote the labor integration of Syrian immigrants in Turkey as well as to facilitate the implementation of entrepreneurial initiatives. The delay in granting work permits and entrepreneurship will only conceal part of the economic activity by moving it to the informal economy, limiting the scope of the global economic impact. Unlike countries that are considered attractive destinations for labor migration, the case of Syrian immigration in Turkey, of a forced nature,

is linked to a specific shock. In this sense, the application of restrictive policies of access to economic integration will hardly promote return or contain new flows. The effects of a restrictive orientation would therefore be clearly negative. On the other hand, promoting labor integration and facilitating the start-up of small businesses would reduce the pressure on public assistance resources in many cities and towns, alleviating the competition for those resources that occurs between natives and immigrants by helping to control the stigmatization of the immigrant population in the reception nuclei.

Complaints, opposition and protest reactions against Syrian refugees have been increasing due to economic, social and cultural reasons. News about facts in field, reports released by civil society and other sources such as discussions among intellectuals have contributed to this phenomenon. News reports in Turkey feature articles about reactions against refugees. These include protest meetings as well as violence. These realities can be regarded as possible harbingers of future massive reaction against Syrian refugees if they continue to stay without being integrated into society in a comprehensive perspective including labor market and business integration.

Under these conditions, policy makers face a dilemma over whether public support is sufficiently favorable to adopt a more integrative policy. The simulation results presented here can be used to change public opinion and justify integration policies if the majority of the Syrian refugees continue to stay in Turkey.

Regarding international experiences and expert opinions, it is expected that at least 80 percent of Syrian refugees will continue to stay permanently in Turkey. A significant part of them have low education and skill level. Furthermore, a significant number of school age children are still not attending either primary school or training courses. There is also academic interest and debate whether the refugees working-age population complement or compete with native workers. The empirical exercise implemented by the research project supports that creating more employment opportunities for the refugee population through improving their education and skill level, local language competency, their awareness about legal obligations and opportunities (training, health, labor market, residence permission, etc.), entrepreneurial capacity, and also providing permission in well targeted work area (complementary and open works) will enhance their contribution to the economic growth because of the fact that the production effect is greater than the induced demand effect. In order to avoid the crowding out effect of Syrian refugees on natives, it is necessary to conduct a comprehensive field survey to explore complementary job opportunities (where they exist in terms of sector and location) and skill requirements to fulfill them.

A more comprehensive, inclusive and holistic approach seems a key factor for alleviating costs of refugees on host countries. This entails active participation of local actors such as municipalities and NGOs to project design

and implementation. The monetary cost and source of resources (from international institutions, donors, Turkish central government budget, local municipalities and others) should also become more transparent to the public and make them aware of more reliable data.

Notes

1. World Bank, *Migration and Remittances Factbook 2016*.
2. DGMM Database.
3. OECD, *Perspectives on Global Development 2017*.
4. Using the term employed by Seccombe in 'Immigrant workers.'
5. Aydemir and Kirdar, "Quasi-Experimental Impact Estimates," 282.
6. 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>).
7. Böhme and Kups, "The Economic Effects."
8. Biavaschi, "South-South Migration"; Özden and Wagner, "Immigrant versus Natives," and Narayanan and Lai, "The Causes and Consequences."
9. Mayda et al., "The Labor Market Impact of Refugees"; Petrucci, "An Economic Take"; IMF "The Refugee Surge in Europe"; Capps and Newland, "The Integration Outcomes"; and Peri and Yasenov, "The Labor Market Effects."
10. Ruiz and Vargas-Silva, "The Economics of Forced Migration."
11. Mayda et al., "The Labor Market Impact of Refugees."
12. In the Syrian-Turkish case, fewer than 10 percent of refugees live in camps, according to the 2016 Government Annual Migration Report.
13. UNHCR, "2017 Progress Report."
14. 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.
15. UNHCR, "Global Trends."
16. Such as those of Tumen, "The Economic Impact," or Ceritoglu et al., "The Impact of Syrian Refugees."
17. 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.
18. Kuschminder and Koser, "Understanding Irregular Migrants."
19. INGEV and IPSOS, "Syrian Refugee Livelihood Monitor."
20. Including 10 cities hosting 79 percent of refugees – Istanbul, Şanlıurfa, Hatay, Gaziantep, Adana, Mersin, Kilis, Mardin, Bursa and İzmir – and a total of 1,282 face-to-face interviews.
21. As pointed out by Akgündüz et al., "The Impact of Refugee Crises."
22. Tumen, "The Economic Impact."
23. Described to the author as the 'rapid and massive movement toward the nearest neighbor during 2012 and 2013.'
24. See, for example, Zachariadis, "Immigration and International Prices."

25. 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. See Zachariadis, "Immigration and International Prices." 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 labor.
26. Ceritoglu, et al., "The Impact of Syrian Refugees."
27. Akgündüz et al., "The Impact of Refugee Crises."
28. Borjas, "Native Internal Migration."
29. Del Carpio and Wagner, "The Impact of Syrians Refugees."
30. Though only for men who had not completed high school education.
31. Kuyumcu and Kösematoglu, "The Impacts of the Syrian."
32. Nowrasteh, "Economics of the Syrian Refugee."
33. Ozpinar, Basihos, and Kulaksiz. "Trade Relations with Syria."
34. TOBB, Statistics.
35. See Tumen, "The Economic Impact"; Akgündüz et al., "The Impact of Refugee Crises," and Del Carpio and Wagner, "The Impact of Syrians Refugees."
36. DGMM Database.
37. INGEV & IPSOS, "Syrian Refugee Livelihood Monitor."
38. Ibid.
39. DGMM Database.
40. CSGB. Labor Statistics, and TBMM 2018 datasets.
41. INGEV & IPSOS, "Syrian Refugee Livelihood Monitor."
42. Gerşil and Temel, "Working Conditions and Informal."
43. De Arce and Mahía, "An Estimation of the Economic Impact," and de Arce and Mahía, "A Dynamic Input–Output Scheme."
44. Ghosh, "Input–Output Approach."
45. OECD, Online Tax Database.
46. TOBB, Statistics.
47. We assume an annual GDP growth of 4.5 percent for the first five years (2018–2022) and of 4 percent for the next five (2023–2028).
48. Results in billions of TL, expressed as 2012 equivalent prices.
49. 18 years and older.

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