

THE LONG-RUN CAUSAL EFFECTS OF THE EMIGRATION OF  
CRIMEAN AND NOGAY TURKS ON THE URBANIZATION AND  
AGRICULTURAL OUTCOMES OF TURKEY: AN EMPIRICAL  
ANALYSIS

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MAHMUT ABLAY

THE DEPARTMENT OF ECONOMICS

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I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science



Prof. Serdar SAYAN

Director of the Graduate


School of Social Sciences

This is to certify that I have read this thesis and that it in my opinion is fully adequate, in scope and quality, as a thesis for the Degree of Master of Science in the field of Economics of Graduate School of Social Sciences.

Thesis Advisor

Asst. Prof. Güneş Arkadaş AŞIK ERPEK

(TOBB ETU, Economics)



Thesis Committee Members

Assoc. Prof. Ozan EKŞİ

(TOBB ETU, Economics)

Assoc. Prof. Semih TÜMEN

(TED University, Economics)



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Mahmut ABLAY

## ABSTRACT

### THE LONG-RUN CAUSAL EFFECTS OF THE EMIGRATION OF CRIMEAN AND NOGAY TURKS ON THE URBANIZATION AND AGRICULTURAL OUTCOMES OF TURKEY: AN EMPIRICAL ANALYSIS

ABLAY, Mahmut

M.Sc., Economics

Supervisor: Asst. Prof. Güneş Arkadaş A. ERPEK

The purpose of this thesis is to investigate the long-term causal effects of the emigration of the Crimean and Nogay Turks on the urbanization and agricultural outcomes of Turkey. To estimate the long-term causal effects of emigrants, a novel dataset at province level consisting of six years between 1928 and 1965 is constructed by digitalizing the Agricultural Yearbooks and Population Censuses of Turkey. In addition to baseline the Ordinary Least Square (OLS) methods, Instrumental variable methods are employed to address potential endogeneity problem.

The results reveal that the emigration of Crimean and Nogay Turks had a positive and significant long-term effects on urbanization rate, per capita cultivated land, per capita total agricultural production, per capita cultivated area of grain, per capita grain production and per capita industrial crops production.

**Key Words:** Emigration, Crimean and Nogay Turks, Long-Term Causal Effects, Urbanization, Agricultural Outcomes

# ÖZ

## KIRIM VE NOGAY TÜRKLERİNİN GÖÇ ETMELERİNİN TÜRKİYE’NİN ŞEHİRLEŞME VE TARIMSAL ÇIKTILARI ÜZERİNDEKİ UZUN DÖNEMLİ NEDENSEL ETKİLERİ: BİR AMPİRİK ANALİZ

ABLAY, Mahmut

Yüksek Lisans Tezi, Ekonomi

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Bu tezin amacı, Kırım ve Nogay Türklerinin göçünün, Türkiye’nin kentleşmesi ve tarımsal çıktıları üzerindeki uzun dönemli nedensel etkilerini araştırmaktır. Göçmenlerin uzun dönemli nedensel etkilerini tahmin etmek için, Türkiye Cumhuriyeti Tarım Yıllıkları ve Nüfus Sayımlarının kullanılması yoluyla, 1928 ve 1965 aralığındaki altı yıldan oluşan il düzeyinde yeni bir veri seti hazırlanmıştır. Sıradan En Küçük Kareler (SEKK) yöntemine ek olarak, potansiyel içsellik sorununu gidermek için araç değişken ayarlaması yapılmıştır.

Sonuçlar, Kırım ve Nogay Türklerinin göçlerinin, kentleşme oranı, kişi başına düşen toplam ekilen alan, kişi başına düşen toplam tarımsal çıktı, kişi başına düşen toplam hububat alanı, kişi başına düşen toplam hububat üretimi ve kişi başına düşen toplam sınav ürünler üretimi üzerinde uzun dönemli nedensel etkilerinin olduğunu ortaya koymaktadır.

**Anahtar Kelimeler:** Göç, Kırım ve Nogay Türkleri, Nedensel Uzun Dönem Etkiler, Şehirleşme, Tarımsal Çıktılar



To the Memory of Crimean Tatar and Nogay Emigrants

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## ABBREVIATION LIST

OLS : Ordinary Least Square

IV : Instrumental Variable

SDR : Standard Deviation of Rain

FE : Fixed Effects

LTT : Linear Time Trends

DID : Difference in Differences

GDP : Gross Domestic Product

NUTS : Nomenclature of Units For Territorial Statistics

TUIK : Türkiye İstatistik Kurumu

WWII : World War II

# CHAPTER I

## INTRODUCTION

During the 19th and 20th centuries, the hundreds of thousands of Muslims have emigrated to the Ottoman Empire and Turkey. The Crimean and Nogay Turks which are one of the most populous emigrants' groups emigrated to the territories of the Empire during this period of time, have settled in the many parts of the Empire.

Even though there is a huge literature investigating the effects of migrations on the economies of host countries, there are not any empirical research about the effects of Crimean and Nogay emigrants on the economic conditions of Turkey. On the other hand, archival records and contemporary claims about the effects of Crimean and Nogay Turks on the urbanization, agricultural production, especially on the grain production are available. It is frequently claimed that Crimean and Nogay emigrants have made a great contribution to agricultural production in the settlement regions. It is mentioned that Crimean and Nogay emigrants have brought a series of agricultural skills, methods, and machinery to the settlement regions. As a result of the more advanced agricultural methods and machinery, emigrants have increased the cultivated area, agricultural production, and productivity. It is frequently mentioned that thanks to the advanced agricultural methods, vehicles, and machinery, the cultivated area, and agricultural production have increased, and especially by the increases in grain production, Central Anatolia has developed as a “grain elevator”. There are also some claims about that emigrants have taken an important role in the spreading of new industrial crops such as sugar beet, sunflower, and potatoes in Anatolia. Karpat also

claims that the rising of Eskisehir which one of the most important settlement regions of emigrants, as an urban center has resulted from the increases in wheat production in the region after the settlement of Crimean Turks. Another important claim is that Crimean Turks have established the new enterprises in the settlement provinces (Karpas 2010a, 167; Karpas 2010b, 12; Kırımlı, 2012; Gözaydın1948, 99-100).

In this thesis, I investigate the causal long-term impacts of the settlement of Crimean and Nogay emigrants on the urbanization and agricultural outcomes of Turkey. My main motivation to investigate the effects of Crimean and Nogay Turks is the historical narratives claiming that emigrants have brought better agricultural skills, methods, and agricultural machinery to the settlement regions, and as a result, agriculture has developed in settlement locations. I prepare a novel dataset to investigate the long-term causal effects of emigrants. Firstly, I determine the settlement regions of emigrants by using several contemporary research which will be mentioned in detail in Historical Background. I separate provinces as Treatment and Control groups by depending on the intensity of the settlement of emigrants. Furthermore, I digitalized the agricultural yearbooks of Turkey to get agricultural outcomes capturing the years between 1928 and 1965.

One possible concern is about the settlement decision of emigrants. To overcome the potential endogeneity problem, I rely on the instrumental variable setting. I use the weighted distances between the five departure locations in Balkans, and 56 provinces of Turkey as an instrumental variable determining the settlement locations.

First of all, I use urbanization rate (the ratio of urban population to total population) as a proxy for economic conditions of provinces. I estimate the effects of

the settlement of emigrants on the urbanization rate of provinces and find positive and significant effects. I show that the treated provinces have had a higher rate of urbanization compared to the controlled provinces from 1928 to 1965. The results reveal that settlement of Crimean and Nogay Turks have increased the urbanization of provinces and their effects have been persistent over time. These results give us a channel to better understand the roots of economic conditions/developments of provinces.

Secondly, I estimate the effects of the emigration on the agricultural outcomes of Turkey by following the historical narratives and contemporary claims. I show empirically that Crimean and Nogay emigrants have had a positive and strong effect on the agricultural outcomes of Turkey as it has been frequently mentioned in archival records and by contemporary researchers. Firstly, I estimate the effects of the settlement of emigrants on the per capita cultivated area and per capita agricultural production and find positive and significant results. To better understand the sources of increases in total agricultural area and production, I extend my investigation by focusing on outcomes of grain and industrial crops. I show that the two of the main sources of the increases in per capita agricultural outcomes are the increases in per capita outcomes of grain and industrial crops. By this way, I show the accuracy of historical narratives claiming that Crimean and Nogay Turks have increased the grain production and total production in settlement regions. Results reveal that the effects of the settlement of emigrants have continued to be persistent over time.

Additionally, to explore the mechanism underlying the increases in per capita agricultural outcomes, per capita outcomes of grain and industrial crops, I investigate the effects of emigrants on the production of some key crops and agricultural machinery. I show that the increases in per capita grain outcomes result from the



increases in the per capita outcomes of wheat and barley. Additionally, I show that another important mechanism underlying the increases in agricultural production is the increases in per capita sugar beet production, by following the historical records about new industrial crops whose production have expanded after the settlement of emigrants. I also show that the share of sugar beet production in total industrial crops production is significantly higher for settlement provinces. It means that the production of sugar beet has spread thanks to the emigrants. I show that another important mechanism increasing all agricultural outcomes is as agricultural machinery. As I mentioned previously, Crimean and Nogay emigrants have brought technologically better agricultural machinery, vehicles and methods to the settlement regions. I show that per capita number of agricultural machinery is significantly higher in the settlement regions than in controlled provinces.

Finally, I show a series of mechanisms underlying economic development. I show that Crimean and Nogay emigrants have had an important role in the increases in urbanization which is an indicator of the economic conditions of provinces. We can interpret the results as settlement of emigrants have increased the economic development in the regions. Additionally, I reveal that the increases in agricultural outcomes are another important source of economic development. My findings also reveal that emigrants have had a positive and significant long-term effect on the non-agricultural occupations, the other important indicator of economic development in provinces.

As the main assumption, I accepted that provinces have had the same level of urbanization rate and agricultural outcomes before the settlement of emigrants. I support the assumption by using only historical evidence because we do not have available data about the pre-settlement period. But, we have some reliable sources of

information about the pre-settlement economic conditions of provinces. I make several robustness checks by depending on these sources of information. Firstly, to overcome the potential concerns about the effects of railroads on my outcome of interests, I use only the provinces which have gained railroad access between 1856 and 1916 and show the robustness of results. One of the most important information about the pre-settlement period is the urban population of provinces in the 1840s. I exclude the provinces which have more than 40.000 urban population in the 1840s, and show the robustness of results. In addition to the previous exclusion, I make some additional sub-sample estimations to check the robustness of my findings. Firstly, I exclude the south, south-east, Aegean and the Black Sea regions of Turkey from the sample, and show that results continue to be positive and significant. Then, I exclude the provinces of Thrace and the inner part of the Aegean region and show the robustness of results. Finally, I exclude Ankara because of the development potential as the capital of Turkey and show that the results continue to be strong and positive.

All in all, my findings are consistent with the contemporary claims and archival records stating that Crimean and Nogay emigrants have increased the agricultural production, cultivated area, grain production/area and played a role in the expansion in the cultivation of some industrial crops. Additionally, I show that the increases in urbanization and agricultural outcomes have continued to be persistent over the twentieth century.

My findings are also consistent with the literature investigating the effects of skilled immigrants on the economies of host countries. Murard and Sakalli (2018) reveal that the settlement of refugees migrating during the Turkish-Greek population exchange has had an important role in the long-run economic development of settlement locations. Similarly, Hornung (2014) show that Huguenot immigrants

migrating to Prussia during the 17th century have had a persistent long-term effect on productivity in textile manufacturing. Fourie and Fintel (2014) show that Huguenot immigrants, migrating to Cape Town during the 18th century and skilled in wine-producing, have increased the per capita wine production in settlement regions. Additionally, Sequeira, Nunn, and Quian (2017) reveal that European-origin immigrants have had an important role in increasing in the long-term economic development of settlement locations. Droller (2016) show that the share of the European-born population in Argentine are significantly and positively correlated with economic development proxied by per capita GDP, education, and high-skilled occupations. Rocha, Ferraz, and Soares (2017) reveal that in the long-term, per capita income and settlement of European immigrants are positively and significantly correlated. In sum, literature investigating the effects of skilled immigrants and my findings are in line.

In this thesis, In Chapter II, the general outlook of the Muslim emigrations during the 19th century is explained. Then, I give detailed information about the emigration and settlement of Crimean and Nogay Turks. In Chapter III, the general outlook of the agricultural structure, production, production types, agricultural machinery, and changes in agriculture during the 19th century in the Ottoman Empire are presented. I present the historical records and contemporary claims in Chapter IV. Then, I mention about the related literature in Chapter V. The data, methodology of research and estimation results are presented in Chapter VI. Then, the conclusion is in Chapter VII.

## CHAPTER II

### HISTORICAL BACKGROUND

This chapter begins with the historical background of Muslim emigrations towards the Ottoman Empire during the years between the 18th and 20th centuries. And later, this chapter gives details about the emigration of Crimean and Nogay Turks and the settlement of emigrants in the Ottoman territories.

#### **2.1. The Muslim Emigration To The Ottoman Empire: A General Outlook**

The 18th and 20th centuries have been a period of mass emigrations towards the Ottoman Empire. Millions of Muslims who were displaced from lost territories emigrated to remaining lands in the Balkans, Anatolia and Syria.

Main reasons for these mass displacements vary, but three important factors stand out. The first one has been the weakness of the Ottoman Empire due to gradual deterioration of the Ottoman government system, the negative impact of the market changes and the economic losses. As a second reason, nationalism and insurrections have been compelling factors in mass displacements (McCarthy 1998, 4-7).

Another important reason is expressed as Russian imperial expansionism. It is observed that the majority of mass Muslim emigration towards the Ottoman Empire has resulted from Russian expansionism. The Russian imperial expansionism that started in the 14th century and the policies implemented against the indigenous nations have been the main reasons of the mass emigrations towards the Ottoman Empire from the Crimea and the Caucasus in the 19th century (McCarthy 1998, 13).

In particular, the mass Muslim emigrations resulted from Russian imperial expansionism has been concentrated in three different historical periods (Yıldız 2006, 15-16). The first emigration period has begun with the emigration of the Crimean Tatars and Nogays in 1772 and have continued until the Crimean War (1853-1856). Crimean Tatars and Nogays have constituted the majority of the emigrations in this period. The second mass migration wave was concentrated between the 1853-1856 Crimean War and the 1877-1878 Ottoman Russian War. The displacement of the approximately 20,000-25,000 Crimean Tatars along with the allied forces during and immediate aftermath of the Crimean War has been the first wave of emigration in this period (Kirimli 2008, 767). This emigration was followed by the emigration of approximately 300,000 Tatars and Nogays to the Ottoman Empire between 1859 and 1865 (Kırımlı 2012, 12). The emigration of the Caucasian peoples to the Ottoman Empire, which began in the 1860s after the Russian army embarking on the conquest of the Caucasus, has been one of the largest emigrations in this period. Between 1859 and 1864, over a million Circassians emigrated to the Ottoman Empire as a result of the Russian policies which are named as "mass ethnic cleansing". In addition to Circassians, Chechens, Ubykhs, Abkhazians, the Laz of the south-western Caucasus and the other Caucasians have also emigrated to the Ottoman Empire (Williams 2000, 93-94). Between 1855 and 1866, at least 500.000 and possibly 900.000 Muslims have emigrated to the Ottoman Empire's territories. One-third of this emigrant population was from the territory of the former Crimean Khanate, and two-thirds from North and West Caucasus (Fisher 1987, 356). In various sources, it is stated that the total number of Caucasians who emigrated in the second half of the 19th century was between 200,000 and 1,500,000 (Habiçoğlu 1993, 70-73). Saydam states that between the years

1856-1876, about 600,000 to 2,000,000 emigrants have left the Crimea and the Caucasus (Saydam 1997, 90-91).

The third period, in which mass emigration movements intensified, has been the period after the Ottoman-Russian war (1877-78). After the war, as a result of losing lands in the Balkans and in the Trans-Caucasus, the Crimean Tatars and Nogays, Circassians, Ajarians, Abkhazians and Dagestanis were forced to emigrate to the Ottoman Empire. In addition to these groups, the Rumelian Turks, Albanians, and Bosnian Muslims were forced to emigrate to the Ottoman Empire. Some of these emigrants were emigrants who had emigrated to the Rumelia's territories during and immediate aftermath of the Crimean War. So, they experienced the second exile after the Ottoman-Russian War (Yıldız 2006, 15-16).

These migrations have been followed by the mass emigrations of the Muslims which took place during the Balkan War (1912-1913). Muslims have emigrated from Macedonia, Kosova, Thrace, and Dobruja to the Anatolia during and aftermath of the Balkan Wars (Karpat 2010a, 94).

The total number of emigrants coming from the Crimea, the Caucasus, and the Balkans to Ottoman Empire's territories is expressed as approximately five million (Karpat 2010b, 152-53). McCarthy, by depending on the lowest estimates, points out that the number of Muslims who have been killed or died between the Greek rebellion in 1821 and the Greek-Turkish population exchange, is 5,060,000. He states that the number of emigrants who emigrated within the same period is 5,381,000 (McCarthy 1998, 374).

The mass emigration of Muslims which began in 1783 when The Crimean Khanate was occupied by Tsarist Russia has continued approximately 150 years. And, emigrants coming from different territories have settled in the many regions of the

Ottoman Empire. Karpat, along with emigrations from the Crimea, the Caucasus, and the Balkans during the 19th century, states that the Muslim population in Anatolia increased by 20-30% (Karpat 2010a, 57).

## **2.2. Emigration of Crimean and Nogay Turks**

### 2.2.a. Economical, Political, and Religious Reasons of Emigrations

There are a number of reasons why the Crimean and Nogay Turks have emigrated to the Ottoman Empire. The main reason for emigrations has been the Russian imperial expansionism and the economic, political and religious policies implemented with.

The policy of clearing the Crimean peninsula from the Crimean Turks, who were seen as harmful elements, and resettling the Christian colonists (preferably Russians or Slavs) to the peninsula has been the main reason for the emigrations. This policy was put into practice at the end of the 18th century with the exile of first-degree members of the Geray dynasty from the Crimea to the Ottoman lands. And, in the following years, it has triggered the mass emigrations (Kırımlı 2012, 10).

There have also been some economic policies to force the Crimean Turks to emigrate. The expulsion of Crimean Turks from their own lands has often occurred as a result of the policy of the ownership of Crimean lands forcefully by Russian landowners and officials. The Russian officials have continuously increased the tax levied on the Tatars and have brought additional taxes. These pressure and intimidation policies have accelerated the emigrations (McCarthy 1998, 16).

The oppression and atrocities against the Tatars were considerably increased during the Crimean War, and many of the Tatars were killed or forced to flee. An unspecified number of people were deported to the inner regions (McCarthy 1998, 16). The Slavic population has been settled at peninsula within the context of the policy of

Slavization of Crimea. The demolition of the social and political institutions of the locals, the land policy that considers the benefit of the Russian landowners and the perception of the Muslim population as a security problem has been the main reasons of emigrations (Fisher 1987, 356-57). During the Crimean War, the attitude of Tsarist Russia towards the Crimean Turks, and these policies have led to the emigration of Crimean and Nogay Turks which resulted in almost emptying of the peninsula.

Although the policy of the mass Christianization of the Crimean Tatars was not common in practice, the Christianization of the peninsula has become one of the main policies so as to stabilize the peninsula. To this end, the number of Christian institutions on the peninsula has been increased (Kozelsky 2008, 889). And parallel to this, the Russians (Slavic settlers), Greeks, Bulgarians, Germans, Czechs, Estonians, and others have been settled in the vacancies (Kozelsky 2008, 889; Williams 2002, 326; Potichnyj 1975, 303).

#### 2.2.b. The Process of Emigration

The first mass emigration of Crimean Turks to the Ottoman Empire territories was realized in the period of 1772-1789. Approximately 50,000 to 300,000 Crimean Tatars emigrated to the Empire in this period (Fisher 1987, 156). Although it is stated that there is not much information about this first mass emigration, it is estimated that in 1783/84, 80,000 Tatars settled in Bessarabia and Dobruja and then in Anatolia (Karpas 2010a, 162).

The annexation of the Crimea in 1783 by Russia is accepted as the beginning of the process of Crimean Tatars' emigration to the Ottoman Empire (Kirimli 2008, 751). Crimean Tatar emigrations in the years 1802-1803, 1812-1813 and 1830 have



been followed by large waves of emigrations during and immediate aftermath of the Crimean War (1853-56) (Kırımlı 2012, 11).

As a result of the Russian imperial expansionism and all these pressure and intimidation policies implemented, emigrations of the Tatars and Nogays from their ancestral lands reached its peak during and after the Crimean War(1853-56). With the great Nogay emigration in 1859-60 and the great Crimean Tatar emigration of 1860-61, while the Nogays completely emptied the Kipchak steppes, the Crimean Tatars lost the majority in their lands. Between 1859-65 at least 300,000 Tatars have emigrated to Ottoman lands, Rumelia and Anatolia. This wave of emigration was the largest mass emigration that the Ottoman Empire had ever witnessed. The Crimean Tatars remaining in the peninsula have also continued to emigrate to the Ottoman Empire from time to time as smaller masses (Kırımlı 2012, 11-13).

The Crimean Tatars that had settled in the Balkan territory have experienced the second mass emigration towards Anatolia as a result of the losses in Balkans after Ottoman-Russian War (1877-78). Majority of the Crimean and Nogay Turks who currently live in Turkey descended from emigrants coming with the second mass emigration from Balkans (Kırımlı 2012, 11-13). Similarly, second and even third wave emigrations to the Anatolia experienced from the lands lost as a result of the 1912-13 Balkan wars. The emigrations have continued until the First World War (Kırımlı 2012, 14).

The number of Crimean Tatar and Nogay emigrating to the Ottoman lands varies in several sources. Karpat states that the total number of Tatars who migrated to the Ottoman lands between 1783-1922 was approximately 1,800,000 (Karpat 2010a, 162-63). Shaw gives the number of emigrants migrated between 1854 and 1876 from

the Crimean territory to the Ottoman lands as 1,400,000 (Fisher 1987, 363). There are different emigrant records and estimates for different historical periods. In any case, the Crimean and Nogay Turks, which can be expressed with hundreds of thousands of people, have emigrated from the territories of the Crimean Khanate to the Ottoman Empire during the 19th century.

### **2.3. Settlement of Crimean and Nogay Turks in Ottoman Empire Territories**

The settlement policy of the Ottoman Empire regarding Muslim emigration spreading over a wide historical period has changed according to time and place. The Ottoman Empire has applied the different settlement policies for emigrants coming from the different economic and cultural backgrounds in accordance with the political, economic, and social circumstances and necessities of the Empire (Kırımlı 2012, 15).

#### **2.3.a. General Settlement Policy of The Ottoman Empire**

The Ottoman Empire implemented the systematic placement of the Muslims who emigrated to the Empire lands. The most important issue for the Ottoman Empire was to ensure provision of necessary conditions to emigrants to get out of misery immediately and to be able to continue their lives by becoming a producer. For this purpose, the Ottoman administration has tried to settle the Crimean and Caucasian emigrants coming during and after the 1853-56 period in the best way. The administration has spent a considerable amount of resources on the job of the settlement of emigrants (Saydam 1997, 115, 119).

For the purposes of the relocation of emigrants from the Crimea and the Caucasus to the Imperial lands, settling in suitable places and providing the necessary assistance, institutions such as the Ministry of Commerce, and Şehremaneti has been

employed. As a result of the increase in the number of emigrants, the “Muhacirin Komisyonu” was formed on 1 January 1860 to provide more comprehensive attention. In the regions where a large number of emigrants were located, policies have been implemented for emigrants through established units and appointed administrators (Saydam 1997, 102-108). Assigned officers have identified the settlements and provided the settling of emigrants in accordance with the instructions given. In 1865, the “Muhacirin Komisyonu” was abolished as a result of the decrease in the number of emigrants. The “İdare-i Umumiyye-i Muhacirin Komisyonu” was established on 18 June 1878 in order to deal with the resettlement of emigrants coming from the lands lost after the Ottoman-Russian War (1877-78). In the following years, similar institutions have carried out works about the settlement of emigrants (Saydam 1997, 113-114).

### 2.3.b. Grants and Aids

The Ottoman Empire, which aimed to eliminate the misery of the emigrants by placing them as soon as possible and allowing them to become a producer, has provided a series of assistance to emigrants. In addition to the economic and political conditions of the State, the aid and facilities provided also changed according to time and place in parallel with the changes in the number of emigrants (Kırımlı 2012, 17).

The aid provided to emigrants was initiated by transporting those from the Crimea and the Caucasus with state-owned or merchant ships and all expenses were paid by the treasury (Saydam 1997, 153). In general, emigrants have been provided with food and fuel aid in temporary and permanent settlements. Dwellings of the emigrants who were poor and who could not able to make their own dwellings, have

been built by the state itself, and in some cases by neighbors in the context of neighborhood relations. In addition, the state has exempted emigrants from "aşar" and all other taxes for a certain period of time in order to help them to provide the necessary capital accumulation. Similarly, although the duration varies according to time and place, the exemption of emigrants from military services has been one of the policies applied frequently. The provision of seed grains, oxen and agricultural equipment for emigrants to process the land given to them and to ensure their immediate transition to producer status has been a policy frequently applied. Instead of dealing with agriculture, those who had commercial and artistic businesses, and have settled in cities, have been given the values of these aids (Saydam 1997, 169-175).

Another aid provided to emigrants has been educational, cultural, health and social assistance. In order for the emigrant children to receive education, schools were built, mosques and madrasas were built, and various health assistance was provided for the protection of emigrants from epidemic diseases (Saydam 1997, 176-184).

### 2.3.c. Determinants of Settlement Locations

The Ottoman Empire has acted according to some criteria in determining the settlement locations of the emigrants. The most important of these criteria has been the allocation of empty lands suitable to settle in mass. In addition, the state has resettled emigrants, taking some points into account. One of them has been the state's desire to ensure the security of the borders. To ensure the security by increasing Muslim population, the Crimean Tatars and Nogays, who emigrated during the Crimean War and before, have mostly resettled in the Balkan lands (Saydam 1997, 96-97; Kırımli 2012, 16).

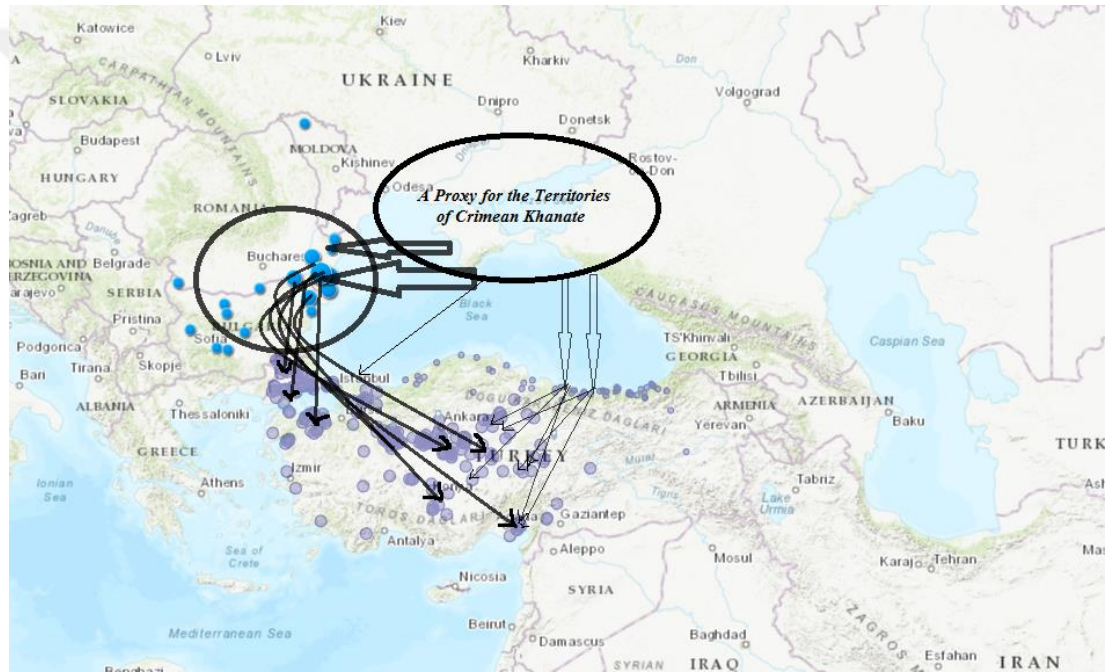
Another important factor in the choice of settlement locations was suitability and favorable conditions of settlement regions for emigrants in terms of the climate and topography characteristics. This was largely demanded by emigrants. In any case, even though a preliminary investigation was not possible to determine whether climate and natural conditions were suitable for emigrants, the officials have followed this criterion to reduce the losses due to improper climate, nature and health conditions (Kırımlı 2012, 17-18). In some cases when the state could not fulfill the request from the emigrants, the emigrants left their settlements and migrated to the regions where the climate and nature were suitable for them. For example, the Nogays, who came from the steppes, had left the lands assigned to them and have settled in the Konya, Ankara and Kırşehir, and the Central Anatolian steppes. Similarly, the people coming from the Yalıboyu and from the mountainous regions of the Crimea have settled regions that having greenery and highlands (Kırımlı 2012, 22).

#### 2.3.d. Settlement Locations of Crimean Turks, and Nogays in Ottoman Empire

The settlement of the Crimean and Nogay Turks to the Ottoman territories have often not occurred in the form of settling in the Anatolia by emigrating directly from the Crimea and Dest-i Kıpçak. Emigrants have first resettled in the Balkans and have resettled in Anatolia after these lands were lost. The settlement areas of the masses of Tatar and Nogay emigrants coming especially during the 1853-56 Crimean war and before have been Balkan lands. They have spread over wide regions in Balkan territories, mainly in Bulgaria and Dobruja. An intensive Tatar population was settled to the Dobruca-Deliorman region. In 1857, with the settlement of the Tatars, the Mecidiye town, which the majority was composed of the Crimean Tatar population,

was formed (Kırımlı 2012, 14; Karpát 2010a, 199-232). According to the Fisher, with the settlements of Tatars, Dobruja has transformed almost a "Küçük Tataristan". In 1880, the population share of Crimean Tatars in Silistre is 7%, Mecidiye 65%, Mangalye 76%, Kostenza 54%, Hirsova 15%, and in the whole Dobruja, 38% (Fisher 1987, 368). In addition to these regions, the emigrants have settled in many parts of the Balkans such as Tırnova, Babadagı, Tulca, Pleven, Sofia, Kazanlık, Karınabad, Pazarcık, Lofca, Vidin, Ruscuk, etc. as it can be seen from Map.2.1.<sup>1</sup>

**Map 2.1.** Emigration routes of the Crimean and Nogay Turks



After the Ottoman-Russian War (1877-78), with the loss of these lands, the lands of the Empire in Anatolia and Thrace have been new settlement regions.

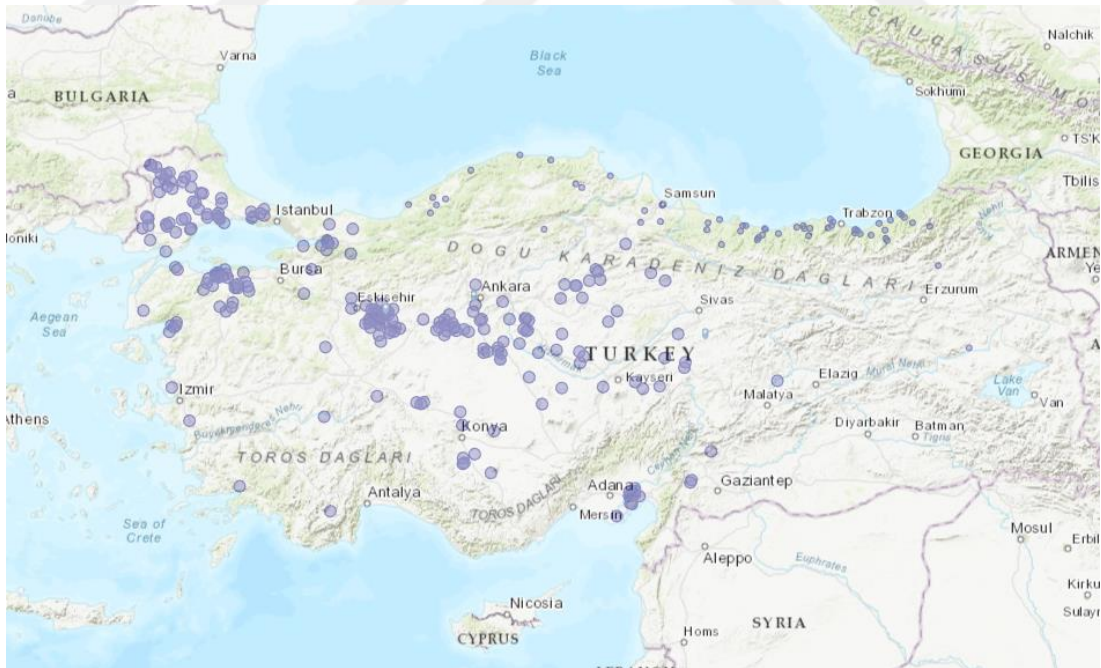
<sup>1</sup> I prepared this Map by using ArcGIS. The locations circled in the Balkans represent the main settlement regions of Crimean and Nogay Turks. I use Kırımlı (2012), Karpát (2010a), Fisher (1987), and Yıldız (2006) to determine the settlement regions in Balkans. The map shows that Crimean and Nogay emigrants have emigrated to Balkans from the territories of Crimean Khanate first. Then, after the Ottoman-Russian War (1877-78), they have emigrated to Anatolia and Thrace. As it can be seen from the Map, in some cases, they have emigrated from the Crimea to Samsun port, Trabzon port, or Istanbul. But, the vast majority of emigrants have settled in Balkans first and, after the War, they have experienced the second exile and emigrated to Thrace and Anatolia. So, the directions given as bold represent the main migration routes.

Similarly, the Crimean and Nogay Turks have settled in the territories of Anatolia and Thrace by emigrating from the regions lost after the Balkan Wars (Kırımlı 2012, 14).

### 2.3.d.i. Crimean Tatar and Nogay Settlement in Anatolia and Thrace

The regions where the Crimean Tatars have densely resettled are the territories of Thrace, Marmara, Central Anatolia, and Çukurova as seen in Map 2.2.<sup>2</sup> It is seen that the Crimean Tatars have been placed in the ground areas and the plains in such a way as to enable them to use their agricultural skills. The regions where the Nogays have heavily settled are the Central Anatolia and Çukurova regions, which have similar climate and topographic characteristics with their homeland (Kırımlı 2012, 28; Paşaoğlu 2009, 301-348).

**Map 2.2.** Distribution of Rural Settlement of Crimean Tatars and Nogays in Turkey



<sup>2</sup> I arranged this map by using ArcGIS. Every circle in the map shows the exact coordinates of villages of Crimean Tatars and Nogays. I use the "Türkiye' de Kırım Tatar ve Nogay Köy Yerleşimleri, Kırımlı, 2012 " to get the names of the villages, the number of villages, and the provinces they were established on.

First region where the Crimean and Nogay Turks densely settled is Çukurova Region. Nogays, who established Ceyhan district as a village named Yarsuvat in the Çukurova region, formed many village settlements around the Ceyhan River. Fourteen Crimean Tatar and Nogay villages, whose traces survived until today, have been identified and almost all of them have been established in the plain of the Ceyhan (Kırımlı 2012, 46-67; Bayraktar 2008, 49-56).

Second region where the Crimean Tatar and Nogays have settled massively is Ankara. Thirty Crimean Tatar and Nogay village settlements have been established in Ankara. It is observed that these settlements were concentrated in Polatlı, Gölbaşı and Haymana districts (Kırımlı 2012, 85-171). One of the regions where the Tatars have been settled intensively is Konya. Fourteen Crimean Tatar and Nogay village settlements have been established in this region (Kırımlı 2012, 485-526)

One of the most important settlements of the Crimean Tatars and Nogays is Eskişehir. Emigrants have been scattered to a total of 39 village settlements identified in the aforementioned work and whose traces continued until today (Kırımlı 2012, 281-381). It is seen that they distributed to 10 villages in Bursa, another settlement region (Kırımlı 2012, 215-230). It is mentioned that the Crimean emigrants have settled in Bursa villages, especially in the central neighborhoods, the villages of Karacabey and the villages of Mustafa Kemal Pasha (Seyhan, 67-114, 156-158).

Another province where the Crimean Tatars and Nogays were settled intensively is Balıkesir. In this region, it is observed that they were distributed to a total of 23 village settlements (Kırımlı 2012, 177-210). They are scattered in a total of 17 village settlements in Edirne, another intense settlement region (Kırımlı 2012, 253-276). Tekirdağ is also one of the dense settlement locations. A total of 18 Crimean



Tatar villages were established in the provincial borders (Kırımlı 2012, 579-606). Another province where emigrants have settled intensively is Kırsehir. It is mentioned about the 11 village settlements in this region that were established by Crimean and Nogay emigrants (Kırımlı 2012, 461-74, 531-35). In addition, Kocaeli, Kiklareli, and Corum have been also settlement regions of Crimean and Nogay emigrants.

The Crimean Tatars and Nogays have continued to live for many years in the villages they settled. Their migration to other villages or city centers for various reasons has started to be seen especially after the second half of the twentieth century. (Kırımlı 2012, 30). Even though the vast majority of emigrants have settled in the rural areas, difficulties of conditions in rural areas, the prevalence of epidemic diseases, and some other reasons have triggered to migrations to the other villages or city centers. The occupational status of the emigrants has been also influential in this decision, and tradesmen, craftsmen, and merchants have preferred to settle in cities (Kırımlı 2012, 31).

As we understand from the Kırımlı (2012), migrating to the other villages or city centers as a result of difficulties in rural areas, epidemics, and other factors are first stage decisions determining the settlement places. So, we can state that these kinds of migrations took place at the beginning, or the immediate aftermath of the settlement. Hence, we can infer that our knowledge about the settlement locations depends on the last settlement locations. So, even if the emigrants migrated to other villages or city centers, it does not affect the intensity of the emigrants in provincial borders, because migrations generally took place within the provincial borders.

There are three different types of settlements in terms of demographic distribution in rural settlements of Crimean and Nogay emigrants. The first one is the

typical Tatar villages that Crimean and Nogay emigrants have had the vast majority of the population. The second category is the villages where other ethnic groups have settled with Tatars and Nogays. The third type of settlement is the villages where different ethnicities live, and where small groups of Tatar and Nogay emigrants have also settled (Kırımlı 2012, 28).

Another form of Crimean Tatar settlement is the settlements found in the regions of Central and Eastern Black Sea. Crimean Tatar settlements are observed in these regions due to its geographical proximity to the Crimean Peninsula and some other reasons. As a settlement type in these regions, it is stated that the Crimean Tatars which have dispersed as families to the villages those native people had lived. Emigrants who have settled in these regions have been few in number and have migrated in earlier periods (Kırımlı 2012, 29).

## CHAPTER III

### AGRICULTURE IN OTTOMAN EMPIRE

In this section, we will explain the importance of agricultural activities in the Ottoman Empire from the 19th century on, the scope of agriculture, the way of agriculture, the existing agricultural technologies, agricultural production and the possible internal and external factors affecting agricultural activities.

#### **3.1. Agricultural Structure and Land Regime**

The vast and favorable lands of the Ottoman Empire have remained empty during the nineteenth century and even at the beginning of the 20th century. The proportion of cultivated land has been higher in Rumelia compared to Anatolia and it has been 8.3% of total arable land in Rumelia and 6.7% in Anatolia. This ratio has also varied within the regions. Especially, in Western Anatolia, cultivated land represented a larger percentage compared to Eastern Anatolia and Central Anatolia, where the population density was relatively lower (Güran 1998, 67).

Until the 1850s, there were no regions where populated intensely in the large Central Anatolia basin. In Western and Southeastern Anatolia, the marshes had large areas and malaria-like diseases were quite common (Quataert 1997, 861). Most of the cultivated land was operated by small family businesses with limited capital (Güran 1998, 69; Quataert 1997, 861). The small family businesses, which had been in the majority for centuries, accounted for about 4/5 of the lands processed in the 1840s, and these lands were smaller than 8 hectares that a family could operate without using

workers. By 1907, 81% of the cultivated land of Anatolia was composed of family farms which were less than 4.5 hectares. In 1910 in Anatolia, 75% of the land was operated by family farms smaller than 5 hectares. In this period of time, despite the increase in population and commercialization of agriculture, the domination of small family farms throughout the Empire has remained unchanged (Quataert 1997, 863-64).

With the Land Code (1858), the Empire provided the right to farmers to legally operate the state land by issuing the title deed to farmers who de facto operate the land. With this law, it was aimed to keep the "Ayan" -proprietors of big lands-under strict control and to limit their power. Thanks to this law, largely, small farmers have become landowners in a more confident legal framework by obtaining title deeds. In this context, private land ownership has been supported and as a result, the stability of owning land, and production and tax revenues have increased (Quataert 1997, 857).

In the 19th century, large-scale land ownership has been also available in Ottoman lands. The large manor organizations, which had increased in the late 19th century, have been widespread in the Moldavia, Wallachia, the Çukurova plain, much of the Iraqi regions and the Hama area, and have engaged in export-oriented production. Large manor organizations were operating through the adoption of sharecropping, generally by using the 50-50 division method, rather than the capitalist enterprises employing paid workers (Pamuk 2005, 213; Quataert 1997, 863).

It is stated that the separation of lands as "vakıf", "miri", or "mülk" has had a limited impact on the methods of soil processing. At the same time, it is emphasized that, although small family farms have been widespread, the method of soil processing have not been affected by the form of ownership-owning by large or small landowners, and the use of paid workers or the method of the sharecropping (Quataert 1997, 863)

### **3.2. Agricultural Methods and Technology**

Agriculture in the territory of the Empire was carried out by the widespread use of dry agricultural techniques. While the yield of the soil can be increased by 3 to 8 times when it was irrigated, the share of irrigated lands in the total agricultural area has been limited (Quataert 1997, 852-53). The Ottoman farmer was using technologically primitive tools to process the soil and remove the harvest. Primitive agricultural tools such as wooden plow, hand trowel, scythe, anchor and slider were commonly used agricultural tools. With the wooden plow, only 3 acres of land on a working day could have been processed at a depth of 10-15 cm. On the other hand, the use of iron plows could have increased the land processed in one working day to 12 acres and the processing depth of the soil to 20-25 cm. The use of wooden plow has been one of the most important factors limiting cultivated lands (Güran 1998, 85).

The Ottoman farmers generally were using the throwing method when they sow seeds which were screened. In order to harvest the crop, farmers were commonly using a hand-sickle. The use of sickle machines which were used in the regions where agriculture was relatively developed and which minimized the cost by 30% was very limited. The method of separating the grains from the stalks after crushed by animals such as donkey, horse, and similar animals has been commonly used. In addition to this, the stone mills have been used to a limited extent in threshing works. The farmers have not cultivated all lands due to the limited number of agricultural machines which could be considered as primitive (Güran 1998, 87).

For agricultural transportation, two-wheeled vehicles pulled by animals such as horses and donkeys, and vehicles pulled by a pair of oxen were frequently used. Besides, the more widely used four-wheeled trolleys (“Tatar arabası”) in Rumelia were lighter in weight and suitable for more load-bearing. The use of these vehicles was

accelerating the works and significantly reducing transport costs (Güran 1998, 87). Even though transportation with vehicles pulled by horse and oxen was less costly compared to other types of transport, the roadways suitable for these vehicles have remained insufficient over the long time period. The high transportation costs have not promoted the farmers to produce more and caused the production to remain in subsistence-level. While more progress has been made in coastal areas suitable for maritime transport, railway transportation that started in 1865 has been effective in providing transportation advantages in Rumelia and inner parts of Anatolia (Güran 1998, 70-73).

After 1890s, there have been changes in the tools used in agriculture. Use of iron plow and modern tools in agriculture increased after this date. In the years before World War I, the number of iron plows has increased by individual initiatives, the encouraging policies of the government, and the initiatives of railway companies. In addition to iron plows, the use of steam engines has also increased in various regions of Anatolia. By the 1950s, the number of farms with iron plows have still remained around 44%, although the modern tools used in agriculture had increased (Quataert 1997, 853).

### **3.3. Changes in Agricultural Production, and Production Profile**

In the Ottoman Empire, a large part of the population, for centuries, has provided its livelihood from agricultural activities. While, in the 1800s, the proportion of those engaged in agriculture was four-fifths of the population, and in 1909 the same situation was continuing. From the 19th century to the beginning of the 20th century, Ottoman agriculture experienced changes in many aspects ranging from the composition of production to the method of production. By 1914, production increased

significantly compared to 1800, export-oriented production expanded, and in some regions use of modern agricultural equipment increased. The use of chemical fertilizers in agriculture remained limited, and natural fertilizer continued to be the most widely used additive (Quataert 1997, 843)

In the Ottoman Empire, the presence of relatively abundant lands, scarcity of labor and capital, primitive transportation methods, primitive agricultural equipments, the being not widespread of commercial agricultural production, the insufficient climatic conditions, unfavorable land tenure, the crushing burden of taxation and security problems have been the main reason why the cultivated lands remained limited during the centuries. But, by the 19th century, this profile has started to change with the effects of certain internal and external factors, and as a result, agricultural production has increased (Novichev 1966, 65; Güran 1998, 69).

One of the main reasons for the increase in agricultural production in the Empire has been the expansion of cultivated lands (Quataert 1997, 843). One of the main factors that encouraged the cultivation of more land has been the increase in export-based production. As a result of the expansion of foreign markets, farmers have increased their production to meet the increasing external demand. Between 1840 and 1913, the export of the Empire has increased tenfold at fixed prices and seven-fold at current prices. Although the share of agricultural products exported in the GNP increased, it has remained around 10% in 1913. While more than 20% of the total agricultural products were exported, the share of agricultural products in total exports was around 90%. By the beginning of the 19th century, export-oriented production was concentrated in Macedonia, Thrace, Western Anatolia, Marmara, and Eastern Black Sea coasts where generally nearby to the main ports or where the product shipment was relatively easy. Until the construction of railways, interregional food

trade has not much improved due to the fact that the means of vehicles were primitive and transportation was expensive for long distances. After 1890, with the access of the railway, Central Anatolia has also started to produce for long-distance, especially for Istanbul and European markets. On the other hand, the Southeast and Eastern Anatolia have been the most closed regions of the Empire to external markets (Pamuk 2017, 86-87, 100-101).

While the agricultural production and the composition of production were affected by external demand in the context of market-oriented production, the changes that occurred within the Empire have been the main factors triggering the increase in agricultural production. Increased security in the Empire, absolute and relative population increases led to an increase in cultivated land. The arrival of nearly seven million emigrants into the Empire and their resettlement to various places, and the settlement of nomad tribes have been more effective than the export-oriented production in terms of increasing agricultural production (Quataert 1997, 844). The settlements of the nomad tribes and the resettlement of the emigrants had effects on the agricultural production by increasing in cultivated lands. On the other hand, they have triggered the increases in domestic demand by increasing the urban population (Quataert 1997, 849).

In addition to all the above developments, the government has implemented various incentive and support programs to increase agricultural production. The support programs launched in the 1830s have not succeeded, and in the 1890s these supports have been accelerated and agricultural schools were opened for this purpose. To support the farmers, Ziraat Bank was established in 1883 and credit support has provided to farmers to enhance their conditions and to increase their agricultural productions (Quataert 1997, 872).



When we look at the progress of agricultural productivity in the light of all the internal and external factors mentioned above; In particular, the efficiency of some products increased significantly in 1909 compared to 1897 (Güran 1998, 97). A number of different arguments have been put forward as the reasons for the increases in agricultural outcomes. The first is that the railroads and other transportation routes have improved and as a result, farmers have increased their production towards the internal and external markets. It is stated that the connection of cities to railroads have accelerated the commercialization of agriculture and as a result, farmers have increased their productions towards the markets, especially domestic markets (Güran 1998, 97; Hourani 1966, 20; Pamuk 2005, 217-18). On the other hand, as the main reason for the increase in productivity, it is mentioned that emigrants coming from Rumelia brought technologically better tools and methods, and as a result, agricultural productivity and production have increased (Güran 1998, 97).

## CHAPTER IV

### HISTORICAL RECORDS

In this section, the historical records about developments that had been provided by the Crimean Tatars and Nogays with the knowledge and skills they brought with them will be mentioned.

#### **4.1. Improvements Provided by Crimean and Nogay Turks**

It is stated that the Crimean Tatars have been the most successful group in the regions they have settled between the emigrants who had been exiled by Russians (McCarthy 1998, 18). Because of the similarities of their languages and traditions with natives, the Tatars, who quickly caught the social cohesion, have begun to produce agricultural crops on the farms provided by the Ottoman government (McCarthy 1998, 44). Coming from a geographically different region, this group has brought with themselves a number of innovations to the Ottoman lands.

Crimean and Nogay Turks skilled in agriculture, contributed a number of changes/developments in settlement regions. One of the most important innovations brought by emigrants was using more advanced methods and skills in agricultural production. The emigrants have brought with themselves some agricultural equipment which was better than the equipment used by natives at that time such as the iron plow, the reaping machine pulled by horses, steam-operated threshing machine, and the boxed seed drill machine. Thanks to these agricultural tools and machinery, the soil has been better processed, the products have been harvested more quickly and

effectively, and as a result, cultivated area and agricultural productions have increased. New transportation vehicles such as “Tatar arabası (taleqa)”, which have been brought by emigrants, and which have not been used in Anatolia at that time, have provided advantages in terms of transportation. Thanks to the transportation advantages provided, it has become easier to carry agricultural products. Thus, the cultivated area has expanded and welfare increases have been experienced in the related regions. In addition, the marshy areas which have been abundant before the settlement of emigrants have been dried. It is stated that production, especially the production of grains, in the settlement regions has expanded. With the settling of Crimean emigrants coming from the plains, there have been significant increases in grain production in the triangle of Konya-Ankara-Eskişehir. The transformation of Central Anatolia into a "grain elevator" has started with the settlement of this group of emigrants. The development of Eskişehir as a commercial center has been the result of the increase in wheat production in this region. (Karpat 2010a, 187; Karpat 2010b, 162; Kırımlı 2012, 25; Gözaydın 1948, 99-100)

In addition to increases in agricultural production which were yielded by using more developed agricultural methods, tools, and machines, emigrants have played an important role in the spread of some cultivated plants such as potatoes, beets, and sunflowers. In this way, with the settlement of the Crimean Tatar and Nogay emigrants, the agricultural production profile has also experienced some changes (Kırımlı 2012, 25). In addition to these changes, a small group of Crimean Tatars having commercial experiences has played a role in the establishment of new enterprises, and as a result, has affected the increase of commercial activities in the regions where they settled (Karpat 2010a, 187).

There are a number of historical records on the changes/developments that the above-mentioned Crimean Tatar and Nogay emigrants have created in the settlements. I will mention these historical records in detail below.

#### **4.2. Historical Records**

The improvements they brought about in the city of Adana, where the emigrants settled intensely, were reflected in the historical records. The famous Ottoman statesman Ahmed Cevdet Pasha, who visited the region, states how the settlement locations developed in terms of agricultural production, and how Nogay emigrants have been insufficient to transport crops that harvested in productive amounts. It is stated that the emigrants started cotton farming which had high economic value after a few years than their settlement in the region. Additionally, it is mentioned that Nogay emigrants have met the transport needs of both themselves and natives by manufacturing hundreds of vehicles (Kırımlı 2012, 18).

In Ankara region, which has been one of the intense settlement locations of emigrants, effects of the Crimean Tatar and Nogays on agricultural production and agricultural productivity have been mentioned in the historical records and contemporary research. In the Eskipolatlı village, the Crimean Tatars have carried out advanced agricultural techniques they brought from Dobruja and Crimea. In this village, they have used agricultural machines which had more advanced technology such as the reaping machine pulled by horses, and the boxed seed drill (Kırımlı 2012, 114). Similarly, Crimean emigrants who have used iron plows in agricultural production, and who have processed the lands by horses have led to successful results in agricultural production in Günalan (Horoz) and Karauyu villages. Additionally, founded in 1931 in the village of Karakuyu, Agricultural Credit Cooperative, the first

agricultural cooperative was established in Turkey, have also made great contributions to the development of agricultural production in the village and the surrounding villages in an inclusive manner (Kırımlı 2012, 121, 127). Similar developments have been recorded for the other Crimean Tatar villages such as Karayavsan, Sakarya and Taspınar villages established in Ankara region (Kırımlı 2012, 137, 139, 153).

Similarly, the contributions of the Crimean and Nogay emigrants, who settled intensely in the Edirne region, have reflected in the records. The inhabitants of Hasköy, which were founded in this region, have been Crimean Tatars coming from Dobruja, and they have brought their cattle, horses, vehicles, equipment with themselves. Additionally, It is stated that sunflower production, which is an important source of livelihood, was started by Crimean emigrants in the region (Kırımlı 2012, 268).

In Tatar villages established in Eskişehir, one of the most important settlements of Crimean Tatars and Nogays, production increases yielded from the using of new agricultural methods and machines have been experienced frequently. The iron plows and reaping machines pulled by horses used in the village of Akyurt (Lütfiye) have affected agricultural production considerably (Kırımlı 2012, 289). In the villages of Fevziye, Gökçeoğlu, and Güneli, the increases in agricultural production yielded from better and advanced agricultural methods and tools have been also recorded (Kırımlı 2012, 302, 305, 310). In addition to agricultural improvements, the fact that the first model of the project of the " Köy Enstitüsü " was established by Tatar origin Ismail Hakki Tonguc in the Hamidiye as "Çifteler Köy Enstitüsü" has increased the education level of the region considerably (Kırımlı 2012, 315). In also the villages of Hayriye, İkipınar, and Mesudiye, the increases in agricultural production yielded from better and advanced agricultural methods and tools have been recorded (Kırımlı 2012, 318, 325, 351). Another settlement is the village of Serefiye where Tatar emigrants have

brought advanced agricultural technologies. It is stated that in this period, some of the Tatars in the village have begun to import agricultural equipment from Crimea by selling all their goods (Kırımlı 2012, 361). Similarly, it is stated that the production with advanced agricultural methods and tools in the village of Yaverören, which is one of the villages established by the Tatars, exceeds the villages in the region. It is mentioned that the village, which consists of 60 households in 1917, paid the tax which was twice as much as the total tax paid by the 45 villages in Sivrihisar region (Kırımlı 2012, 368).

In Konya, which is one of the dense settlement regions, Tatar people who established Tursunlu Village and who come from the regions of Crimea known for its vineyards and gardens, have brought the viticulture with themselves. But, it has not been permanent because of the inappropriate agricultural conditions of the region (Kırımlı 2012, 516). Furthermore, it is recorded that Tatars, who settled in Mandasun village of Karaman, have used agricultural methods and tools which were unknown to native people, and as a result, they have increased agricultural production (Kırımlı 2012, 425). According to Kırımlı, the Hungarian traveler Bela Horvath has expressed his impressions of the Yağlıbayat, a Crimean Tatar village in Konya, as follows:

“Emigrant settlements, increase the country's already very low population density and provide improvements to the country with hardworking and culturally developed layers. The emigrants, along with themselves from the countries they come from, definitely bring more advanced work tools and quality seed than those in Anatolia. They are also developing their settlement locations in a short time.” (Kırımlı 2012, 522).

“Tatars are very good at gardening, trade and animal husbandry. It is possible to see them as Jews of the East; that is, they can reach a noticeable wealth and cultural development among the peoples of the East. The language they speak is similar to Turkish, but the Tatars, who emigrated from the Crimean Peninsula and the Balkan countries, have adopted Turkish. Now things have changed, the roles have been reversed: In their settlement regions, Tatars take on the function of the Jews. Jews are in decline in Anatolia.” (Kırımlı 2012, 523)

In one of the Crimean Tatar villages in Tekirdag, the Büyük Manika, it has been recorded that emigrants have brought their artistic skills with themselves. It is mentioned that the people of this village have been interested in the ironworking and the horseshoeing, and they have been famous for producing the best breed Crimean Tatar vehicles (taleqa). It is also mentioned that they are the first and only village that started tobacco cultivation in the region with the permission of the government (Kırımlı 2012, 587). Furthermore, it is stated that in the village of Karaagac, the emigrants were placed in the lands that were opened from the forest and they have made very fertile agriculture on these lands (Kırımlı 2012, 593). It is also mentioned that the iron horse carriages brought by the Crimean Tatars to the village of Önerler have been highly developed compared to the carriages used by natives and other emigrants (Kırımlı 2012, 597).

In addition to the above mentioned agricultural production and productivity improvements, there has been an increase in the number of commercial enterprises established in the settlement regions. Some wealthier Crimean people and tradesmen have been able to sell their goods during the emigration and brought together a significant amount of capital with their trade skills to Anatolia. According to the Karpat, in the second half of the 19th century, the Crimean emigrants, who had

constituted an important part of the Muslim middle class in Anatolia, have established successful commercial enterprises in cities such as Istanbul, Izmir, Balikesir, Bursa, Ankara, Konya, and Eskisehir (Karpas 2010a, 187). Karpas states that there has been a very developed merchant community among the Crimean emigrants coming from coastal areas of Crimean Peninsula (Karpas 2010a, 333).





## CHAPTER V

### LITERATURE BACKGROUND

The literature on the impact of migrants on the economies of the host countries is quite extensive. As this study is an empirical study, I will give some of the empirical studies investigating the economic effects of migration. First of all, I will mention the literature investigating the long-run consequences of migrations.

Murard and Sakalli (2018) investigate the long-term effects of the refugees migrating to Greece during the Turkish-Greek population exchange on the level of development. The population density, the luminosity per square kilometer, and dwelling characteristics are used as proxies for long-run economic development. They find evidence that municipalities which are experienced more refugee inflow have higher population density in 1971 and 1991 and higher luminosity (per square meter) in 1995. They also rely on dwelling characteristics as a proxy for household wealth and find evidence that presence of electricity, water supply, proper sewage inside, and bathing facilities in dwellings are significantly correlated with the refugee share. Furthermore, they find evidence that higher refugee share is significantly correlated with the higher participation in non-agricultural sectors and lower participation in agricultural. They also investigate the effects on non-primary occupations and earnings and find evidence that the manufacturing and financial sectors in 1971 are larger for the localities with the higher share of refugees in 1928. Additionally, they show that high-skilled occupations, earnings, top-earning occupations, and completion rate of primary, secondary, and tertiary education are positively and significantly correlated

with the refugee share. They show that refugees provided a large workforce and as a result, by accelerating the wages and productivity, settlement localities being become local manufacturing centers and attracted native migrants from the other regions of Greece. Additionally, they show that textile and tobacco industries, especially carpet-making and woolen and silk materials are introduced by refugees in settlement localities. They claim that these industries enhanced trade and increased the positive spillover effect on the production process.

Sequeira, Nunn, and Qian (2017) investigate the long-run effects of migration occurring during the Age of Mass Migration (1850-1920) on economic and social parameters of U.S. They rely on the instrumental variable to overcome the potential endogeneity problem. They find evidence that average per capita income, urbanization, and average years of schooling in 2000 are significantly higher for the counties which have higher immigrant share between the years 1860 and 1920. They also reveal that the population living under the poverty line and unemployment are significantly lower for the counties which have a higher migrant share. They show that the long-run positive effects of immigrants have resulted from the creation of economic activity rather than relocation of economic activity. Then they estimate the short-run effects of immigrants and find evidence that immigrants accelerated the establishment of more manufacturing, industrialization, agricultural productivity and innovation (patenting rates) are positively affected by immigration. To show the dynamic process and persistence of positive effects of immigrants on urbanization, income, and education, they estimate effects at the short-, medium-and long-runs, and find positive and significant effects. As a conclusion, they emphasize that their findings are supported by historical narratives that less-skilled immigrants provided labor force which is important for the industrial development, and some of them

brought new know-how which beneficial for industrial development and increased agricultural productivity.

Rocha, Ferraz, and Soares (2017) investigate the long-run effects of state-sponsored settlements which were established between 1870 and 1920 in the state of São Paulo, Brazil. They rely on the difference-in-differences method. Their estimation reveals that municipalities which had experienced state-sponsored settlements have a higher literacy rate in 1920. They also estimate the short-run effects of settlements on population density, percentage of small farms, agricultural productivity, land prices, and wages of construction and agricultural workers, but they do not find any significant effect. Secondly, they estimate the medium-run effects of the existence of state-sponsored settlement on literacy rate in 1940 and find evidence that municipalities having the establishment of state-sponsored settlements have 10 percentage points more literacy rate than non-settlement municipalities. This effect is more robust for individuals aged between 15 and 19. Lastly, they estimate the long-run effects of the establishment of state-sponsored settlements on education in 2000 and find evidence that there is a small effect on literacy rate and no effect on literacy rate for individuals aged 15-19. They also show that municipalities with state-sponsored settlements had more years of schooling than non-settlement municipalities. Additionally, they find evidence that income per capita in 2000 is 15 percent higher. As a mechanism for long-run effects, they provide evidence that settlement municipalities had more school per child only in 1920, more teachers per child in 1920 and in the long-run. They also reveal that settlement municipalities had more employment share in manufacturing and service sectors in the short-, medium-and long-runs while the lower share in agricultural sectors. They provide evidence about agglomeration economies which provided by more educated immigrants migrating to settlement municipalities from

the other parts of the country had a positive effect on income per capita in the long-run. Finally, they provide evidence that national or religious identities of immigrants had no effects on the long-run outcomes.

Droller (2016) examines the long-run effects of European migrations which took place during the Age of Mass Migration (1850-1914) on economic development of Argentina. It relies on the instrumental variable setting to overcome the potential endogeneity problem of settlement decisions. It uses a synthetic measure of the immigrant share as an instrumental variable for the actual share of immigrants in 1914. He reveals that the share of the European-born population in 1914 are significantly and positively correlated with GDP per-capita in 1994 and high-skilled occupations and higher education in 2001. As the underlying mechanism for these results, the author looks at the impact of European immigrants on literacy rates and find a positive and significant effect. The author states the skills brought by immigrants to the settlement counties as a second mechanism underlying the effects of European migrants on long-run outcomes. To show the skills' effects, the author separates the European immigrants as low-skilled and high-skilled in 1914, and provide evidence that the shares of high skilled and low-skilled European immigrants are positively and significantly correlated with the industrial GDP in 1994. And, the effects of high-skilled immigrants on industrial GDP is much larger than low-skilled ones. To better analyze these effects, the author investigates the industrialization process and find evidence that the industrial production value in 1935 increases by 41 percent and the number of industrial workplaces by 130 percent if the share of European immigrants increases one percentage point. Finally, the author examines the source of skills brought by European immigrants and finds evidence that immigrants who come from northern Europa have higher effects on main outcome variables than immigrants

coming from southern Europa. According to the author, this outcome is correlated with the differences in industrialization in countries.

Hornung (2014) investigates the long-run effects of Huguenot migration occurred during the seventeenth century to Prussia on productivity. The author uses the Huguenot population share in towns in 1700 and Prussian firm-level data of 1802 to analyze the productivity effects of those skilled immigrants. He uses a Cobb-Douglas production function including the number of workers, the value of materials, the number of looms, and the population share of Huguenots in towns to estimate the productivity effects. To handle the endogeneity problem, the author relies on an instrumental variable. The author claims that the instrumental variable which is represented by the population losses which are resulted from Black Death, and the other epidemics is exogenous and has no effect on the towns' economic conditions. The author finds evidence that the share of Huguenots' population in 1700 is positively and significantly correlated with the productivity in the textile industry in 1802. Then, the author estimates the same model by using the share of Huguenots in 1720 and finds more robust evidence on productivity in textile manufacturing. On the other hand, when the same model is tested by using the share of Huguenots in 1795, the author does not find any effect on productivity. Additionally, the author test the effects of immigrants on productivity by using the number of Huguenots worked in the textile industry in 1700 and finds evidence that productivity in textile and the number of Huguenot workers in textile in 1802 is positively and significantly correlated with each other. Additionally, the author shows that the share of Huguenots is positively and significantly correlated with the sub-categories of textile industry including wool, linen, cotton and silk industries. On the other hand, he reveals that Huguenot immigrants do not any effect on the non-textile industries including leather, metal,

tobacco, and mills. He finds a positive correlation only in the soap industry. Finally, the author estimates the effects of immigrants on the level of technology by using the number of looms in use as an indicator for physical capital and finds evidence that the share of Huguenots is positively correlated with the number of looms in full-time occupations. According to the author, the positive effects of Huguenots on the productivity in the textile manufacturing sector result from the diffusion of knowledge and technology brought by the skilled Huguenot immigrants to towns.

Fourie and Fintel (2014) investigate the effects of Huguenot immigrants who migrated from France to the Cape Colony in 1688/9. They use micro-level production data of the period of 1700 and 1773. They use only the farmer population of Cape Town. And, they divided the farmers as Huguenot farmers who are originated from wine-producing regions of France, Huguenot farmers who are originated from non-wine-producing regions of France, and not-Huguenot farmers. They find evidence that per household wine production of Huguenot farmers coming from the wine-producing regions of France is strongly larger than the not-Huguenot farmers. On the other hand, they show that the Huguenot farmers coming from non-wine producing territories of France do not produce more wine per household than the farmers who are not Huguenots. Furthermore, they find evidence that Huguenot farmers coming from wine-producing regions produce more wine per household than the Huguenot farmers coming from non-wine producing regions. They also show that these effects of Huguenots on wine production in Cape Colony have been persistent during the following 80 years. Additionally, they find evidence that Huguenot farmers coming from wine-producing regions of France have had positive effects on the wheat reaped per household member, which are not larger compared to the effects on wine production. Their findings reveal that skills gained in the original countries or regions

may have positive and persistent effects on the new settlement locations' long-run developments.

There is also a large literature investigating the effects of migrations on a variety of subjects in host countries, especially on labor market outcomes and educational attainment.

Tumen (2018) investigates the effects of Syrian refugee inflow on youth education in Turkey. The author uses DID and IV-DID specifications to overcome the potential endogeneity problem. The study uses the distances between the most populated city of regions of Turkey and Syrian governorates as an instrumental variable, and finds evidence that the Syrian refugee inflow has a significant positive effect on the high school enrollment of native population. Additionally, the author reveals that these positive effects mostly result from the effects on the high school enrolment of native men. Furthermore, the author shows that these positive and significant effects on native men's outcome are more robust for individuals whose parents have lower educational background and work in informal sectors.

Clemens et al. (2018) investigate the effects of the exclusion of seasonal Mexican farm workers (Bracero) from the United States. They find evidence that the exclusion of Mexican farm workers had a small effect on the labor market outcomes of native farm workers. They reveal that the exclusion of Mexican farms workers do not result in an increase in agricultural employment and wages of native farm workers. They show that employers changed their production technology to compensate for the decline resulting from the exclusion of Braceros or changed the production level instead of hiring native farm workers. As a result, the exclusion of Braceros does not yield an increase in employment and wages of native farm workers.

Aydemir and Borjas (2007) explore the effects of international migrations on the labor market outcomes of the United States, Canada, and Mexico by using microdata censuses of countries. They find evidence that shifts in labor supply caused by immigration and wages in these three countries are negatively and significantly correlated. Additionally, they show that the effects of immigrations vary between countries. They show that wage inequality was reduced by immigrants in Canada because of the high-skilled structure of immigrants, while immigrants increased the wage inequality in the United States because of the low-skilled profile of them. On the other hand, they reveal that wages in the middle class of Mexicans were affected positively because of the higher rates of emigration of workers who are in middle class, while wages at extremes were affected negatively because of the lower rate of emigration at extremes.

Aydemir and Kırdar (2017) investigate the effects of emigration of Bulgarian Turks occurred in 1989 on the employment of native Turkish. They find evidence that emigrants have positive and significant effects on the unemployment rate of native men whom education level are a primary school, junior high, or high school, while there is no effect for workers whom education levels are very low or very high. Additionally, they reveal that the effects of repatriates on the unemployment of native men are stronger for workers who have a similar educational background with emigrants and who are younger.

Peri and Sparber (2009) examine the effects of migration on the labor market outcomes of the United States by focusing on the task specialization channel. They use the ratio of “imputed” Mexicans to all workers and distance to the Mexican border as instrumental variables. They reveal that with the inflow of immigrants, less educated native workers specialize in communication fields while less educated foreign-born



workers specialize in the fields requiring manual labor tasks. They find evidence that inflow of immigrants does not have a strong negative effect on the wages of less educated natives because of the imperfect substitutes between native and immigrant workers.

Glitz (2012) examines the effects of immigration of ethnic Germans on the labor market outcomes of Germany. The article finds evidence that ethnic German immigrants have a negative effect on the labor force/employment rate of the native population. The author also shows that the negative effects of immigrants are stronger for workers aged 15-24 and 55-64. Additionally, the author reveals that the negative effects of immigrants are more robust for the labor force/employment rate of men workers. Furthermore, the author tests the effects of immigrants on the wages of natives but does not find robust effects.

Braun and Kvasnicka (2012) investigate the effects of repatriates of ethnic Germans from Eastern Europe to West Germany after WWII on the sectoral changes and output. They use the weighted distance between the homeland and final destination place of emigrants as an instrumental variable. They claim that immigrants are more reactive to new opportunities and less bounded by specific labor segments than natives and as a result, they accelerate the sectoral changes. They find evidence that inflow of ethnic Germans has a significant and positive effect on the non-agricultural employment share. Their findings confirm that immigrants accelerate the improvement of high-productivity sectors in settlement locations. They also show that expellees have a small and significant negative effect on the output per capita in the short-run.

Aksu, Erzan, and Kırdar (2018) conduct research on the effects of Syrian refugee inflow on the Turkish labor market outcomes. They rely on the instrumental

variable which is the weighted distance calculated according to the major cities of NUTS-2 region of Turkey and 13 provinces of Syria. They find evidence that Syrian refugee inflow does not have any effect on the total employment and wages of native men. They show that the men employment in the formal sectors increase while men employment in the informal sectors decreases. Their findings reveal that native men changed their occupations towards self-employment and unpaid family occupations. They also reveal that the total employment of native women falls as a result of part-time employment losses. They show that Syrian refugee inflow has positive effects on wage employment and wages of men while wage employment of men falls in the informal sectors. They also focus on the sectoral division and show that informal-dominated construction, agriculture, and labor-intensive sectors are negatively affected by Syrian refugee inflow. Native women's employment, men's and women's wages in the agriculture sector, and men's employment in the construction sector are negatively affected. According to the article, the increasing number of jobs in the service and manufacturing sectors are more than the decreasing number of jobs in the informal sectors. While men's wage increase in the formal service and manufacturing sectors, women's wage increase in the only manufacturing sector. They also find evidence that negative effects of refugee inflow on wages and wage employment in the informal sectors are more robust for the younger and less educated workers. Similarly, in the formal sectors, the positive effects of refugee inflow are larger for the younger and less educated workers.

There is also literature about the effects of railroads on agricultural development and the other economic parameters. Donaldson and Hornbeck (2013) investigate the effects of railroad access on agricultural development in the United States. By focusing on the expansion of market access correlated mainly with railroad

network, they find evidence that agricultural land values in 1890 would have decreased % 63.5 if the counties did not have railroads. They also estimate effects of the feasible improvements of canal networks and country roads and find that improvements in the canal networks and country roads would have reduced the only % 13 and % 20 of the negative effect of the absence of railroad, respectively. Their findings reveal that expansion of railroads increases the market access which has a positive effect on the agricultural land values. Atack et al. (2010) examine the effects of railroad access on the urbanization and population density of the American Midwest between 1850 and 1860. They rely on the dif-in-dif analysis and instrumental variable setting and find evidence that connection to the railroads significantly increased the urbanization while had a small positive effect on the population density. Atack and Margo (2011) investigate the causal effects of the railroad on agricultural outcomes in the United States. They find evidence that percentage of improved farm acres have increased significantly and largely in counties which have had railroad access earlier than 1860 compared to the counties which did not have railroad access before 1860. Additionally, they reveal that having railroad access accelerated the increases in the value of improved farms.

## CHAPTER VI

### DATA, METHODOLOGY AND ESTIMATION

In this chapter, the data, methodology and estimation model will be explained.

#### 6.1. The Data

As explained before, main purpose of this thesis is to estimate the long-run causal effects of Crimean Tatar emigration on urbanization, cultivated land, agricultural production, cultivated area of grain and grain production, industrial crops production, and spreading of new crops.

For this purpose, I compiled a novel dataset through the use of agricultural yearbooks, statistical yearbooks, and population censuses. In addition, based on archival records and current studies, I identified the locations where the Crimean Tatars and Nogays intensely resettled. I created Treatment and Control groups with reference to archival records, current studies, and 1927 and 1935 censuses. In order to control the changes in the number of provinces over time, I combined the dataset, between 1928 and 1965, at the level of 56 provinces in terms of the historical borders and squares of the provinces (see Appendix 1).

##### 6.1.a. Agricultural Data

I digitalized the agricultural yearbooks of the Republic of Turkey covering 1928-1965, and I compiled province level agricultural series. The agricultural

production data consists of all agricultural products produced in provinces. These products are classified in four main groups and their sub-groups: Grains including wheat, barley, rye, oat, mixed grains, maize, millet, rice, and canary seed; Pulses including bean, broad bean, chickpea, pea, kidney bean, lentil, wild vetch, and cow vetch; Industrial products including potatoes, sugar beet, aniseed, cotton, garlic, sesame, onion, hemp, flax, opium, tobacco, saffron, rapeseed, soybean, safflower, and sunflower; and Fruits. My dataset includes agricultural production data for the years 1928, 1935, 1940, 1950, 1959, and 1965.<sup>3</sup>

While the data on grain, pulses and industrial crops production (in tonnes and hectares) are available for all years from 1928 to 1965, fruits production data in province-level is available only for the years 1940, 1950, 1959, and 1965. Additionally, the number of fruits produced in provinces are not the same for these years. For example, the fruit production data of 1950 is available for the limited number of fruits while it is available for the higher number of fruits for the other years.

The number of provinces generally changed from one year to another. As a result, I had to make to merge some provinces by depending on the geographical borders of the provinces. Depending on the 1928 provinces' geographical borders and the number of provinces available in 1928, I merged the province level agricultural data as 56 provinces for the other years. (see Table A.1 in Appendix 1 for the list of provinces.)

In this research, I test the hypothesis whether the Crimean Tatars and Nogays had an impact on the per capita agricultural outcomes. Based on agricultural data, I

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<sup>3</sup> I get the agricultural production data of 1928, and 1935 from the "Tarım İstatistikleri, 1928-1934", and the "Tarım İstatistikleri 1928-1936"; 1940 from the " Tarla Mahsulleri İstatistiği, 1940-1942" and the " Meyve İstatistiği, 1938-1942"; 1950 from the "Zirai Bünye ve İstihsal, 1946-1953"; 1959 from the "Zirai Bünye ve İstihsal, 1959-1961"; and 1965 from the "Zirai Bünye ve İstihsal, 1965".

calculated; i) the grain production, cultivated area of grain, industrial crops production, pulses production and cultivated area of pulses, fruit production, total cultivated land, and total agricultural production, ii) per capita agricultural outcomes (per capita total cultivated area, per capita total agricultural production, per capita cultivated area of grain, per capita grain production, per capita industrial crops production, per capita cultivated area of pulses, per capita pulses production, per capita fruit production, and per capita outcomes of wheat, barley, and sugar beet), and iii) the share of sugar beet production in total industrial crops production. I use all of these variables as dependent variables in different estimation models.

Population data are available for the years 1927, 1935, 1940, 1950, 1960, and 1965. Climate variables are available for the years 1928, 1935, 1940, 1950, 1959, and 1965 while agricultural production data is available for all years. Since I use the per capita values as the outcome of interests, I assumed that the total population in 1927, 1928 and 1959, 1960 is fixed. So, I made the per capita calculations for 1928 and 1959 by using the total population data I received from the censuses of 1927 and 1960, respectively. I made this arrangement so that the number of observations does not fall below a certain level when I use the per capita outcomes along with the climate data.

To investigate the mechanism affecting agricultural developments, I use the agricultural machinery data provided by (Asik, Karakoc, and Pamuk, 2019). It is available for the years 1927, 1936, 1940, and 1956 and consists of all agricultural machinery except wooden plows. I use the populations of 1927, 1935, 1940, and 1955, respectively for per capita agricultural machinery calculations in 1927, 1936, 1940, and 1956 by assuming the population in 1935, 1936 and 1955, 1956 is fixed.

### 6.1.b. The Demographic and Climatological Data

In my thesis, I use the population and climate data which explained in details below.

#### 6.1.b.i. Historical Population Data of Crimean and Nogay Emigrants

I have identified the number of Crimean Tatars and Nogays emigrating to the Ottoman Empire territories, and the regions where they have intensely placed, with reference to a series of contemporary works which we have detailed in the Historical Background. In addition, I obtained the population distribution data of the Crimean Tatars and Nogays from the 1927 and 1935 censuses, based on the number of those who declared their mother tongue as Tatar.

I created Treatment and Control groups as follows: The provinces in the treatment group are the provinces where the related group of emigrants has been frequently settled and are expressed by a dummy variable taking 1. Similarly, I created the Control group by assigning a dummy variable taking 0 to provinces where the corresponding group of emigrants has not been settled or less settled. I have identified the Treatment and Control groups by depending on some criteria explained in detail in Appendix 2. The most important criterion I used for the identification of these groups is the distribution and intensity of the settlements of Crimean Tatars and Nogays, based on Kırımlı (2012). Kırımlı (2012) provides information about the number and distribution of Crimean Tatar and Nogay emigrants, gives detailed information about where emigrants have settled, about how often they have settled, and about when they have settled. Additionally, in the censuses of 1927 and 1935, the data on the number of Tatar lived in provinces has also used comparatively. The distribution of Crimean

Tatars which is in these censuses overlaps to a great extent with the historical settlement regions of Crimean Tatars and Nogays suggested by Kırımlı (2012). Based on this overlap, it can be concluded that the Crimean Tatars and Nogays have continued to live for a long time period in the villages where they have settled after the Crimean War (1856-57) and especially after the Ottoman-Russian War (1877-78).

Based on the aforementioned sources, a total of 12 provinces where Crimean Tatars and Nogays settled intensively were identified. These provinces are Adana, Ankara, Balıkesir, Bursa, Edirne, Eskisehir, Corum, Kocaeli, Konya, Kirklareli, Kirsehir, and Tekirdag. Among these provinces, Adana, Ankara, Balıkesir, Eskisehir, Edirne, Konya, and Tekirdağ are determined as the regions where have been settled most intensively by Crimean Tatars and Nogays. According to the number of villages established by emigrants and the recorded number of emigrants, two different Treatment group are determined. Main Treatment group consists of seven provinces (Adana, Ankara, Balıkesir, Eskisehir, Edirne, Konya, and Tekirdağ) mostly settled by emigrants. I accepted provinces as treated if the number of Crimean and Nogay Turks village settlement in provincial borders is equal to or more than 14. Additionally, I rely on information about settlement regions coming from historical sources. Moreover, I use the registered emigrant number to decide the Treatment group (see Table A.2 in Appendix 2 for the determinant criteria and detailed information about settlement regions). I present a table including treated and controlled provinces in Table A.3 in Appendix 3.



*6.1.b.ii. The Data of Population and Climatology*

Variables	Descriptions
Urbanization	The ratio of urban population to total population
Distance to Railroads	Distances of the province's centers to nearest railroads (decimal degree)
Total Rain	Annual total rain (m/m)
SDR	The standart deviation of the rain (m/m) from mounthly avarage
Agricultural Production	Per capita output of total agricultural crops as tonnes (includes the only production of grains, pulses, and industrial crops)
Cultivated Land	Per capita cultivated area as hectares (includes the only cultivated area of grains, pulses, and industrial crops)
Cultivated Area of Grain	Per capita cultivated area of grain as hectares
Grain Production	Per capita output of grain as tonnes
Industrial Crop Production	Per capita output of industrial crops as tonnes
Wheat Production	Per capita production of total wheat as tonnes
Cultivated Area of Wheat	Per capita cultivated area of total wheat as hectares
Barley Production	Per capita output of barley as tonnes
Cultivated Area of Barley	Per capita cultivated area of barley as hectares
The share of sugar beet	The ratio of sugar beet production to total industrial crops production
Sugar Beet Production	Per capita output of sugar beet as tonnes
Per capita machinery	Per capita agricultural machine
Pulses Production	Per capita output of pulses as tonnes
Cultivated Area of Pulses	Per capita cultivated area of pulses as hectares
Fruit Production	Per capita output of fruits as tonnes
Circassian	The ratio of Circassian population to total population in 1927
Born Greece	The ratio of Greece-born population to total population in 1927
Greek	The ratio of the Greek population to total population in 1927
Bulgarian	The ratio of Bulgarian population to total population in 1927
Ladino	The ratio of Ladino population to total population in 1927
Armenian	The ratio of the Armenian population to total population in 1927
Agriculture	The share of people working in the agricultural sectors
Non-Agriculture	The share of people working in non-agricultural sectors
Industrial Occupations	The share of people working in industrial sectors
Services	The share of people working in the service sectors

**Table 6.1.** Descriptions of variables

I use data on population and urban population in my thesis. I compiled the total population, and urban population by using population censuses of 1927, 1935, 1940, 1950, 1955, 1960, 1965 provided by TUIK. As I mentioned in the Agricultural Data section, I used population data of 1927 and 1960 respectively for the per capita calculations and urbanization in 1928 and 1959. I have calculated the urbanization rates of the provinces by using the total population and the urban population. I also use the climatology (temperature and rain(m/m)) data of 1928, 1935, 1940, 1950, 1959, and 1965 which are provided by (Asik, Karakoc, and Pamuk, 2019). Additionally, I use population data according to the main occupational groups which are available for the years 1935, 1950, 1955 and 1960 (Asik, Karakoc, and Pamuk, 2019).

Description of variables are presented in Table 6.1. Additionally, descriptive statistics of variables and balance table results are presented in Table A.4, A.4.1, and Table A.5 in Appendix A.4 and A.5, respectively.

## **6.2. Methodology and Estimation**

In this thesis, to analyze the causal long-term effects of the mass emigration of Crimean and Nogay Turks on urbanization and agricultural outcomes of Turkey, a panel dataset is constructed consisting 56 provinces for 6 years between 1928 and 1965.

### 6.2.a. Econometric Specification

To estimate the causal long-run effects of Crimean Tatars and Nogays on the urbanization rate and per capita agricultural outcomes I use the following model of estimation:

$$A_{p,t} = \beta_1 Crimean_p + \beta_2 X_{p,t} + f_t + f_r + \varepsilon_{p,t} \quad (1)$$

where subscript  $p$  and  $t$  represent the provinces and years, respectively.  $A_{p,t}$  stands for the urbanization rate, and per capita agricultural outcomes. Crimean is the dummy variable taking 1 if the province  $p$  has experienced mass emigrations between the period of 1856 and 1910, and otherwise taking value equal 0. The parameter of  $\beta_t$  measures the impact of mass emigrations of Crimean Tatars and Nogays on the main outcome of interests.  $X_{p,t}$  is the vector of controls including distance to railways, total rain (m/m), and mean standard deviation of rain. Finally,  $f_t$  is the year fixed effects, and  $f_r$  is the region fixed effects. (See Table A.6 and A.7 in Appendix 6 and Appendix 7 for NUTS-1 regional division of Turkey and its arranged version, respectively)

The biggest threat of our OLS model is the problem of endogeneity stemming from non-random distribution of the Crimean Tatar and Nogay settlement locations. There may have been some unobservable factors affecting the decision of emigrants about the preference of settlement locations. In this case, the results of the model will be biased. As we have mentioned in the previous chapters, Ottoman Empire has resettled emigrants in a systematic way in most cases. The main criteria for the selection of settlements have been the availability of vacant land to accommodate large groups of emigrants, the climatic and topographic suitability of the regions for emigrants, and availability of opportunities for them to apply their skills and abilities. It can be argued that emigrants were initially placed in locations with better conditions. Even if we know that emigrants have been resettled in mostly rural areas which were unoccupied by natives at that time in most case, settlement locations may have had more potential for development than the other locations. And similarly, it can be argued that over time emigrants might have changed their initial settlement locations because of unobservable favorable conditions which may have indirect effects on our

main outcomes. So, to overcome the potential endogeneity problem, I rely on instrumental variable methods. I give the details of the instrumental variable below.

### 6.2.b. IV Specification

The Instrument that I use is based on the travel distance between the departure points of emigrants and the 56 provinces of Turkey. I prepared the instrumental variable by following Del Carpio and Wagner (2015)<sup>4</sup>, Tumen (2018)<sup>5</sup>, and Aksu et al. (2018)<sup>6</sup>. To overcome the potential endogeneity problem of settlement decisions of emigrants, I use an instrumental variable as follows:

$$IV_{p,t} = \sum C (\pi_{p,t} / d_{p,r} ) \quad (2)$$

where  $C$  is the estimated historical number of Crimean Tatar and Nogay emigrants in Turkey<sup>7</sup> which emigrated to the Ottoman Empire between the 19th and 20th centuries and  $\pi_{p,t}$  is the fraction of the Crimean Tatars living in province  $p$  at time  $t$ . And,  $d_{p,r}$  is the travel distance between 56 provinces of Turkey and the settlement regions of Crimean Tatars in the 19th century in Balkan territories. As I mentioned in the previous parts, the most part of the Crimean Tatars and Nogays who have lived in the Thrace and Anatolia have emigrated from the Balkan lands of the Empire after the Ottoman-Russian War. Even though Crimean Tatars and Nogays were resettled in the many parts of the Balkan lands of the Empire during the 19th century, their settlement was

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<sup>4</sup> They use an instrumental variable to identify the settlement regions of Syrian immigrants. My instrumental variable is very similar with their instrumental variable.

<sup>5</sup> Tumen use a distance instrument to overcome the potential endogeneity problem of the settlement decision of Syrian immigrants.

<sup>6</sup> They rely on a very similar instrumental variable to understand the pattern of settlement decisions of Syrian immigrants.

<sup>7</sup> Total historical number of emigrants of Crimean Tatars and Nogays that I used in my IV is 1.200.000 by depending on the estimates in (Karpat, 2010) and (Fisher, 1987) after excluding the estimated number of emigrants who died or has been killed. According to Saydam, this ratio is 30 % of total emigrants, and I accepted it as 30 % (Saydam 1997, 91).

concentrated in some regions. I accepted the Harsova, Kostence, Silistre, Mecidiye, Mangalye, and Dobruja as a proxy for regions frequently settled by Crimean and Nogay emigrants by following the Fisher (1987), Karpat (2010), and Kırımlı (2012). Similarly, I accepted these regions as departure locations that Crimean Tatars and Nogays emigrated to the Thrace and Anatolia. I calculate the travel distances between the 56 province of Turkey and those 5 regions by using Google Maps. I exclude Mangalye in calculations because it has similar distance with the Silistre. The number of Crimean Tatars living in provinces is available only in 1927 and 1935 censuses. So, the subscript  $t$  denotes only 1927 and 1935. I used the value of the instrumental variable calculated for 1935 also for the following years, by depending on the knowledge and assumption that emigrants have not changed their locations during long times. Similarly, I used the value of IV calculated for 1927 for 1928.

Instrumental variable states that settlement locations of Crimean Tatar and Nogay emigrants have been determined according to the distance from the regions where emigrated from. As we mentioned in the previous sections, emigrants which had settled in the many parts of the Balkan territories of the Empire have emigrated and settled in Thrace and Anatolia after the Ottoman Russian War (1877-78). It is probably reasonable that the emigrants have been placed starting from regions where are the nearest to their departure points if we consider the limited transportation facilities of that time and the settlement policy of the Ottoman Empire which has aimed to ensure about the immediate settlement of emigrants.

### **6.3. Results**

I start by estimating the causal effects of emigration on the urbanization. Then, I test the effects on agricultural production. Both for OLS and IV models, the first

columns in all Tables, as indicated in the controls lines, does not include any other variables except year and region fixed effects, and through the second to third columns, new variables are added to estimation models. At the fourth and fifth columns of OLS and IV estimations, I relax the assumption, and to check the results by adding 12 region–year fixed effects and 12 region linear time trends, respectively.

### 6.3.a. Effects on Urbanization

I have used the urbanization rate of provinces as an indicator of economic conditions/developments of provinces. And, I have estimated the causal effects of emigration of Crimean and Nogay Turks on the urbanization. I find evidence that Crimean and Nogay emigrants have had a significant positive effect on the urbanization. The results from OLS and Instrumental Variable models are presented in Table 6.2, respectively. Through the first to fifth columns of OLS and IV estimations in Table 6.2., I find a positive and strong effect of emigration of Crimean and Nogay Turks on the urbanization. The results state that the treated provinces which have been immensely settled by emigrants between the second half of the 19th century and the first quarter of the 20th century experienced a significant increase in urbanization compared to controlled provinces. The result from the first column of OLS estimation indicates that urbanization rate increases 0.07 percentage point for treated provinces compared to controlled provinces. After adding the distance to the railroad, and total rain or standard deviation of rain, the significance level, and direction of results do not change while the increase in urbanization is about 0.06 percentage point. Even if I add the 12 region-linear time trend or 12 region-year fixed effects, we see that the positive and significant effect on urbanization still continues. As I mentioned in the previous

sections, I also test the result by using an instrumental variable to overcome the potential endogeneity problem of settlement decisions. Similar to the results from OLS estimation, I find a significant and strong causal effect of emigrations on urbanization rate of provinces after eliminating the potential endogeneity problem by using an instrumental variable. The results of instrumental variable estimations in Table 6.2., through the first to fifth columns in Panel B, show that the provinces in the treatment group have experienced between the 0.14 and 0.09 percentage points increase in urbanization compared to controlled provinces. It can be seen in the fourth and fifth columns that results are persistent when 12 region linear time trends and 12 region-year fixed effects are added. When we compared the results of OLS and IV estimations, we see that the results from IV estimations are larger than the results from OLS.

All in all, we can interpret the results as Crimean and Nogay emigrants have had a positive and significant effect on the economic conditions of settlement provinces. Settlement provinces have had significant increases in economic development as it can be seen from the results on urbanization used as a proxy for economic conditions of provinces.

In addition to the above conclusions, my instrumental variable which is the weighted distances of 56 provinces in Turkey and 5 locations in Bulgaria and Romania, is a strong determinant factor for settlement locations as it can be seen in the first stage regression results in Table 6.2. As it is seen, F-statistics of first stage regressions are very high in all estimation sections.

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
Urbanization	<i>OLS</i>				
A. Crimean Effect	0.0788***	0.0672***	0.0668***	0.0619***	0.0620***
	[0.0208]	[0.0158]	[0.0159]	[0.0134]	[0.0140]
	<i>2SLS</i>				
B. Crimean Effect	0.143***	0.106***	0.104***	0.0941***	0.0924***
	[0.0389]	[0.0366]	[0.0369]	[0.0317]	[0.0310]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	279.31	227.03	237.47	289.87	277.27
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	331	255	256	255	255

**Table 6.2.** This table presents the results from OLS and IV estimations, one under the other, about the effects of the settlement of emigrants on urbanization. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

Additionally, my finding is consistent with the literature investigating the long-run effects of skilled immigrants on the economic conditions of settlement locations. One of the similar results is presented by Murard and Sakalli (2018) which reveal that the settlement of refugees migrating during the Turkish-Greek population exchange has had an important role in the long-run economic development of settlement locations. Similarly, Hornung (2014) and Fourie and Fintel (2014) show that skilled Huguenot immigrants have had an important role in the development of settlement provinces by providing know-how on textile manufacturing and wine producing, respectively. Additionally, Sequeira, Nunn, and Quian (2017), Droller (2016), and Rocha, Ferraz, and Soares (2017) reveal that European-origin immigrants have had an important role in the long-term economic development of settlement locations.



### 6.3.b. Effects on Cultivated Land and Total Land Production

As I mentioned in the Historical Records section, the archival records and contemporary researchers frequently mention about that Crimean and Nogay emigrants have played an important role in the expansion of the cultivated area and the increase in the total agricultural output. Their claims about the contributions of Crimean and Nogay emigrants depend on some know-hows brought by emigrants to the settlement locations such as the more advanced agricultural methods, more useful vehicles, and more developed agriculture machines. In this section, I estimate the long-term causal effects of Crimean and Nogay emigrants on the cultivated land and total agricultural output by following the historical narratives.

Firstly, I used the per capita cultivated area as the dependent variable and estimated the claimed effects of emigrants. The results presented in Panel A of Table 6.3 suggest that the settlement of Crimean and Nogay Turks have a positive and significant long-term effect on the cultivated area in provinces. Through the first to third columns of OLS estimation in Table 6.3, it is seen that treated provinces compared to the controlled provinces experience an increase on the per capita cultivated land between 0.29 and 0.32 hectares. As it can be seen in the fourth and fifth columns, the results are persistent even if I add 12 region time trends or 12 region-year fixed effects. After estimating the same model by using the instrumental variable I find significant and higher effects presented in Table 6.3. When we compared the results from OLS and the results of IV estimation, we see that instrumenting the settlement locations increases the effects of emigrants on per capita cultivated land between 0.05 and 0.06 hectares. And similar to the OLS results, the IV results continue to be positive and significant even if I add time trends or region-year fixed effects.

<i>Dependent Variables:</i>	[1]	[2]	[3]	[4]	[5]
	<b>OLS</b>				
A. Cultivated Land	0.299***	0.320***	0.317***	0.329***	0.318***
	[0.0730]	[0.0706]	[0.0688]	[0.0685]	[0.0716]
B. Agricultural Production	0.228**	0.299***	0.292***	0.266***	0.285***
	[0.107]	[0.0761]	[0.0677]	[0.0735]	[0.0785]
	<b>2SLS</b>				
A. Cultivated Land	0.335***	0.372***	0.371***	0.375***	0.385***
	[0.0663]	[0.0461]	[0.0464]	[0.0370]	[0.0446]
B. Agricultural Production	0.281***	0.314***	0.310***	0.284***	0.286***
	[0.0813]	[0.0735]	[0.0705]	[0.0768]	[0.0830]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	280.39	227.15	237.6	289.89	276.73
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	334	257	258	257	257

**Table 6.3.** This Table presents the results from estimations of the effects of emigration on the per capita cultivated land and per capita agricultural production. Lines A include the OLS and IV estimation results of per capita cultivated area while Lines B includes the OLS and IV estimation results of per capita agricultural production. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

Secondly, I estimate the effects of the settlement of Crimean and Nogay Turks on the per capita agricultural production and find significant and positive effects. As it is expected, the increases in the per capita cultivated land have also increased the per capita agricultural production. The results of OLS estimation in Lines B in Table 6.3 mean that the per capita agricultural output increases between 0.22 and 0.28 tonnes for the treatment group compared to the control group. Instrumenting the settlement regions increases the effects between 0.01 and 0.06 tonnes as it is seen in the differences between OLS and IV estimations in Table 6.3. Both the OLS and IV results are persistent under the 12 region-year fixed effects and 12 region linear time trends, respectively. All these findings suggest that the settlement of Crimean and Nogay

emigrants has positive and significant long-term causal effects on the per capita agricultural production.

Similar to the previous estimations, the first stage F-statistics are very high which means that distance between departure points and settlement locations is a strong determinant factor affecting settlement decision.

### 6.3.b.i. Effects on Grain Production/Cultivated Area

To understand the mechanism under the increase in per capita cultivated land and per capita agricultural production, I look at the effects of emigrations on grain production/cultivated area. As I mentioned in Historical Records part, there are several claims in historical narratives that Crimean and Nogay emigrants have increased the grain production in settlement locations thanks to the better agricultural methods, vehicles, and machines. It has been especially claimed that the Central Anatolia has become a “grain elevator” thanks to the emigrants. Hence, both for understanding the mechanism making it causal the increases in agricultural outcomes and to explore whether the emigrants have made an increase in grain production and whether the increase has been persistent in the long-term, I estimate the effects of emigrants on grain production.

By using per capita grain production and per capita area of grain, I estimate the effects of Crimean and Nogay Turks. The results from OLS and IV estimations are given in Table 6.4. The first and second lines ( lines A and B) of OLS and IV estimations include the results from per capita cultivated area of grain and per capita grain production, respectively. Results through the first to third columns in line A of OLS estimation state that provinces in the treatment group have experienced an

increase of about 0.18 and 0.19 hectares compared to control group in per capita area of grain. When I add the region-year fixed effects and region linear time trends, the results continue to be positive and significant. Additionally, instrumenting the settlement locations gives significant and higher results. The results from IV estimation in Line A, through the first to third columns, state that provinces, having been frequently settled by Crimean and Nogay Turks, have experienced a significant increase about 0.33 and 0.37 hectares in per capita cultivated area of the grain. The results also continue to hold after adding the region-year fixed effects and region-linear time trends. The results from IV estimation are very higher than the results from OLS estimation.

As it is expected, the increases in per capita cultivated area have also resulted in the increases in per capita production which can be seen from OLS and IV estimations in Line B. Through the first to third columns of OLS estimation, the results show that the per capita production of grain has increased about 0.20 and 0.22 tonnes for treated provinces compared to the control group. Instrumenting the settlement locations do not affect the significance level and the direction of the results, even after adding the region-linear time trends and region year fixed effects. The differences resulted from using the instrumental variable is about 0.01 tonnes.

Additionally, the F- statistics of first stage regressions continues to remain in very high significance level similar to previous regressions.

All in all, they are seen from the results in Table 6.4 that settlement of Crimean and Nogay Turks have had a significant and positive long-term effect on the grain production/cultivated area in Anatolia and Thrace. We have empirically shown that

the claims in the historical narratives are accurate, and the effects of emigrants on the expansion of grain production have been persistent over time.

Dependent Variables:	[1]	[2]	[3]	[4]	[5]
	<i>OLS</i>				
A. Cultivated Area of Grain	0.181***	0.194***	0.191***	0.202***	0.193***
	[0.0641]	[0.0626]	[0.0613]	[0.0650]	[0.0643]
B. Grain Production	0.202***	0.227***	0.223***	0.204***	0.223***
	[0.0401]	[0.0377]	[0.0361]	[0.0378]	[0.0388]
	<i>2SLS</i>				
A. Cultivated Area of Grain	0.337***	0.371***	0.369***	0.375***	0.384***
	[0.0666]	[0.0520]	[0.0523]	[0.0420]	[0.0484]
B. Grain Production	0.195***	0.209***	0.207***	0.206***	0.212***
	[0.0545]	[0.0562]	[0.0542]	[0.0503]	[0.0536]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	280.39	227.15	237.6	289.89	276.73
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	334	257	258	257	257

**Table 6.4.** This Table presents the results from estimations of the effects of emigration on the per capita cultivated area of grain and per capita grain production. Lines A include the OLS and IV estimation results of per capita cultivated area of grain while Lines B includes the OLS and IV estimation results of per capita grain production. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

### 6.3.b.ii. Effects on Industrial Crops Production

I also look at the effects of emigrations on industrial crop production to understand the mechanism under the increase in per capita agricultural production. As I mentioned in Historical Records part, there have been also some claims about the increases in industrial crops, especially about being bringing new industrial crops to the settlement regions.

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
Industrial Crop Production	<i>OLS</i>				
A. Crimean Effect	0.0336	0.0818	0.0788	0.0719	0.0716
	[0.0845]	[0.0567]	[0.0533]	[0.0499]	[0.0564]
	<i>2SLS</i>				
B. Crimean Effect	0.0951***	0.124***	0.120***	0.0944**	0.0891**
	[0.0351]	[0.0301]	[0.0289]	[0.0386]	[0.0418]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	280.39	227.15	237.6	289.89	276.73
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	334	257	258	257	257

**Table 6.5.** This table presents the results from OLS and IV estimations, one under the other, about the effects of the settlement of emigrants on per capita industrial crop production. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

To explore the effects of emigrants on industrial crops production, I use the per capita industrial crops production as a dependent variable and find evidence that settlement of Crimean and Nogay Turks have had a positive and significant effect on it. The results from OLS and IV estimations are given in Table 6.5, respectively. From the first to fifth columns of OLS, we see that treated provinces have experienced an increase in per capita industrial crops production compared to controlled provinces, but these effects are not significant. On the other hand, after instrumenting the settlement regions, I find positive and significant effects of emigration on the production of the industrial crops. Through the first to third columns of IV estimations, we see that treated provinces have experienced an increase of about 0.09 and 0.12 tonnes compared to controlled provinces. After adding the region-year fixed effects or region linear time trends, even though the significance level falls to 5%, the

significance and robustness of the results do not change. Additionally, the value of the first stage F-statistics continues to be very high.

### 6.3.c. Mechanism

In what follows, I explore the mechanism affecting our main outcome of interests and consider a series of potential factors explaining the results.

#### 6.3.c.i. Effects on Wheat and Barley Production/ Cultivated Area

As I showed empirically in the previous section, one of the main factors which have increased the per capita cultivated area and agricultural production has been the increases in the per capita grain production and cultivated area. To better understand the reasons for the increases in grain production and area, I turn to investigate the effects of the emigrants on the production and cultivated area of some key crops. Following the claims made by the historian Karpat that Eskisehir appeared as an urban center as a result of the expansion of wheat production in the region, I estimated the effects of the settlement of Crimean and Nogay Turks on the wheat and barley production. And I find evidence that settlement of Crimean and Nogay Turks has had a positive and significant effect on the wheat and barley production. The results from OLS estimations in line A Table 6.6, through the first to third columns, suggest that treated provinces have experienced an increase in the per capita wheat production about 0.10 to 0.12 tonnes. The results from IV estimations in Table 6.6, through the first to third columns, are also significant and positive. There is an increase in results under IV estimations about 0.06 and 0.08 tonnes compared to results from OLS. Adding linear time trends and region-year fixed effects do not affect the direction and

significance level of the results both for OLS and IV estimations. Additionally, the results from OLS estimations in Line B in Table 6.6 show that treated provinces have experienced an increase in the per capita barley production compared to controlled provinces. The results which are little higher for IV estimations are positive and significant both for OLS and IV estimations. Furthermore, we explore that significance level and direction of results do not change after controlling by linear time trends and region-year fixed effects.

Dependent Variables:	[1]	[2]	[3]	[4]	[5]
<i>OLS</i>					
A. Wheat Production	0.107*** [0.0282]	0.129*** [0.0252]	0.127*** [0.0260]	0.116*** [0.0267]	0.128*** [0.0260]
B. Barley Production	0.0595*** [0.0132]	0.0607*** [0.00969]	0.0592*** [0.00965]	0.0528*** [0.0104]	0.0579*** [0.00963]
<i>2SLS</i>					
A. Wheat Production	0.168*** [0.0554]	0.205*** [0.0266]	0.207*** [0.0264]	0.201*** [0.0227]	0.204*** [0.0239]
B. Barley Production	0.0875*** [0.0102]	0.0836*** [0.0103]	0.0830*** [0.00936]	0.0787*** [0.00954]	0.0787*** [0.0100]
<i>First-stage regression</i>	0.0003*** [0.0000]	0.0003*** [0.0000]	0.0003*** [0.0000]	0.0003*** [0.0000]	0.0003*** [0.0000]
F-statistics	280.39	227.15	237.6	289.89	276.73
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	334	257	258	257	257

**Table 6.6.** This Table presents the results from estimations of the effects of emigration on the per capita cultivated area of wheat and per capita wheat production. Lines A include the OLS and IV estimation results of per capita wheat production while Lines B includes the OLS and IV estimation results of per capita barley production. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

Similar results are available for per capita cultivated area of wheat and barley presented in Table A.8 in Appendix 8.



All in all, I explore that one of the channels affecting the growth in per capita cultivated area and production has been the increases in wheat and barley production/cultivated area which have increased the per capita grain production/cultivated areas. Additionally, we have shown that the claims about that settlement of Crimean and Nogay emigrants have made The Central Anatolia to “grain elevator” are accurate and the effects of emigrants on the wheat and barley production have been persistent over time.

#### 6.3.c.ii. New Industrial Products Brought by Emigrants and Its Persistence

The other important finding was that in the settlement regions have experienced an increase in the per capita production of industrial crops. As we mentioned in the previous section, the increases in the per capita production of industrial crops has been one of the factors affecting the per capita total agricultural production. Now, we turn to investigate the channels that cause to increase in per capita production of industrial crops. By following the claims about the new crops brought by emigrants, I find evidence that sugar beet production has expanded in settlement locations as it claimed by contemporary researchers. Through the first to fifth columns of OLS estimation in Line A in Table 6.7, I find positive but not significant effects, except the first column. After using an instrumental variable to overcome the potential endogeneity problem, I find positive and significant effects of the settlement of emigrants on the per capita production of sugar beet. Among the first to third columns in the B Line, the results obtained from the IV estimations indicate that per capita sugar beet production in the provinces frequently settled by the Crimean and Nogay Turks is about 0.14 to 0.20 tonnes higher than in the provinces controlled. Even after adding the region-linear time

trends and region-year fixed effects, the positive and significant effects continue to hold.

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
Sugar Beet	<i>OLS</i>				
A. Crimean Effect	-0.0216	0.0237	0.0198	0.0157	0.0162
	[0.0821]	[0.0627]	[0.0602]	[0.0571]	[0.0621]
	<i>2SLS</i>				
B. Crimean Effect	0.145***	0.202***	0.195***	0.178***	0.172***
	[0.0507]	[0.0390]	[0.0382]	[0.0472]	[0.0484]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	280.35	227.15	237.6	289.89	276.73
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	No	Yes	Yes	Yes
SDR	No	Yes	No	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	333	257	258	257	257

**Table 6.7.** This table presents the results from OLS and IV estimations, one under the other, about the effects of the settlement of emigrants on per capita sugar beet production. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

I also estimate the effects of the settlement of emigrants on the spreading of sugar beet production to better understand the mechanism. I use the share of sugar beet production in total industrial crops production as a dependent variable. The results from OLS and IV estimations presented in Table A.9 in Appendix 9 state that the share of sugar beet production in total industrial crops production is positively correlated with the settlement of emigrants. Even though the results from OLS estimation are positive but not significant, the results through the second to fifth columns of IV estimations reveal that the treated provinces have had the higher share of sugar beet about 0.26 to 0.40 percentage points than the controlled provinces. Additionally,

positive and strong results continue to be available after adding region-year fixed effects and region-linear time trend even if the significance level falls to 5% level.

All in all, we showed that as a mechanism for increases in industrial crops production, the per capita sugar beet production has increased in the settlement regions of emigrants. It is also possible that there may have been increases in some other industrial crops. I chose the sugar beet because historical narratives were claiming that sugar beet planted widely in the Crimean peninsula has been brought by Crimean emigrants to the Anatolia and that as a result, production of sugar beet has increased in Anatolia following the settlement of emigrants. As a conclusion, I find evidence that supports the claims and show the persistence of new-products brought by emigrants to the Anatolia.

### 6.3.c.iii. Effects on Agricultural Machinery

As I mentioned frequently in the previous sections, the most important knowledge and skill brought by Crimean and Nogay emigrants has been the new and more advanced agricultural machinery and new agricultural methods. It is possible that the settlement of new populations increases total production. But, the increases in per capita production requires a technological improvement in production factors. To explore the mechanism caused the increases in per capita agricultural outcomes, I focus on the agricultural machinery. And we know the records and claims that Crimean and Nogay Turks have brought new agricultural equipment and methods to the settlement regions such as four-wheeled transportation vehicles “Tatar arabası”, steam-operated harvest machine, the boxed seed drill machine, iron plow. We also know that the agricultural technology in Anatolia at that time was highly primitive as

I mentioned in Agricultural in Ottoman Empire section. By following the historical narratives, I estimate the effects of Crimean and Nogay emigrants on the per capita agricultural machinery. The results from OLS and IV estimations are presented in Table 6.8. I find positive effects of the emigrants on the per capita agricultural machinery in OLS estimations. But, these effects are not significant. On the other hand, after instrumenting the settlement regions, I find positive and significant effects for treated provinces. The first column of IV estimation states that the treated provinces have experienced an increase of about 0.015 machineries in the per capita agricultural machinery compared to the controlled provinces. Although the significance level falls to 10% after adding the distance to railroads variable, the results become higher and significant at 5% level when we add 12 region-linear time trends and 12 region-year fixed effects.

Dependent Variable:	[1]	[2]	[3]	[4]
Per Capita Machinery	<i>OLS</i>			
A. Crimean Effect	0.00548	0.00539	0.00498	0.00518
	[0.0113]	[0.0116]	[0.0115]	[0.0115]
	<i>2SLS</i>			
B. Crimean Effect	0.0151**	0.0137*	0.0156**	0.0157**
	[0.00650]	[0.00784]	[0.00771]	[0.00750]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	235.51	180.72	245.32	218.97
<i>Controls for</i>				
Distance to Railroads	No	Yes	Yes	Yes
NUTS-1 FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	Yes	No
12 Region LTT	No	No	No	Yes
# Observations	222	214	214	214

**Table 6.8.** This table presents the results from OLS and IV estimations, one under the other, about the effects of the settlement of emigrants on per capita agricultural machine. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at % 1, %5, and % 10, respectively.

In sum, we find a positive and significant effect of the settlement of Crimean and Nogay emigrants on the per capita agricultural machinery. We can state that more

advanced equipment/machines brought by emigrants to the settlement regions are the main mechanism underlying the increases in wheat, barley, grain, industrial, and finally total agricultural outcomes/cultivated areas. And we can also state that new agricultural technologies brought by emigrants have continued to remain in settlement regions over time even if they migrated to the other provinces. It can be expressed as the diffusion of knowledge and technology.

#### 6.3.c.iv. A Mechanism for Economic Development

I investigate a series of the channel to express the increases in economic development. It can be considered as a first channel that the increases in agricultural outcomes have accelerated the economic developments. By following the historian Karpat's claim about the rising of Eskisehir as a result of the increases in wheat production after the settlement of emigrants, we can state that increases in agricultural production accelerate the development of regions as urban centers. When we consider the importance of agriculture in Turkey during the examined period, it is possible that development in agriculture may have affected the other developments. One potential candidate is that increases in per capita agricultural outcomes may have affected the industrial developments related to agriculture. As a result, industrial developments may have accelerated increases in economic development.

On the other hand, there are also records that emigrants have settled in the center of provinces. So, the settlement of emigrants in urban centers is also a channel that may have increased the urbanization rate as an indicator of economic development. The other important claim was that a group of Crimean Tatar who have

emigrated from the coastal areas of the peninsula and who have had advanced trade skills has constituted new enterprises in the settlement regions.

Dependent Variables:	[1]	[2]	[3]	[4]
	<i>OLS</i>			
A. Agriculture	12.69	8.487	8.511	8.509
	(10.03)	(8.654)	(8.664)	(8.662)
B. Non-Agriculture	0.0360*	0.0243	0.0227	0.0227
	(0.0218)	(0.0184)	(0.0182)	(0.0182)
C. Industrial Occupations	2.298	1.675	1.674	1.674
	(1.679)	(1.403)	(1.405)	(1.405)
D. Services	2.681	2.035	2.043	2.042
	(1.897)	(1.567)	(1.572)	(1.572)
	<i>2SLS</i>			
A. Agriculture	47.20**	32.68	32.70	32.70
	(19.15)	(25.84)	(25.85)	(25.85)
B. Non-Agriculture	0.107***	0.0730***	0.0728***	0.0728***
	(0.0300)	(0.0184)	(0.0184)	(0.0184)
C. Industrial Occupations	8.413***	6.389*	6.391*	6.391*
	(2.645)	(3.553)	(3.553)	(3.553)
D. Services	9.777***	7.801**	7.804**	7.804**
	(2.582)	(3.464)	(3.465)	(3.465)
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	359.82	333.39	279.71	316.85
<i>Controls for</i>				
Distance to Railroads	No	Yes	Yes	Yes
NUTS-1 FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	Yes	No
12 Region LTT	No	No	No	Yes
# Observation	223	215	215	215

**Table 6.9.** This table presents the OLS and IV estimation results, respectively. Dependent variables are the share of agricultural occupations, the share of non-agricultural occupations, the share of industrial occupations, and the share of services occupations, in Line A, B, C, and D, both for OLS and IV estimations, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

By following the claims and records, I estimate the effects of Crimean and Nogay emigrants on the sectoral specialization. The results from OLS and IV estimates presented in Table 6.9 reveal that the treated provinces have a significantly higher share in non-agricultural, industrial, and services sectors compared to the controlled

provinces. In line D of IV estimates, we see that treated provinces have higher share in services. It can be considered as a normal conclusion of the increases in urbanization rate we find. But, the effects on industrial occupations are needed to be understood.

Normally, we expect that the increases in per capita agricultural outcomes result in the increases in the share of agricultural occupations. However, the results in Table 6.9 means the opposite. We see that the treated provinces have a higher share in non-agricultural occupations consisting of industrial and services. My finding is consistent with the literature investigating the effects of immigrants on the sectoral specialization. Murard and Sakalli (2018) reveal that higher refugee share is significantly correlated with higher participation in non-agricultural sectors and lower participation in agricultural. Similarly, Droller (2016) shows that the shares of European immigrants are positively and significantly correlated with the industrial GDP. Additionally, Rocha, Ferraz, and Soares (2017) reveal that the settlement of European-origin immigrants has resulted in more employment share in manufacturing and service sectors, and the lower share in agricultural sectors.

We can interpret the results by using two channel. One of them is that emigrants skilled in the trade have started new enterprises in the settlement regions as it is claimed by Karpat. As a result of new enterprises, the share of industrial occupations may have been increased in settlement regions. The second channel may be that the increases in per capita agricultural outcomes result in the increases in agriculture-related industrial enterprises. And, as a result, the share of industrial occupations may have been increased in the settlement regions. The historian Karpat claims that the rising of Eskisehir as an urban center has resulted from the increases in wheat production which resulted in the founding of commodity (wheat) exchange market. The same process may have been experienced in the other settlement regions.

Hence, we can infer that the higher share in non-agricultural occupations, especially in industrial occupations means that settlement regions have higher non-agricultural, and industrial business than controlled provinces. It is possible to consider that settlement locations have transformed into urban centers as a result of the increases in agricultural outcomes. With the increases in agricultural outcomes and in urbanization, new industries may have appeared in the settlement locations. It is possible that this process has ended with the increases in industrial business and additionally increases in non-agricultural occupations. Then, the industrial and non-agricultural businesses have possibly pulled people to the centers and as a result, urban centers in the provincial borders and the urbanization of provinces have continued to increase.

All in all, we can state that Crimean and Nogay emigrants have had an important role in the development of settlement provinces. Settlement provinces experienced an increase in agricultural production, in all type of occupations, especially non-agricultural occupations, and as a result of all, in urbanization. So, all causal results refer to the increases in the economic conditions of provinces. We can express the results as that settlement regions have experienced significant economic development. As presented in previous sections, my findings are in line with the literature investigating the effects of skilled immigrants on the economic conditions of host countries.

#### **6.4. Additional Estimation Results**

I also estimate the effects of the settlement of emigrants on per capita production of pulses, and on per capita production of fruits to better understand the sources of changes. One of the main concerns is that the increases in the per capita



outcomes of grains may result from the decreases in the pulses and fruit productions. Even if we find strong evidence about the increases in percapita cultivated area/production of total agricultural crops, farmers in controlled provinces, somehow, may have decided to produce pulses and fruits instead of grain and industrial crops. If it is the case, the validity of our results on grain and industrial crops may become debatable. So, to eliminate the possible concerns, I also estimate the effects of emigration on pulses and fruits.

First of all, I estimate the effects of the settlement of emigrants on the per capita outcomes of pulses and find evidence that the treated provinces have had lower per capita production/cultivated area in pulses compared to controlled provinces. But, the effects are very small and not significant in any specifications. Following the results from OLS and IV estimations presented in Table A.10 in the Appendix 10, it can be expressed that the increases in per capita outcomes of grain and industrial crops are not yielded from the decreases in pulses production. We find a negative correlation between the settlement of emigrants and pulses production, but the results mean that increases in grain and industrial crops production/areas are not corresponded by the same level of decrease in pulses production/area.

Furthermore, I estimate the effects of the settlement of Crimean and Nogay Turks on the per capita fruit production. I find evidence that treated provinces have lower per capita fruit production compared to the controlled provinces. But, similar to the previous results, effects are not significant in all specifications except the first column of IV estimation presented in Table A.11 in the Appendix 11.

All in all, it can be argued from the results that the decreases in per capita outcomes in pulses and fruit do not correspond to the increases in per capita outcomes

of grain and industrial crops. Hence, we can state that per capita outcomes of grain and industrial crops have increased without decreasing significantly the per capita outcomes of the other crops.

## **6.5. Robustness Checks**

I make several robustness checks to better understand the results. First of all, I estimate the results by controlling with other emigrant groups or ethnicities. Then, I use an alternative Treatment group and check the results.<sup>8</sup> Finally, I make several sub-sample analysis to check the robustness of the results.

### 6.5.a. Controlling By Other Emigrants or Minorities

As I mentioned in the Historical Background part, The Crimean and Nogay emigrants are not the only group emigrating to the Ottoman Empire during 19th and 20th centuries. The Cricassians, Bulgarians, Greeks and the other ethnic groups have also emigrated to the Ottoman Empire territories during the same period. One possible concern is that these groups may have been affected the our main outcome of interests. In addition to those emigrants, the minorities such as Ladinos and Armenians may have affected the results. To eliminate this concern, I check the robustness of the results by adding the share of the population of those emigrant groups to total population as control variables. The results from OLS and IV estimations controlled by the other ethnic groups are given in Table A.12 and Table A.13 in Appendix 12,

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<sup>8</sup> I check the results by using first alternative treatment group which is presented in Table A.3 in Appendix 3. In this arrangement I accepted Kirsehir as additional treated province and check the results by using same estimation models with previous sections. I find that the effects of the settlement of emigrants on the urbanization, per capita agricultural area/production, per capita grain area/production, and per capita production of industrial crops continue to be positive and significant. Results are available upon request.

and 13, respectively. The results from OLS and IV estimations in Table A.12 state that the positive and significant effects of the settlement of Crimean and Nogay Turks on urbanization rate have not been affected the share of the other emigrant groups or ethnicities. Even though the significance levels fall to 5% under IV estimations, the results continue to be positive and significant in all specifications. The results from OLS and IV estimations in Table A.13 reveal that adding the share of the other emigrant groups or ethnicities do not affect the significance level and direction of the results about the effects of Crimean and Nogay settlement on the per capita agricultural outcomes. I present only some of them in Table. Similar results are available for the other agricultural outcomes.

#### 6.5.b. Sub-sample Analysis

Now, I look at the results by using some sub-sample analysis. One of the main concerns about the results is the initial conditions of provinces. So as to eliminate the effects of initial conditions on our outcome of interests, I narrowed the sample size by depending on some criteria explained in Table A.14 in Appendix 14, respectively. The first sub-sample is arranged depending on the railroad access of the provinces. The second sub-sample is prepared by using the urban population of provinces during the 1840s as a proxy for initial urbanization, and then by following the previous excludes some new provinces are excluded from the sample as explained in the related Appendix and sections.

### 6.5.b.i. 1st Sub- sample

One of the main concerns about the treatment and control groups is that the comparison of the treated provinces with controlled provinces which do not have any railroad access. As it can be seen from the balance table results in Table A.5 in Appendix 5, distances to railroads in treated provinces are significantly lower compared to controlled provinces. So, to satisfy the concerns, I re-estimate the results by using only the provinces which have gained access to the railroad between 1856 and 1916 (Eldem 1970, 165). In addition the access to the railroad, I also exclude the provinces which have a distance to railroads more than 0.40 decimal degree in 1912. The list of included provinces is presented as the 1st sub-sample in Table A.14 in Appendix 14. Then, I check the results beginning with the urbanization. The results from OLS and IV estimations are given in Table A.15 in Appendix 15. As can be seen from the Table, the results continue to be positive and significant both for OLS and IV estimations. When we compared the result with the main sample results, we see that after excluding the provinces, the effects of the settlement of Crimean and Nogay Turks on urbanization become higher about 0.01 to 0.05 percentage points than the main sample results almost in all estimations of IV. Similarly, I find significant and positive effects of the settlement of emigrants on our the other outcome of interests. I present the results of per capita cultivated land and per capita cultivated area of grain in Table A.16 in the Appendix 16. The results from OLS and IV estimates state that the significance level and direction of effects remain unchanged. Hence, we can state that our results are robust under the narrowed sample estimations which include the provinces gained access to the railroad in the Ottoman period. It means that the treated provinces which had gained access to railroads during the Ottoman period have a higher rate of urbanization and agricultural outcomes compared to the provinces that

had gained access to railroad during the same period. All in all, after eliminating the possible effects of railroads on our main outcome of interests, the positive and significant effects experienced in treated provinces continue to hold.

#### 6.5.b.ii. 2nd Sub-sample

By beginning the excluding the provinces which had an urban population more than 40.000 during the 1840s from the main sample, I will also check the results (Behar 1996, 33). The excluded provinces are given as 2nd sub-sample in Table A.14 in Appendix 14. The results from OLS and IV estimations on urbanization are given in Table A.17 in Appendix 17. When we compare the results with the main results, we see an increase in effects on urbanization about 0.03 to 0.05 percentage points in the columns of IV estimations. Similar results are available for per capita cultivated area, and per capita cultivated area of grain which are given in Table A.18 in Appendix 18. The results are a little lower than the main results, but the significance level and the direction of the effects remain unchanged. Even though most of the excluded provinces which were initially urbanized and more developed are from the control group, Edirne in treated provinces is also excluded. To better understand the robustness of results, I continue to narrow the sample.

#### 6.5.b.iii. 3rd Sub-sample

The other concern is that controlled provinces include provinces which are very different from the other provinces in terms of geographical and physical conditions. Two of them are the south and south-west parts of Turkey. The others are the Black Sea region, and east and south-east parts of Turkey. After excluding these regions from

the sample, the Middle Anatolia, inner parts of the Aegen region and the Thrace have remained in the sample. The provinces included are given as 3rd sub-sample in Table A.14 in Appendix 14. Urbanization results from OLS and IV estimations are presented in Table A.19 in Appendix 19. In can be seen from the columns of IV estimation that treated provinces have had 0.13 to 0.17 percentage points higher urbanization rate than controlled provinces which are 0.03 to 0.05 percentage points higher than the main results, while the significance level is unchanged. Similar results for cultivated land and per capita cultivated area of grain are given in Table A.20 in Appendix 20. Even though there is a little decrease in results, the significance level has not been affected.

#### 6.5.b.iv. 4th Sub-sample

After excluding the Thrace and the inner parts of the Aegean region we have a new sub-sample to check the robustness of results. This sample is also important because the treated provinces remained in the sample are the provinces representing the more than 10 percent of the total Crimean population in 1927 census. The included provinces are presented as the 4th sub-sample in Table A.14 in Appendix 14. The results on urbanization from OLS and IV estimations given in Table A.21 in Appendix 21 state that treated provinces continue to have significantly higher urbanization rate compared to the controlled provinces. And, effects are higher about 0.02 to 0.05 percentage points than the main results. Similar results are available for per capita agricultural outcomes. I present the some of the results in Table A.22 in Appendix 22.

### 6.5.b.v. 5th Sub-sample

In addition to previous exclusion, Ankara is excluded from the sample because of its development potential as the capital of Turkey. The results from OLS and IV estimations presented in Table A.23 in Appendix 23 reveal that the positive and significant effects on urbanization experienced in treated provinces continue to be robust even if we exclude one of the main settlement locations from the sample. Similar positive and significant results are found for agricultural outcomes. Some of the estimations are presented in Table A.24 in Appendix 24.



## **CHAPTER VII**

### **CONCLUSION**

Nowadays, the effects of mass migrations on the economies of host countries are frequently investigated. The literature reveals that mass migrations have positive or negative effects on several outcomes of host countries. One of the most important effects of immigrants on the economies is the long-term effects.

By following the literature about the long-term effects of immigrants on the economies of host countries, I investigate the long-term effects of Crimean and Nogay emigrants on economic development and agricultural outcomes of Turkey. My main motivation to investigate the effects of the emigration of Crimean and Nogay Turks is the historical narratives claiming that Crimean and Nogay emigrants have brought better agricultural skills, methods, and agricultural machinery to the Anatolia. Even though there is a huge literature about the effects of mass population inflows, the effects of the emigration of Crimean and Nogay Turks are not empirically investigated. There are only historical records and contemporary claims about the effects of emigrants on urbanization and the agricultural outcomes of Turkey.

To investigate the effects of emigrants on economic conditions of Turkey, I prepared a novel dataset by digitalizing the agricultural yearbooks, population censuses, and statistical yearbooks. Additionally, I determined the settlement location of emigrants by following the archival records and contemporary research. I created Treatment and Control groups to explore the causal long-term effects of emigrants.



Then, I use an instrumental variable to overcome the potential endogeneity problem. I find strong results that settlement regions of emigrants are determined by the distances between settlement regions and departure regions.

First of all, I use the urbanization rate of provinces as a proxy for the economic conditions in provinces and find positive and significant results stating that the settlement of emigrants has increased the economic development. Secondly, I estimate effects of emigrants on the agricultural outcomes including per capita total agricultural production, per capita total cultivated area, per capita production of grain, per capita cultivated area of grain and per capita production of industrial crops. I find strong evidence that the treated provinces have significantly higher per capita agricultural outcomes compared to controlled provinces. The results reveal that the settlement of emigrants has increased the per capita agricultural outcomes. And, the results state that the positive effects of emigrants have continued to be persistent over time.

Furthermore, to understand the mechanism underlying the effects on urbanization and agricultural outcomes, I extend my investigation by following the historical narratives. I find positive and significant results that per capita production of wheat and barley, and area of wheat and barley are significantly higher for treated provinces. These positive results express the sources of increases in grain production and area. I find also a channel underlying the increases in per capita production of industrial crops which is a mechanism expressing the increases in the per capita agricultural production. Being consistent with the historical records, I find evidence that Crimean and Nogay emigrants have had an important role in the expansion of sugar beet production in settlement regions. I find that per capita production of sugar beet and the share of sugar beet out of total industrial crops (in tonnes) are significantly higher for treated provinces compared to controlled provinces.

Finally, I show the main mechanism underlying the increases in agricultural outcomes as increases in per capita agricultural machinery. By this way, I show the accuracy of historical narratives claiming that Crimean and Nogay emigrants have brought advanced agricultural machinery to Anatolia and as a result took an important role in increases in agricultural production. I make several additional estimations to understand the robustness of results, and find that the results are robust and persistent.

All in all, I find strong pieces of evidence that the Crimean and Nogay emigrants have increased the economic development in settlement regions. My findings reveal that the positive effects of emigrants have continued to be persistent over time. I also show that the contemporary claims and historical records about the effects of emigrants on urbanization, agricultural outcomes, expansion of some industrial crops, and increases in agricultural machinery are accurate.

By this way, I provide a channel to understand the roots of the economic development and development differences between provinces. Increasing in per capita agricultural outcomes over the time means that settlement regions have experienced long-term increases in welfare when we consider that agriculture has been one of the most important sources of welfare during the centuries in Turkey. In addition, the increases in mainly non-agricultural occupations and urbanization mean that settlement provinces have experienced long-term persistent economic development compared to controlled provinces. So, the results give us a mechanism expressing why the provinces differ each other in terms of economic conditions.

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## APPENDIX

### A.1. Provinces

<i>id</i>	<i>Provinces</i>	<i>Subprovinces</i>	<i>id</i>	<i>Provinces</i>	<i>Subprovinces</i>
1	Adana	Adana Cebel-i Bereket	29	Isparta	Isparta
2	Afyon	Afyon	30	Istanbul	Istanbul
3	Agri	Agri	31	Izmir	Izmir
4	Amasya	Amasya	32	Kars	Kars
5	Ankara	Ankara	33	Kastamonu	Kastamonu
6	Antalya	Antalya	34	Kayseri	Kayseri
7	Antep	Antep	35	Kirklareli	Kirklareli
8	Aydin	Aydin	36	Kirsehir	Kirsehir Nevsehir
9	Balikesir	Balikesir	37	Kocaeli	Kocaeli Sakarya
10	Bilecik	Bilecik	38	Konya	Konya
11	Bolu	Bolu Zonguldak	39	Kutahya	Kutahya Usak
12	Burdur	Burdur	40	Malatya	Malatya Adiyaman
13	Bursa	Bursa	41	Manisa	Manisa
14	Eskisehir	Eskisehir	42	Maras	Maras
15	Canakkale	Canakkale Gelibolu	43	Mardin	Mardin
16	Cankiri	Cankiri	44	Mugla	Mugla
17	Coruh	Coruh Rize Artvin	45	Mus	Mus Bingöl Bitlis
18	Corum	Corum	46	Nigde	Nigde Aksaray
19	Denizli	Denizli	47	Samsun	Samsun
20	Diyarbakir	Diyarbakir	48	Siirt	Siirt
21	Edirne	Edirne	49	Sinop	Sinop
22	Elazig	Elazig Tunceli	50	Sivas	Sivas
23	Erzincan	Erzincan	51	Tekirdag	Tekirdag
24	Erzurum	Erzurum	52	Tokat	Tokat
25	Giresun	Giresun	53	Trabzon	Trabzon Ordu
26	Gumushane	Gumushane	54	Urfa	Urfa
27	Hatay	Hatay	55	Van	Van Hakkâri
28	Icel	Icel Mersin	56	Yozgat	Yozgat

**Table A.1.** Based on the number of provinces available in 1928 and the geographical boundaries of the provinces, I obtained all the data I used in the dataset through the merging of the raw data at the above 56 provincial levels. In some years, some provinces have been expressed with different names, while some of them have been divided into different provinces over time. Included provinces refer to the provinces that have different names for any year or who have divided as a different province.

## A.2. Criteria for Treatment Group

Provinces	The Number of Villages <sup>9</sup>	Share of Crimean in 1927 (out of total 10,528) <sup>10</sup>	Share of Crimean in 1935 (out of total 15,593) <sup>11</sup>	The Ratio to Total Population in 1927 <sup>12</sup>	The Ratio to Total Population in 1935 <sup>13</sup>
Eskisehir <sup>14</sup>	39	0.30	0.53	0.0200	0.0540
Ankara <sup>15</sup>	30	0.11	0.15	0.0029	0.0057
Balıkesir <sup>16</sup>	23	0.18	0.02	0.0044	0.0008
Tekirdag <sup>17</sup>	18	0.005	0.017	0.0000	0.0021
Edirne <sup>18</sup>	17	0.005	0.02	0.0000	0.0024
Adana <sup>19</sup>	14	0.01	0.001	0.0002	0.0001
Konya <sup>20</sup>	14	0.12	0.12	0.0024	0.0036
Kirsehir <sup>21</sup>	11	0.003	0.003	0.0002	0.0003
Bursa <sup>22</sup>	10	0.03	0.03	0.0008	0.0011
Kocaeli <sup>23</sup>	9	0.005	0.02437	0.0002	0.0013
Kırklareli <sup>24</sup>	9	0.000	0.00750	0.000	0.0011
Corum <sup>25</sup>	7	0.0116	0.01033	0.0005	0.0006

<sup>9</sup> All information about Crimean Tatar and Nogay villages were taken from (Kırımlı, 2012)

<sup>10</sup> The Crimean population in 1927 was taken from the Population Censuses of 1927. It represents the population that consists of people who declared their mother language as Crimean. (TUIK)

<sup>11</sup> The Crimean population in 1935 was taken from the Population Censuses of 1935. It represents the population that consists of people who declared their mother language as Crimean. (TUIK)

<sup>12</sup> The ratio of Crimean speaking population to total population in 1927.

<sup>13</sup> The ratio of Crimean speaking population to total population in 1935.

<sup>14</sup> Most of the villages established in the borders of Eskişehir, the settled densely by Tatars, have been established after the 1880s. The population of the vast majority of these villages is comprised by Crimean emigrants. (Kırımlı, 2012)

<sup>15</sup> The majority of these villages, which was founded in the period after the Ottoman-Russian War of 1877-78, has settled by Tatar emigrants. (Kırımlı, 2012)

<sup>16</sup> In a small part of these villages established in the provincial borders, natives also have lived along with the Tatars. These villages were established after the 1860s and especially after the Ottoman-Russian War of 1877-78. (Kırımlı, 2012)

<sup>17</sup> These villages have been mixed types of settlement locations rather than typical Tatar village. These villages have been the villages where other immigrant groups have lived together with the Tatars. Crimean emigrants have come after the 1930s in a few of these villages. (Kırımlı, 2012)

<sup>18</sup> These villages have been mixed types of settlements. Crimean emigrants have lived together with natives and the other emigrants. (Kırımlı, 2012) Paşaoğlu estimates 1413 Nogay emigrant settled in the Edirne region. This number does not include Tatar emigrants who settled in the region and whose exact number is unknown. (Paşaoğlu 2009, 348)

<sup>19</sup> These villages, which were established between the 1860s and 1900s, have been mostly settled by Nogay emigrants. (Kırımlı, 2012) Paşaoğlu states that there are a total of 23,354 Nogay emigrants who were settled in the Adana region. (Paşaoğlu 2009, 348)

<sup>20</sup> Crimean Tatar emigrants comprised the majority of the population in these villages that established between the 1860s and 1900s. (Kırımlı, 2012)

<sup>21</sup> The vast majority of these villages was established in the second half of the 19th century. Paşaoğlu states that the number of only Nogay emigrants who settled in Konya-Kirsehir province is 13,659. (Paşaoğlu 2009, 348)

<sup>22</sup> These villages have been also mixed type settlements. Paşaoğlu mentions a total of 1215 registered Nogay emigrants settled in this region. (Paşaoğlu 2009, 348)

<sup>23</sup> No exact information is available on the population of Tatars settled in the provincial borders. Almost half of the villages established in this province were established during the 1860s. In the half of them, Crimean emigrants have settled after the 1930s. (Kırımlı, 2012)

<sup>24</sup> To some of these villages, Crimean emigrants settled after the 1930s. (Kırımlı, 2012)

<sup>25</sup> These villages were established around the 1880s. (Kırımlı, 2012) Paşaoğlu states that 507 registered Nogay emigrants were settled on the borders of this province. (Paşaoğlu 2009, 348)

**Table A.2.** I prepared the Treatment group by depending on the number of Crimean Tatar village settlement in accordance with the archival records about the settlement regions and registered number of emigrants. Additionally, I use the population of Crimean language speaker in 1927 and 1935 for criteria to decide Treatment Group. But, there are some possible concerns about the number of Crimean and Nogay Turks in the 1927 and 1935 censuses. One of them is that Crimean Turks speak a dialect of Turkish which is very similar with Anatolian Turkish as the researchers are mentioned and as a result, it is possible that they have easily adopted the Anatolian Turkish. So, when it was asked which language they speak, their answers may have been the Turkish because of that Crimean language is a dialect of Turkish or they have swiftly adopted to Anatolian Turkish. In any case, we see that Eskisehir, Konya, Ankara, and Balıkesir are provinces where Crimean and Nogay Turks have frequently settled. Hence, I use the Eskisehir, Ankara, Balıkesir, Tekirdag, Edirne, Adana, and Konya as the main treated provinces, by considering the number of Crimean and Nogay villages, the population of the Crimean language speakers in censuses, the number of registered emigrants, and by considering the historical records about settlement region. So, in all estimations, these provinces are used as the Treatment Group, otherwise mentioned. Additionally, the other provinces are considered as controlled provinces. Because of the less number of the village settlement and the developed conditions of the Bursa, I do not use it as treated. In some estimations, I add Kırsehir in Treatment Group and check the results.

### A.3. Treatment and Control Groups

Main Treated Provinces	1st Alternative Treatment Group	Main Controlled Provinces	
Adana	Adana	Afyon	Izmir
Ankara	Ankara	Agri	Kars
Balikesir	Balikesir	Amasya	Kastamonu
Eskisehir	Eskisehir	Antalya	Kayseri
Edirne	Edirne	Antep	Kirklareli
Konya	Konya	Aydin	Kirsehir
Tekirdag	Tekirdag	Bilecik	Kocaeli
	Kirsehir	Bolu	Kutahya
		Burdur	Malatya
		Bursa	Manisa
		Canakkale	Maras
		Cankiri	Mardin
		Coruh	Mugla
		Corum	Mus
		Denizli	Nigde
		Diyarbakir	Samsun
		Elazig	Siirt
		Erzincan	Sinop
		Erzurum	Sivas
		Giresun	Tokat
		Gumushane	Trabzon
		Hatay	Urfa
		Icel	Van
		Isparta	Yozgat
		Istanbul	

**Table A.3.** Main Controlled Provinces include provinces being outside the main treated provinces. In the 1st column, a total of 7 provinces where Crimean Tatars and Nogays have settled are taken as the treated provinces. Between the first and second columns, the new Treatment group is formed by adding Kirsehir to the previous group by depending on the number of villages which settled by emigrants and the historical number of emigrants settled in provinces.

#### A.4. Descriptive Statistics of Variables: All Sample

Variables:	<i>All</i>		
	Obs	Mean	Std. Dev.
Urbanization	331	0.2359517	0.1229532
Distance to railroads	324	0.4694753	0.7600738
Total Rain	265	658.2118	371.0836
SDR	266	45.66474	26.00156
Agricultural Production	334	0.5727848	0.3976758
Cultivated Land	334	0.5118279	0.2833958
Cultivated Area of Grain	334	0.4482036	0.2636902
Grain Production	334	0.4221856	0.273649
Industrial Crop Production	334	0.1310778	0.1824509
Wheat Production	334	0.2265868	0.1797755
Cultivated Area of Wheat	334	0.2510479	0.1847272
Barley Production	334	0.1070359	0.0804299
Cultivated Area of Barley	334	0.1108982	0.0753477
The share of sugar beet	332	0.2579518	0.3312359
Sugar Beet	333	0.0715015	0.156163
Altitude	336	670.7411	524.4151
Per Capita Machinery	222	0.0363019	0.0391786
Circassian	330	0.006688	0.010548
Born Greece	330	0.00578	0.016141
Greek	330	0.00402	0.016441
Bulgarian	330	0.001552	0.00384
Ladino	330	0.002727	0.009444
Armenian	330	0.002182	0.008475
Pulses Production	334	0.019192	0.018379
Cultivated Area of Pulses	334	0.022695	0.020267
Fruit Production	224	0.235937	0.285159
Agriculture	223	3.560583	14.12778
Non-Agriculture	223	0.156906	0.115032
Industrial Occupations	223	0.479417	2.167649
Services	223	0.51148	2.294882

**Table A.4.** Descriptive Statistics of Variables

#### A.4.1. Descriptive Statistics of Variables: Treatment and Control Groups

Variables:	<i>Treatment Group</i>			<i>Control Group</i>		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Urbanization	42	0.3154762	0.1016738	289	0.2243945	0.1216313
Distance to railroads	42	0.0328571	0.0576908	282	0.5345035	0.7942529
Total Rain	42	544.6686	215.6576	223	679.5967	390.2143
SDR	42	38.1631	16.53856	224	47.07129	27.21286
Agricultural Production	42	0.8577522	0.513322	292	0.5317964	0.3611642
Cultivated Land	42	0.7949429	0.3371281	292	0.4711059	0.2503174
Cultivated Area of Grain	42	0.6671429	0.3135889	292	0.4167123	0.2404152
Grain Production	42	0.6302381	0.3777306	292	0.3922603	0.2417498
Industrial Crop Production	42	0.2083333	0.1995595	292	0.1199658	0.1774727
Wheat Production	42	0.3488095	0.2672735	292	0.2090068	0.1563744
Cultivated Area of Wheat	42	0.3833333	0.2301502	292	0.2320205	0.1694027
Barley Production	42	0.1366667	0.0957809	292	0.102774	0.0772343
Cultivated Area of Barley	42	0.1345238	0.0827928	292	0.1075	0.0737479
The share of sugar beet	42	0.4169048	0.356545	290	0.234931	0.3215956
Sugar Beet	42	0.117381	0.1712089	291	0.0648797	0.1530548
Altitude	42	400.4286	425.3048	294	709.3571	526.4512
Per Capita Machinery	28	0.0676423	0.0342014	194	0.0317785	0.0378278
Circassian	42	0.005203	0.005153	288	0.006904	0.011107
Born Greece	42	0.022377	0.035554	288	0.003359	0.008478
Greek	42	0.001191	0.001501	288	0.004433	0.017555
Bulgarian	42	0.006058	0.007798	288	0.000895	0.002194
Ladino	42	0.007143	0.014018	288	0.002083	0.008421
Armenian	42	0	0	288	0.0025	0.00903
Pulses Production	42	0.016667	0.014595	292	0.019555	0.018854
Cultivated Area of Pulses	42	0.021191	0.019025	292	0.022911	0.020461
Fruit Production	28	0.280237	0.194838	196	0.229609	0.295657
Agriculture	28	11.30643	26.22377	195	2.448359	11.08105
Non-Agriculture	28	0.1975	0.081406	195	0.151077	0.118101
Industrial Occupations	28	1.8075	4.406619	195	0.288718	1.54376
Services	28	2.029643	4.930699	195	0.293487	1.504186

**Table A.4.1.** Descriptive Statistics of Variables: Treatment and Control Groups

### A.5: Balance Table Results

Variables:	(1)	(2)	(3)
	Control group	Treatment group	Difference
Distance to railroads	0.535 (0.794)	0.033 (0.058)	-0.502*** (0.000)
Total Rain	679.597 (390.214)	544.669 (215.658)	-134.928** (0.030)
SDR	47.071 (27.213)	38.163 (16.539)	-8.908** (0.041)
Latitude	39.252 (1.506)	39.554 (1.538)	0.302 (0.226)
Longitude	34.963 (4.960)	30.451 (3.063)	-4.511*** (0.000)
Altitude	709.357 (526.451)	400.429 (425.305)	-308.929*** (0.000)
Observations	294	42	336

**Table A.5.** The table presents the balance table results. P-values are in parenthesis.

## A.6. NUTS-1 Level Regional Division of Turkey

Region Code	Region Name (NUTS-1)	Provinces Included
TR1	Istanbul	Istanbul
TR2	Bati Marmara	Tekirdag Edirne Kirklareli Balikesir Çanakkale
TR3	Ege	Izmir Aydin Denizli Mugla Manisa Afyon Kütahya Usak
TR4	Dogu Marmara	Bursa Eskisehir Bilecik Kocaeli Sakarya Düzce Bolu Yalova
TR5	Bati Anadolu	Ankara Konya Karaman
TR6	Akdeniz	Antalya Isparta Burdur Adana Mersin Hatay Kahramanmaras Osmaniye
TR7	Orta Anadolu	Kirikkale Aksaray Nigde Nevsehir Kirsehir Kayseri Sivas Yozgat
TR8	Bati Karadeniz	Zonguldak Karabük Bartin Kastamonu Çankiri Sinop Samsun Tokat Çorum Amasya
TR9	Dogu Karadeniz	Trabzon Ordu Giresun Rize Artvin Gümüşhane
TRA	Kuzeydogu Anadolu	Erzurum Erzincan Bayburt Agri Kars Igdır Ardahan
TRB	Ortadogu Anadolu	Malatya Elazig Bingöl Tunceli Van Mus Bitlis Hakkâri
TRC	Güneydogu Anadolu	Gaziantep Adiyaman Kilis Sanliurfa Diyarbakir Mardin Batman Sirnak Siirt

**Table A.6.** NUTS-1 Level Regional Division of Turkey (TUIK)



### A.7. Arranged Version of NUTS-1 Level Regional Division of Turkey

Region Code	Region Name (NUTS-1)	Arranged Provinces
TR1	Istanbul	Istanbul
TR2	Bati Marmara	Tekirdag Edirne Kirklareli Balikesir Çanakkale
TR3	Ege	Izmir Aydin Denizli Mugla Manisa Afyon Kütahya
TR4	Dogu Marmara	Bursa Eskisehir Bilecik Kocaeli
TR5	Bati Anadolu	Ankara Konya
TR6	Akdeniz	Antalya Isparta Burdur Adana Icel Hatay Maras
TR7	Orta Anadolu	Nigde Kirsehir Kayseri Sivas Yozgat
TR8	Bati Karadeniz	Bolu Kastamonu Çankiri Sinop Samsun Tokat Çorum Amasya
TR9	Dogu Karadeniz	Trabzon Giresun Coruh Gümüşhane
TRA	Kuzeydogu Anadolu	Erzurum Erzincan Agri Kars
TRB	Ortadogu Anadolu	Malatya Elazig Van Mus
TRC	Güneydogu Anadolu	Antep Urfa Diyarbakir Mardin Siirt

**Table A.7.** I arranged the regions in accordance with my own dataset to use as region fixed effects as above. As I mentioned in the previous chapters, the merging of the provinces into 56 provinces and the regulation of NUTS-1 level regions based on this merger were made in accordance with the geographical boundaries of the provinces which were found in 1928. In the original case, Bolu is located in the TR4 region, while it is included in the TR8 region in the edited version due to its combination with Zonguldak.

### A.8. Effects on the Cultivated Area of Wheat and Barley

Dependent Variables:	[1]	[2]	[3]	[4]	[5]
	<b>OLS</b>				
A. Cultivated Area of Wheat	0.126**	0.142***	0.141***	0.146***	0.143***
	[0.0541]	[0.0505]	[0.0512]	[0.0535]	[0.0518]
B. Cultivated Area of Barley	0.0322**	0.0317**	0.0307**	0.0310**	0.0290*
	[0.0151]	[0.0151]	[0.0151]	[0.0144]	[0.0149]
	<b>2SLS</b>				
A. Cultivated Area of Wheat	0.301***	0.342***	0.346***	0.346***	0.356***
	[0.0576]	[0.0327]	[0.0337]	[0.0279]	[0.0334]
B. Cultivated Area of Barley	0.0815***	0.0884***	0.0876***	0.0829***	0.0834***
	[0.0151]	[0.0110]	[0.0109]	[0.00947]	[0.00917]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	280.39	227.15	237.6	289.89	276.73
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	334	257	258	257	257

**Table A.8.** This table presents the results from OLS and IV estimations. Dependent variables are per capita cultivated area of wheat and per capita cultivated area of barley, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

### A.9. Effects on the Share of Sugar Beet Production in Total Industrial Crops Production

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
The share of sugar beet	<i>OLS</i>				
A. Crimean Effect	0.0375	0.0622	0.0515	0.0569	0.0573
	[0.148]	[0.151]	[0.146]	[0.141]	[0.149]
	<i>2SLS</i>				
B. Crimean Effect	0.269*	0.436***	0.417***	0.391***	0.398***
	[0.153]	[0.116]	[0.114]	[0.115]	[0.127]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	280.3	225.95	236.99	285.21	275.09
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	332	256	257	256	256

**Table A.9.** This table presents the results from OLS and IV estimations. The dependent variable is the share of sugar beet production in total industrial crops production, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

### A.10. Effects on the Cultivated Area and Production of Pulses

Dependent Variables:	[1]	[2]	[3]	[4]	[5]
<b>OLS</b>					
A. Pulses Production	-0.00686	-0.00915	-0.00912	-0.0103	-0.00918
	[0.00693]	[0.00753]	[0.00771]	[0.00695]	[0.00749]
B. Cultivated Area of Pulses	-0.00675	-0.00808	-0.00783	-0.00874	-0.00828
	[0.00805]	[0.00807]	[0.00828]	[0.00783]	[0.00810]
<b>2SLS</b>					
A. Pulses Production	-0.00803	-0.0155	-0.0147	-0.0155	-0.0127
	[0.00919]	[0.0143]	[0.0144]	[0.0142]	[0.0134]
B. Cultivated Area of Pulses	-0.000344	0.000215	0.00138	-0.000777	0.000177
	[0.00650]	[0.00954]	[0.00960]	[0.00866]	[0.00869]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	280.39	227.15	237.6	289.89	276.73
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	334	257	258	257	257

**Table A.10.** This table presents the results from OLS and IV estimations. Dependent variables are per capita pulses production and per capita cultivated area of pulses, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

### A.11. Effects on the Fruit Production

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
	<i>OLS</i>				
A. Fruit Production	-0.0244	-0.0340	-0.0258	-0.0346	-0.0419
	[0.0760]	[0.0851]	[0.0786]	[0.0828]	[0.0843]
	<i>2SLS</i>				
B. Fruit Production	-0.0537**	-0.0411	0.0112	-0.0296	-0.0396
	[0.0221]	[0.0389]	[0.0509]	[0.0377]	[0.0404]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	359.82	267.14	317.65	203.02	247.07
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	224	184	184	184	184

**Table A.11.** This table presents the results from OLS and IV estimations. The dependent variable is per capita fruit production, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

### A.12. Effects on Urbanization: Controlled by Other Emigrants or Ethnicities

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
Urbanization	<i>OLS</i>				
<i>A. Crimean Effect</i>	0.0863**	0.0718***	0.0739***	0.0702***	0.0702***
	[0.0374]	[0.0247]	[0.0229]	[0.0194]	[0.0207]
	<i>2SLS</i>				
<i>B. Crimean Effect</i>	0.142***	0.0937**	0.0940**	0.0824**	0.0807**
	[0.0508]	[0.0440]	[0.0450]	[0.0385]	[0.0382]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
<i>F-statistics</i>	116.51	80.2	50.07	48.12	50.27
<i>Other Ethnicities</i>					
Born Greece	No	Yes	No	No	No
Greek	Yes	No	Yes	Yes	Yes
Circassian	Yes	Yes	Yes	Yes	Yes
Bulgarian	Yes	Yes	Yes	Yes	Yes
Ladino	No	Yes	Yes	Yes	Yes
Armenian	No	Yes	Yes	Yes	Yes
<i>Controls for</i>					
Distance to Railroads	Yes	Yes	Yes	Yes	Yes
Total Rain	Yes	Yes	Yes	Yes	Yes
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	251	251	251	251	251

**Table A.12.** This table presents the results from OLS and IV estimations. The dependent variable is urbanization rate, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

### A.13. Effects on Agricultural Outcomes: Controlled by Other Emigrants or Ethnicities

Dependent Variables:	[1]	[2]	[3]	[4]	[5]
	<i>OLS</i>				
<i>A. Cultivated Land</i>	0.282***	0.344***	0.292***	0.303***	0.294***
	[0.0892]	[0.0764]	[0.0922]	[0.0886]	[0.0933]
<i>B. Cultivated Area of Grain</i>	0.131*	0.188**	0.136**	0.146**	0.140**
	[0.0682]	[0.0734]	[0.0686]	[0.0664]	[0.0671]
	<i>2SLS</i>				
<i>A. Cultivated Land</i>	0.340***	0.429***	0.380***	0.371***	0.385***
	[0.0647]	[0.0789]	[0.0884]	[0.0807]	[0.0922]
<i>B. Cultivated Area of Grain</i>	0.330***	0.413***	0.359***	0.351***	0.364***
	[0.0693]	[0.0837]	[0.0901]	[0.0812]	[0.0920]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
<i>F-statistics</i>	116.59	79.97	50.45	48.3	50.62
<i>Other Ethnicities</i>					
Born Greece	No	Yes	No	No	No
Greek	Yes	No	Yes	Yes	Yes
Circassian	Yes	Yes	Yes	Yes	Yes
Bulgarian	Yes	Yes	Yes	Yes	Yes
Ladino	No	Yes	Yes	Yes	Yes
Armenian	No	Yes	Yes	Yes	Yes
<i>Controls for</i>					
Distance to Railroads	Yes	Yes	Yes	Yes	Yes
Total Rain	Yes	Yes	Yes	Yes	Yes
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	253	253	253	253	253

**Table A.13.** This table presents the OLS and IV estimation results, respectively. Dependent variables are per capita cultivated land and per capita cultivated area of grain, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

#### A.14. The List of Sub-Samples

1st Sub-Sample <sup>26</sup>	2nd Sub-Sample <sup>27</sup>	3rd Sub-Sample <sup>28</sup>	4th Sub-Sample <sup>29</sup>	5th Sub-Sample <sup>30</sup>
<i>Included Provinces</i>	<i>Excluded Provinces</i>	<i>Included Provinces</i>	<i>Included Provinces</i>	<i>Included Provinces</i>
<b><i>Adana</i></b>	Aydın	Afyon	Afyon	Afyon
Afyon	Bursa	Amasya	Amasya	Amasya
<b><i>Ankara</i></b>	Diyarbakır	<b><i>Ankara</i></b>	<b><i>Ankara</i></b>	<b><i>Balikesir</i></b>
Antep	<b><i>Edirne</i></b>	<b><i>Balikesir</i></b>	<b><i>Balikesir</i></b>	Bilecik
Aydın	Istanbul	Bilecik	Bilecik	<b><i>Eskisehir</i></b>
<b><i>Balikesir</i></b>	Izmir	Burdur	<b><i>Eskisehir</i></b>	Cankiri
Bilecik	Sivas	<b><i>Eskisehir</i></b>	Cankiri	Corum
Burdur	Urfa	Canakkale	Corum	Kayseri
Bursa		Cankiri	Kayseri	Kirsehir
<b><i>Eskisehir</i></b>		Corum	Kirsehir	Kocaeli
Canakkale		Denizli	Kocaeli	<b><i>Konya</i></b>
Denizli		Isparta	<b><i>Konya</i></b>	Kutahya
<b><i>Edirne</i></b>		Kayseri	Kutahya	Maras
Icel		Kirklareli	Maras	Nigde
Isparta		Kirsehir	Nigde	Tokat
Istanbul		Kocaeli	Tokat	Yozgat
Izmir		<b><i>Konya</i></b>	Yozgat	
Kirklareli		Kutahya		
Kocaeli		Manisa		
<b><i>Konya</i></b>		Maras		
Kutahya		Nigde		
Manisa		<b><i>Tekirdag</i></b>		
Mardin		Tokat		
Sivas		Yozgat		
<b><i>Tekirdag</i></b>				
Urfa				

**Table A.14.** The list of provinces used in different small sample estimations is above. Only in the second column, excluded provinces are given. In addition, in every column, the provinces written as bold and italic represent the treated provinces remained in the sample.

<sup>26</sup> The provinces in the 1st sub-sample are the provinces gained access to the railroad between 1856 and 1916 (Eldem 1970, 165).

<sup>27</sup> In the 2nd sub-sample, provinces which had an urban population more than 40.000 during the 1840s are excluded from the main sample (Behar 1996, 33).

<sup>28</sup> In the 3rd sub-sample, in addition to the excluded provinces in the second sub-sample, the Mediterranean coast, the Black Sea region, and east and south-east parts of Turkey are excluded from the main sample.

<sup>29</sup> In addition to the 3rd sub-sample, provinces in the Thrace are excluded from the sample.

<sup>30</sup> In addition to the 4th sub-sample, Ankara is excluded from the sample because of its development potential as the capital of Turkey.



### A.15: Sub-Sample Analysis: First Sub-Sample: Effects on Urbanization

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
Urbanization	<i>OLS</i>				
A. Crimean Effect	0.0736***	0.0714***	0.0668***	0.0709***	0.0692***
	[0.0207]	[0.0217]	[0.0222]	[0.0199]	[0.0198]
	<i>2SLS</i>				
B. Crimean Effect	0.141***	0.147***	0.129***	0.140***	0.134***
	[0.0388]	[0.0412]	[0.0386]	[0.0410]	[0.0400]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	262.61	170.32	185.79	115.78	152.85
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	156	132	132	132	132

**Table A.15.** This table presents the results from OLS and IV estimations. The dependent variable is urbanization rate, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

### A.16: Sub-Sample Analysis: First Sub-Sample: Effects on Agricultural Outcomes

Dependent Variables:	[1]	[2]	[3]	[4]	[5]
<i>OLS</i>					
A. Cultivated Land	0.281***	0.336***	0.342***	0.354***	0.341***
	[0.0705]	[0.0949]	[0.0886]	[0.0980]	[0.101]
B. Cultivated Area of Grain	0.176**	0.207***	0.217***	0.219***	0.211**
	[0.0702]	[0.0764]	[0.0708]	[0.0802]	[0.0826]
<i>2SLS</i>					
A. Cultivated Land	0.334***	0.346***	0.353***	0.346***	0.365***
	[0.0649]	[0.0616]	[0.0530]	[0.0692]	[0.0713]
B. Cultivated Area of Grain	0.337***	0.322***	0.340***	0.316***	0.339***
	[0.0650]	[0.0617]	[0.0543]	[0.0667]	[0.0702]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	262.61	170.32	185.79	115.78	152.85
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	156	132	132	132	132

**Table A.16.** This table presents the OLS and IV estimation results, respectively. Dependent variables are per capita cultivated land and per capita cultivated area of grain, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

### A.17: Sub-Sample Analysis: Second Sub-Sample: Effects on Urbanization

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
Urbanization	<i>OLS</i>				
A. Crimean Effect	0.0874***	0.0748***	0.0739***	0.0697***	0.0680***
	[0.0233]	[0.0163]	[0.0154]	[0.0144]	[0.0149]
	<i>2SLS</i>				
B. Crimean Effect	0.178***	0.155***	0.151***	0.138***	0.132***
	[0.0260]	[0.0180]	[0.0177]	[0.0164]	[0.0155]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	367.41	173.51	177.02	188.9	249.83
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	283	209	210	209	209

**Table A.17.** This table presents the results from OLS and IV estimations. The dependent variable is urbanization rate, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

**A.18: Sub-Sample Analysis: Second Sub-Sample: Effects on Agricultural Outcomes**

Dependent Variables:	[1]	[2]	[3]	[4]	[5]
	<i>OLS</i>				
A. Cultivated Land	0.301***	0.325***	0.324***	0.336***	0.319***
	[0.0801]	[0.0801]	[0.0779]	[0.0793]	[0.0810]
B. Cultivated Area of Grain	0.171***	0.178***	0.176***	0.183***	0.173***
	[0.0652]	[0.0651]	[0.0636]	[0.0693]	[0.0665]
<i>2SLS</i>					
A. Cultivated Land	0.298***	0.351***	0.350***	0.349***	0.361***
	[0.0682]	[0.0550]	[0.0558]	[0.0471]	[0.0490]
B. Cultivated Area of Grain	0.299***	0.337***	0.334***	0.333***	0.347***
	[0.0637]	[0.0556]	[0.0565]	[0.0533]	[0.0505]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	368.11	172.43	176.02	189.1	248.33
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	286	211	212	211	211

**Table A.18.** This table presents the OLS and IV estimation results, respectively. Dependent variables are per capita cultivated land and per capita cultivated area of grain, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

### A.19: Sub-Sample Analysis: Third Sub-Sample: Effects on Urbanization

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
Urbanization	<i>OLS</i>				
A. Crimean Effect	0.0793**	0.0635**	0.0630***	0.0597**	0.0560**
	[0.0336]	[0.0253]	[0.0243]	[0.0232]	[0.0226]
	<i>2SLS</i>				
B. Crimean Effect	0.177***	0.157***	0.150***	0.141***	0.135***
	[0.0259]	[0.0209]	[0.0182]	[0.0243]	[0.0223]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	381.44	119.42	166.31	117.95	157.81
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	143	106	106	106	106

**Table A.19.** This table presents the results from OLS and IV estimations. The dependent variable is urbanization rate, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

## A.20: Sub-Sample Analysis: Third Sub-Sample: Effects on Agricultural Outcomes

Dependent Variables:	[1]	[2]	[3]	[4]	[5]
	<i>OLS</i>				
A. Cultivated Land	0.215**	0.238***	0.243***	0.259**	0.243***
	[0.0863]	[0.0907]	[0.0851]	[0.101]	[0.0925]
B. Cultivated Area of Grain	0.196**	0.208**	0.214**	0.226**	0.213**
	[0.0905]	[0.0961]	[0.0888]	[0.104]	[0.0970]
<i>2SLS</i>					
A. Cultivated Land	0.291***	0.311***	0.328***	0.348***	0.350***
	[0.0672]	[0.0544]	[0.0563]	[0.0528]	[0.0511]
B. Cultivated Area of Grain	0.293***	0.287***	0.306***	0.317***	0.320***
	[0.0619]	[0.0512]	[0.0550]	[0.0587]	[0.0532]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	380.76	118.66	164.45	120.07	158.3
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	144	107	107	107	107

**Table A.20.** This table presents the OLS and IV estimation results, respectively. Dependent variables are per capita cultivated land and per capita cultivated area of grain, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

### A.21: Sub-Sample Analysis: Fourth Sub-Sample: Effects on Urbanization

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
Urbanization	<i>OLS</i>				
A. Crimean Effect	0.163***	0.109***	0.109***	0.0807***	0.0875***
	[0.0259]	[0.0195]	[0.0133]	[0.0253]	[0.0181]
	<i>2SLS</i>				
B. Crimean Effect	0.188***	0.152***	0.146***	0.114***	0.116***
	[0.0282]	[0.0223]	[0.0213]	[0.0243]	[0.0223]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	806.14	110.08	138.22	100000.00	268.12
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	101	74	74	74	74

**Table A.21.** This table presents the results from OLS and IV estimations. The dependent variable is urbanization rate, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

## A.22: Sub-Sample Analysis: Fourth Sub-Sample: Effects on Agricultural Outcomes

Dependent Variables:	[1]	[2]	[3]	[4]	[5]
	<i>OLS</i>				
A. Cultivated Land	0.299***	0.341***	0.357***	0.391***	0.351***
	[0.0598]	[0.0770]	[0.0508]	[0.0808]	[0.0797]
B. Cultivated Area of Grain	0.310***	0.200**	0.208***	0.217**	0.204**
	[0.0519]	[0.0955]	[0.0786]	[0.102]	[0.0963]
C. Sugar Beet	0.0975***	0.158***	0.137***	0.0873***	0.0876***
	[0.0265]	[0.0250]	[0.0190]	[0.0303]	[0.0252]
	<i>2SLS</i>				
A. Cultivated Land	0.309***	0.375***	0.386***	0.363***	0.384***
	[0.0716]	[0.107]	[0.0814]	[0.0694]	[0.0771]
B. Cultivated Area of Grain	0.315***	0.357***	0.371***	0.372***	0.383***
	[0.0622]	[0.0913]	[0.0702]	[0.0690]	[0.0734]
C. Sugar Beet	0.113***	0.203***	0.175***	0.0810**	0.0780***
	[0.0316]	[0.0466]	[0.0354]	[0.0329]	[0.0268]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	820.55	110.49	138.93	160000.00	268.38
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	102	75	75	75	75

**Table A.22.** This table presents the OLS and IV estimation results, respectively. Dependent variables are per capita cultivated land, per capita cultivated area of grain, and per capita sugar beet production, in Line A, B, and C, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.



### A.23: Sub-Sample Analysis: Fifth Sub-Sample: Effects on Urbanization

Dependent Variable:	[1]	[2]	[3]	[4]	[5]
Urbanization	<i>OLS</i>				
A. Crimean Effect	0.163***	0.126***	0.121***	0.103***	0.103***
	[0.0259]	[0.0173]	[0.00971]	[0.0231]	[0.0165]
	<i>2SLS</i>				
B. Crimean Effect	0.176***	0.145***	0.138***	0.109***	0.108***
	[0.0254]	[0.0210]	[0.0143]	[0.0240]	[0.0191]
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	862.59	109.33	141.46	8416.64	270.84
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	Yes
SDR	No	No	Yes	No	No
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	95	68	68	68	68

**Table A.23.** This table presents the results from OLS and IV estimations. The dependent variable is urbanization rate, in Line A and B, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.

**A.24: Sub-Sample Analysis: Fifth Sub-Sample: Effects on Agricultural Outcomes**

Dependent Variables:	[1]	[2]	[3]	[4]	[5]
<i>OLS</i>					
A. Cultivated Land	0.299***	0.260***	0.315***	0.305***	0.265***
	[0.0598]	[0.0577]	[0.0511]	[0.0504]	[0.0494]
B. Cultivated Area of Grain	0.310***	0.259***	0.313***	0.314***	0.273***
	[0.0519]	[0.0538]	[0.0481]	[0.0524]	[0.0500]
C. Sugar Beet	0.0975***	0.148***	0.129***	0.0720**	0.0777***
	[0.0265]	(0.0247)	(0.0198)	(0.0291)	(0.0236)
<i>2SLS</i>					
A. Cultivated Land	0.337***	0.357***	0.396***	0.355***	0.365***
	[0.0666]	[0.112]	[0.0868]	[0.0537]	[0.0690]
B. Cultivated Area of Grain	0.341***	0.338***	0.379***	0.362***	0.363***
	[0.0567]	[0.0956]	[0.0744]	[0.0556]	[0.0653]
C. Sugar Beet	0.120***	0.207***	0.180***	0.0835***	0.0824***
	[0.0302]	(0.0456)	(0.0361)	(0.0320)	(0.0271)
<i>First-stage regression</i>	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
F-statistics	878.39	109.86	142.02	9316.31	273.11
<i>Controls for</i>					
Distance to Railroads	No	Yes	Yes	Yes	Yes
Total Rain	No	Yes	No	Yes	No
SDR	No	No	Yes	No	Yes
NUTS-1 FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
12 Region-Year FE	No	No	No	Yes	No
12 Region LTT	No	No	No	No	Yes
# Observation	96	69	69	69	69

**Table A.24.** This table presents the OLS and IV estimation results, respectively. Dependent variables are per capita cultivated land, per capita cultivated area of grain, and per capita sugar beet production, in Line A, B, and C, both for OLS and IV, respectively. Standard errors presented in brackets are clustered at the province level. \*\*\*, \*\*, \* represent the significance level at %1, %5, and %10, respectively.