

***An Eastern Mediterranean economy
under transformation.
Crete in the late Ottoman era (1840-98)***

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This article¹ is part of the wider discussion on the incorporation of regional entities in the global economy during the second half of the nineteenth century. How does an eastern Mediterranean economy respond to the challenge of its accelerated integration into the global markets? The present article analyzes the characteristics of the Cretan economy and traces the working mechanisms that led to its transformation and finally to economic stagnation and the downgrading of its position in the international division of labour. The economic transformation of Crete took within the context a new social order, introduced by the Greek War of Independence (1821-28) and by the short-term Egyptian rule (1830-40) and based on changes in the ethno-religious composition of the population and in the land tenure system.

After approximately four and a half centuries of Venetian rule (1211-1669), from 1669 Crete was governed by the Ottomans for nearly one and a half centuries. In 1830, following the lengthy revolution of 1821 (which lasted until 1828), Crete granted to the regent of Egypt, Muhammad Ali. However, in 1840, following the Egyptian defeat in the Turkish-Egyptian war, Crete was once again placed under Ottoman rule until the proclamation of the island's autonomous regime in 1898 and its eventual union with Greece in 1913.

¹ I am indebted to Socrates Petmezas, supervisor of my PhD thesis, of which this article is part.

1. The Demographic Context (1840-98)

The revolution of 1821 (1821-28) and the following 10-year period of Egyptian rule (1830-40) altered decisively the demographic balance in Crete. The revolution brought extensive population losses, as well as considerable changes in the size of the various ethno-religious groups among the residents (*Table 1*).

Before the revolution of 1821, Crete had a population of between 260,000 and 280,000. However, in 1840 the population had decreased to 152,760-172,450 residents. Despite the fact that in the pre-revolutionary period Christians and Muslims had balanced each other, or at least there had been only a minimum Christian numerical superiority (50-53% of the total population were Christians and 47-50% were Muslims), in 1840 the Christian percentages rose to 70-81%, while the Muslim percentages plunged to 19-30%. Simultaneously, although the pre-revolutionary religious ratios were maintained (1/4 Christians and 3/4 Muslims) in the three urban areas of Chania, Rethymno and Iraklio (on the north coast of Crete), in the rural areas the Muslims decreased radically from 41% to 21% and the Christian residents increased from 59% to 79% of the total population (*Table 1*).

Lastly, the population ratios by place of residence remained unchanged. It seems that in the post-revolutionary period, urban residents accounted for between 17% and 19% of the population and rural residents for between 81% and 83%, maintaining the pre-revolutionary 17% - 83% demographic ratios (*Table 1*).

During the lengthy revolution of 1821, instability and harsh economic conditions had led many of the big landowners (known as "agas" and "beys") to abandon the countryside and find refuge either in the three above-mentioned towns or in regions under the suzerainty of the Sultan far away from the island of Crete. During the Egyptian period, Muhammad Ali's policy to control the island's production could be implemented by means of the return of the Christian population to Crete (in the years of the revolution some Christians had moved to neighbouring regions of Greece) and especially to the rural areas, and the ousting of the Muslim landed aristocracy from the countryside.

Egypt's regent confiscated the land of agas and beys who did not possess the necessary legal land titles or were unable to pay their debts (both current and long-standing). Those agas and beys who remained in the countryside faced extreme difficulties in keeping their lands (most of them relied solely on agricultural production) because of the lack of a Christian workforce, due to the reduction of the population. They were obliged to sell their lands dominating Christian population and either moved to the three major towns or abandoned Crete.²

The transfer of land ownership resulted in the transformation of the size of properties across the island, since most of the large estates were fragmented and small landownership became the new basis of the structure of society. In 1838, the English Consul in Egypt, John Bowring, wrote in his report on Crete that "almost every peasant has his own farm"³, whereas 21 years earlier (1817) the Austrian traveller Franz Sieber had referred to the Muslims as "landholders"⁴.

The transfer of Cretan land to Christians (often under adverse lending terms and harsh economic conditions)⁵ was not limited to those who had lived and worked (prior to the land transfer) on the big estates of the plains. It also concerned people who moved to the plains from the mountainous areas.⁶ In the pre-revolutionary period Christians had inhabited mainly the mountainous areas, but now they began to

² M. Perakis, "Revolution and socio-economic change in the Ottoman periphery: the case of the island of Crete in 1821", in Plamen Mitev, Ivan Parvev, Maria Baramova, Vania Racheva (editors), *Empires and Peninsulas. Southeastern Europe between Karlowitz and the Peace of Andrianople, 1699-1829*, (Sofia 2010), pp. 184-187.

³ J. Bowring, *Report on Egypt and Candia*, (London 1840), p. 162.

⁴ F. Sieber, *Travels in the island of Crete in the year 1817*, (London 1823), p. 35.

⁵ Ministère des Affaires Etrangères, Archives Diplomatiques, *Correspondance Commerciale des Consuls. Turquie* (henceforth MAEADCCC), La Canée, 26(1841-51), Consul Charpentier à Ministère des Affaires Etrangères, no. 9, 12/4/1843, 123, enclosed "Mémoire sur la situation politique, administrative, agricole, commerciale, industrielle et de navigation de l'île de Candie en 1842", 124-132.

⁶ M. Perakis, *Frevnes gia tin ikonomia kai tin kinonia tis Krits tou 19ou eona. I ikonomiki, kinoniki kai politiki ori katarefsis tis "Halepas" 1878-89 (Research on the Economy and Society of Crete in the Nineteenth Century. The Economic, Social and Political Conditions of the Collapse of the "Halepa" Regime 1878-89)*, vol. 1, pp. 83-85, (Unpublished PhD Thesis, University of Crete, 2005).

settle on the plains. However, this settlement did not concern the three port-cities, which remained the preferred dwelling places of the Muslims.

From 1840 to 1898, the qualitative characteristics of the population remained constant (*Table 2*), despite such occasional short-term counterbalancing tendencies, such as the loss of human lives and immigration during the 1866-68 Christian revolution (against the Ottoman administration)⁷ and the 1870s' short-term agricultural crisis⁸. These qualitative characteristics included, alongside the natural population increase (from 152,760 – 172,450 in 1840 to approximately 357,000 residents in 1898), the transfer of Muslim lands to the Christians⁹, the increase in small land-ownership and the Christian settlement of the lowlands.¹⁰

2. The Olive Tree: the Cornerstone of the Cretan Economy

The cultivation of olive trees for the production of olive oil was the primary economic activity in Crete during the early (1669-1830)¹¹ and

⁷ Foreign Office, *General Correspondence*, Turkey, series 78, (henceforth FOGC 78) various reports between February and June 1869; Foreign Office, *Correspondence Respecting the Disturbances in Crete*, presented to both Houses of Parliament by command of Her Majesty, 25/12/1867, no. 29, Fuad Pasha to Musurus Pasha, enclosed document Photiades Bey to Fuad Pasha on 28/10/1867; Foreign Office, *Correspondence Respecting the Disturbances in Crete*, presented to both Houses of Parliament by command of Her Majesty, 1867, 20/11/1867, no. 7, Athens, Erskine to Lord Stanley; I. Mamalakis, *I kritiki epanastasis tou 1866-69 (The Cretan Revolution of 1866-69)*, (Chania 1983), p. 408; newspaper *Patris (Homeland)*, 1883 annex in the Gennadius Library, Archive of Stephanos Dragoumis, folder 36, sub-folder 7, no. 290; K. Kalliataki-Mertikopoulou, *Ellinikos alitrotismos kai otomanikes metarrithmisis. I periptosi tis Kritis 1868-1877 (Hellenic Irredentism and Ottoman Reforms. The Case of Crete 1868-1877)*, (Athens 1988), pp. 103-104, footnote 100.

⁸ The English Consul observed in 1873 that 'small groups of 6 to 8 people depart almost everyday' (FOGC 78, Turkey, 2281, Canca, Consul Sandwith to Foreign Office, political correspondence, no. 7, 7/11/1873, 370-377).

⁹ MAEADCCC, La Canée, 26(1841-51), Consul Charpentier à Ministère des Affaires Etrangères, no. 9, 12/4/1843, 123, enclosed "Mémoire sur la situation politique, administrative, agricole, commerciale, industrielle et de navigation de l'île de Candie en 1842", 124-132; *La vérité sur les événements de Candie*, (Paris 1858), p. 18; I. Mourellos, *I istoria tis Kritis (The History of Crete)*, (Heraklion 1950), p. 1532-1533.

¹⁰ M. Perakis, *ibid.* pp. 83-85.

¹¹ V. Kremmydas, 'I sapounopiies tis Kritis ton 18o cona (Cretan Soap Factories in the Eighteenth Century)', (Athens 1974), p. 44; M. Greene, *A shared world. Christians and Muslims in the Early Modern Mediterranean*, (Princeton 2000), pp. 134-140.

the late¹² Ottoman era. In the aftermath of the destruction of a large part of the olive trees during the revolution of 1821 (the Christians ruined the trees to take revenge on the Muslims and to prevent their return to their rural hometowns, while the Ottoman troops used the trees for fuel¹³) and until the end of the nineteenth century, the cultivation of olive trees experienced its period of major growth. This was reflected in the high value of olive-oil production as a percentage of the total value of the agricultural production and in the amount of levied tax as a percentage of the total taxes collected by the public treasury (*Figure 1*).

Furthermore, the percentage of the value of all olive products in the total value of exports was very high. The olive products that were exported constituted the main source of purchasing power for imported goods (*Figure 2*).

Compared to other crops, olive farming presented many advantages. Olive trees flourish in Crete and may be grown extensively in the less productive territories of the island's hilly and mountainous areas, i.e. in areas that are unsuitable for most other types of farming. Furthermore, the olive tree does not require special care and, compared to other crops, is relatively disease-resistant. Moreover, olive trees continue to resist even in cases where they have been completely abandoned¹⁴, while in Crete they rarely meet with unfavourable weather conditions (drought

¹² J. Bowring, *ibid.*, p. 154; MAEADCCC, La Canée, 26(1841-51), Consul Hitiér à Ministère des Affaires Etrangères, no. 7, 18/7/1843, 149-154; MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 63, 7/7/1862, 152-172; MARADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 5, 17/6/1878, 319-323; newspaper *Heraklion (Heraklion)*, 9/9/1893, no. 5.

¹³ MAHADCCC, La Canée, 25(1834-40), Consul Charpentier à Ministère des Affaires Etrangères, no. 32, 30/11/1840, 449-450, enclosed "Mémoire politique, commercial et statistique sur l'île de Crète (Candie)", 450-461; J. Bowring, *ibid.*, p. 157; *Annales du Commerce Extérieur publiées par le Département de l'Agriculture, du Commerce et des Travaux Publics (3e série d'avis divers)* Turquie, Faits Commerciaux, Paris (henceforth ACI), vol. 6, Décembre 1852, p. 31; FOGC 78, Turkey, 1937, Canea, Consul Dickson to the Foreign Office, no. 6, 8/1/1866, 107, enclosed Report on Maltese Immigration to Crete, 109-121.

¹⁴ Anotera Diefthinis Ikonomikon (Ministry of Finance), Timima Georgias (Department of Agriculture), *Ektthesis epi ton pepragmenon ipo tis georgikis ipiresias meta meletis pros empsibosin tis georgias tis nisou (Activity Report of the Department of Agriculture - Study on the Support of Agriculture in Crete)*, (Chania 1903), p. 5.

and prevailing southern winds that dry the olives)¹⁵. Lastly, the cultivation of olive trees is particularly suitable for small farms (prevalent in Crete), on which all the members of the family work. The most demanding and critical stage of olive cultivation, the harvesting of olives, requires the involvement of all the family members, including women and children.¹⁶ It should also be mentioned that the seasonal extra income from the harvesting of olives was important for household economics.¹⁷

Cretan olive oil was of rather poor quality and was in constant demand by western European countries for the lubrication of engines, the manufacturing of soap¹⁸ and as lamp oil. Moreover, Cretan olive oil was exported as edible oil to countries that were poorer than Crete: in Egypt and generally in North Africa.¹⁹ Finally, there was great demand for olive oil in Crete when soap manufacturing reached its peak (circa 1840-80), since large quantities of olive oil were supplied to the local soap factories for the production of soap. The increased demand for olive oil (for the export trade or for soap manufacturing)²⁰ kept the price of olive oil high during that period.²¹

¹⁵ MAEADCCC, La Canée, 29(1871-80), Consul Chaffray à Ministère des Affaires Etrangères, no. 42, 16/11/1872, 74-76; MAEADCCC, La Canée, 29(1871-80), Consul Chaffray à Ministère des Affaires Etrangères, no. 47, 1/12/1872, 80-84; newspaper *Heraklion (Heraklio)*, 23/6/1894, no. 45.

¹⁶ J. Bowring, *ibid.*, p. 157; Y. Triantafyllidou-Baladic, *To emporio kai i ikonomia tis Kritis [Cretan Commerce and Economy] (1669-1795)*, (Heraklio 1988), p. 134.

¹⁷ MAEADCCC, La Canée, 25(1834-40), Consul Fabreguettes à Ministère des Affaires Etrangères, no. 16, 15/5/1835, 160-162, enclosed "Résumé de l'entrevue entre le Pacha et le Consul de France", 170-171; J. Bowring, *ibid.*; V. Raulin, *ibid.*, p. 243; FOGC 78, Turkey, 1937, Canca, Consul Dickson to the Foreign Office, no. 6, 8/1/1866, 107, enclosed Report on Maltese Immigration to Crete, 109-121.

¹⁸ MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 5, 17/6/1878, 319-323; MAEADCCC, La Canée, 29(1871-80), Consul Vaux à Ministère des Affaires Etrangères, no. 17, 20/10/1874, 124-126, enclosed Annual Commercial Report for the Island of Crete, 126-158; MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 30, 30/4/1879, 373-378; J. Bowring, *ibid.*, p. 158; Foreign Office, *Diplomatic and Consular Reports. Trade of Crete* (henceforth FODCRIC) for the year 1908, p. 14.

¹⁹ FODCRIC, for the year 1908, p. 14.

²⁰ MAEADCCC, La Canée, 25(1834-40), Consul Fabreguettes à Ministère des Affaires Etrangères, no. 6, 4/3/1836, 208-209.

²¹ MAEADCCC, La Canée, 25(1834-40), Consul Fabreguettes à Ministère des Affaires Etrangères, no. 15, 23/7/1836, 220-223.

During the 1840s, the 1850s and the first half of the 1860s, the export of soap and its high price abroad led to the expansion of olive farming with the planting of new olive trees.²² Despite the fact that the production of olive oil had declined as a result of the revolutionary events of 1866-68 and of the unfavourable weather conditions in the early 1870s,²³ it soon recovered.

The decline in the production and export of soap from the end of the 1870s and especially during the 1880s and 1890s (see below) did not have any impact on the cultivation of olives, which continued to provide the increasing Cretan population with edible olives and olive oil and the international markets with olive oil. Thus, olive farming continued to grow until the end of the nineteenth century, a phenomenon reflected in the steadily increasing number of registered²⁴ olive trees and especially in the increase in the number of olive trees per resident (*Table 3*).

In the late Ottoman era, a specific hierarchy characterized the distribution of olive oil. Firstly, the Cretan population took the quantity of olive oil necessary for its nutrition. Secondly, the peasants transferred the remaining olive oil (usually in goatskin sacks) to the three big port-cities where they handed it over to the merchants to store. The latter had often made an advance payment to the farmers several months before the harvest²⁵, after

²² MAEADCCC, La Canée, 25(1834-40), Consul Charpentier à Ministère des Affaires Etrangères, no. 32, 30/11/1840, 449-450, enclosed "Mémoire politique, commercial et statistique sur l'île de Crète (Candie)", 450-461; FOGC 78, Turkey, 1937, Canea, Consul Dickson to the Foreign Office, no. 6, 8/1/1866, 107, enclosed Report on Maltese Immigration to Crete, 109-121; MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. 4, 10/11/1864, 349-365.

²³ MAEADCCC, La Canée, 29(1871-80), Consul Chaffray à Ministère des Affaires Etrangères, no. 31, 20/4/1872, 34-37 on the bad olive harvest in the winter of 1871-72 and 1870-71. See also MAEADCCC, La Canée, 29(1871-80), Consul Chaffray à Ministère des Affaires Etrangères, no. 42, 16/11/1872, 74-76 on the limited olive harvest in the winter of 1872-73 and the medium quantity of olive oil. Also see MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 8, 9/12/1875, 237-238 on the bad olive harvest in the winter of 1875-76.

²⁴ In 1889 and 1894 changes in the system of taxation introduced the registration of trees.

²⁵ The practice of advance payment for the forthcoming harvest was also used in Nablus, Palestine which was another important Eastern Mediterranean olive oil-producing region [B. Doumani, *Rediscovering Palestine. Merchants and peasants in Jabal Nablus, 1700-1900*, (University of California Press, Berkeley and Los Angeles 1995), pp. 135-140].

which they received their share in olive oil. Because of the peasants' inability to store the olive oil and their haste to secure cash²⁶, they lost a considerable share of the profits that was passed on to the merchants, who carried out all the necessary transactions with the representatives of the foreign commercial companies that purchased the olive oil.²⁷

During the peak period of soap manufacturing (circa 1840-80), in years when the olive harvest was poor and the production of olive oil low, the exports of both olive oil and soap declined. This is an indication that a poor olive harvest²⁸ could affect soap manufacturers too, since it forced them to reduce production.²⁹ During those years, soap manufacturing had a "relative priority" over the olive-oil export trade.³⁰

In years with a good olive harvest and subsequently a high production of olive oil, considerable quantities of olive oil were exported. However, there was always a limit to the quantity exported. This limit was fixed, not only by the size of the crop but also by those who supervised the production of olive oil, i.e. mainly the merchants of the three principal ports whose profit was based on the exploitation of the olive-oil production cycle. A year of abundant harvest was usually followed by a year (or two) of poor harvests, and this was a more or less inviolable rule.³¹ This cycle is clearly demonstrated in *Figure 3*, which shows the performance of the tithe tax on olives during the period 1879-88.

²⁶ MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 16, 6/11/1878, 337-338.

²⁷ J. Bowring, *ibid.*, p. 157-158; V. Raulin, *ibid.*, p. 244; MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 30, 30/4/1879, 373-378.

²⁸ FOGC 78, Turkey, 1880, Canea, Consul Ongley to the Foreign Office, no. 7, 10/5/1865, 214-215, enclosed Commercial Report for Crete for the Year 1864, 216-227.

²⁹ MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. 42, 31/10/1866, 489-496.

³⁰ The term "relative priority" indicates that soap manufacturers were not always the first to purchase olive oil. However, soap manufacturers had often secured at least a small portion of the olive-oil production to use in soap making.

³¹ MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 17, 14/11/1878, 338-339, enclosed "Observations sur les modifications introduites dans le Règlement Organique de l'île de Crète de 1868", 339-348; Foreign Office, *Reports on the Trade and Commerce of Crete* (henceforth FORTCC) for the year 1885, p. 3.

When the olive harvest was good and the supply of olive oil to the foreign markets was abundant, the price of olive oil was relatively low.³² In this case, the merchants preferred to purchase olive oil in advance at a low cost from the producers and to keep it in their storehouses, in order to put it up for sale in the following year when the harvest was expected to be poor and olive oil prices high.³³ The storage capacity of the product (olive oil may be stored easily for a long time in appropriate conditions) allowed the merchants to select the most suitable transaction time, in order to increase their profits considerably.

The merchants of the three big cities could earn extra profits by setting the timing of the distribution of the olive oil in the foreign markets in the same production year. During the last months of the harvest and the production of olive oil, production was reduced, supply diminished and the product was more expensive. The same was true during the first months of each year of production, i.e. just before the new harvest, which meant that during that period the merchants, who had saved olive oil from the previous year, were able to derive more profits.³⁴

In some (rare) cases, the decision of the merchants to store the olive oil in their warehouses posed a risk. In the summer of 1862, against all predictions, the harvest was unexpectedly abundant. Those merchants who had saved the olive oil from the abundant harvest of the previous year, in order to keep its price high and to prevent its purchase by the foreign markets (e.g. Marseille) or by the local soap manufacturers, were obliged to get rid of it at any price, since the available storage space could not house the production of two successive harvests.³⁵

³² MAEADCCC, La Canée, 27(1852-60), Consul Du Tour à Ministère des Affaires Etrangères, no. 35, 5/3/1860, 459-462.

³³ FOGC 78, Turkey, 574, Canea, Consul Ongley to the Foreign Office, no. 6, 31/1/1844, 82, enclosed Commercial Report for Crete for the year 1843, 84-87; FORTCC for the year 1882, p. 833; FORTCC for the year 1883, p. 1137; FODCRTC for the year 1909, p. 11.

³⁴ FORTCC for the year 1881, p. 1149; ACE, vol. 21, October 1865, p. 48.

³⁵ MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 63, 7/7/1862, 152-172.

The price of exported olive oil relied on the demand for olive oil abroad and especially in European countries, and depended on the olive harvest in Italy and Spain, the global market's two main suppliers. Moreover, the merchants raised the price they paid to the Cretan producers when the production of olive oil in other Ottoman regions was poor and the demand for Cretan olive oil increased across the Empire, as happened in 1847.³⁶ On the contrary, as was the case in 1834, the small Greek vessels did not export olive oil to the Aegean regions, as the harvest was abundant there.³⁷

3. The Cretan Economy in the Mid-Nineteenth Century: a Rural Economy with a Growing "Industrial"³⁸ Activity

We must clarify that the term industry is not used here in the narrow sense of modern large-scale mechanized production, which takes place in modern manufacturing plants. It rather refers to any kind of pre-modern handicraft production which, using organic power sources, transforms raw materials producing "final" or "intermediary" goods of higher added value. This kind of industry took place either in small-scale workshops or in larger non-mechanized manufactures, and was important for the Cretan economy, where the agricultural production of low added value products prevailed.

Throughout the late Ottoman era, there was no systematic and integrated official registration of economic activities. However, in the mid-nineteenth century, the French Consul in Chania, Hitier, collected data on the volume and value of agricultural production, animal values, animal production and textile production in the Cretan regions. This data was published in the book by the traveller and geologist Victor Raulin «Description physique de l'île de Crète». The information provided

³⁶ MAEADCCC, La Canée, 26(1841-51), Consul Gasparly à Ministère des Affaires Étrangères, no. 6, 26/1/1847, 281-282.

³⁷ MAEADCCC, La Canée, 25(1834-40), Consul Fabreguettes à Ministère des Affaires Étrangères, no. 25, 15/5/1834, 78-79.

³⁸ After the explanation of the first paragraph of the present chapter, the term industry and its derivatives are used henceforth without quotation marks.

by Hitier on the production (according to him, this information had been crosschecked against the consumer needs of the population, the value of imports and exports and the value of tax farming)³⁹ is of great value because of the lack of other relevant data, especially since it regarded the average annual production around 1847 and not the production of a single year. Furthermore, the picture provided by Hitier has been verified by the data presented in the *Annales du Commerce Extérieur*⁴⁰ for the year 1850 and by other qualitative evidence. The Cretan economy was a rural economy with a developed animal husbandry sector and industrial activities (*Table 4*).

A. Agriculture and animal husbandry

The significance of olive farming which, due to the production of olive oil, accounted for 47.7% of the total value of the agricultural production, has already been shown in the previous paragraphs. Cereal cultivation (mainly barley and wheat), accounting for 18.5% of the agricultural production value, and viticulture (for raisins, raki and wine), accounting for 13.85%, were also significant. Advanced animal husbandry required the cultivation of forage (mainly straw and provender) and of forage beans (oats), which together accounted for 9.57% of the total agricultural production value. The nutrition needs of the population were also covered by the annual cultivation of edible beans (mainly broad beans and chickpeas), accounting for 3.6%, and of garden vegetables, accounting for 2.68% of the total value of agricultural production. Some trees produced fruits (mainly locust beans, acorns, chestnuts and almonds) the value of which accounted for 2.79% of total agricultural production value, while various aromatic plants and plants used in industry and textiles (mainly cotton and flax) were also cultivated, accounting for 1.05% of the total value of agricultural production (*Table 5*).

³⁹ V. Raulin, *ibid.*, p. 248.

⁴⁰ The Ministry of Agriculture, Commerce and Public Works of France published the records in the volumes that concerned Turkey. These volumes are available in the National Library of France.

In parallel, in the mid-nineteenth century, a thriving animal husbandry sector emerged (raising different types of animals), which was to be expected, given the aforementioned increase in the cultivation of forage. Among smaller animals, goats and sheep were the most numerous (905,000), supplying primarily cheese and wool for domestic consumption and export (80,155 pounds sterling in value). Among the larger animals, oxen and horses (69,820), used for ploughing, and donkeys and mules (57,650), used for the transportation of people and merchandise, were the most frequent.⁴¹

B. Industry

Soap Manufacturing

By the mid-nineteenth century, Cretan soap manufacturing had regained its former strength.⁴² Soap manufacturers had managed to recover rapidly from the blow of the 1821 revolution and to increase their production steadily until the 1860s in order to meet the growing foreign demand.⁴³ In 1843, Hitier argued that soap factories were becoming «chaque année plus nombreuses et plus actives».⁴⁴

Sericulture

Silk production followed a similar pattern of development. This economic activity had been the outcome of the silkworm disease outbreak in France during 1853-56⁴⁵ and of the subsequent – mostly

⁴¹ V. Raulin, *ibid.*, pp. 256-257.

⁴² Since the mid-eighteenth century, soap manufacturing had become a significant sector of the economic activity of Cretan cities (V. Kremmydas, *ibid.*; Y. Triantafyllidou, "L'industrie du savon en Crète au 18e siècle: Aspects économiques et sociaux", *Etudes Balkaniques*, 4(1974), Sofia, pp. 75-87; M. Grecne, *ibid.*, pp. 137-138).

⁴³ MAEADCCC, La Canée, 26(1841-51), Consul Hitier à Ministère des Affaires Etrangères, no. 7, 18/7/1843, 149-154; G. Kalaisakis, *ibid.*, pp. 18-25.

⁴⁴ MAEADCCC, La Canée, 26(1841-51), Consul Hitier à Ministère des Affaires Etrangères, no. 7, 18/7/1843, 149-154.

⁴⁵ R. Owen, "The silk-reeling industry of Mount Lebanon, 1840-1914: a study of the possibilities and limitations of factory production in the periphery", p. 271, in *The Ottoman Empire and the World Economy* edited by Huri Islamoglu-Inan, (Cambridge 1987); D. Quataert, "The silk industry of Bursa, 1880-1914", p. 286, in *The Ottoman Empire and the World Economy* edited by Huri Islamoglu-Inan, (Cambridge 1987).

French – demand that had vastly increased the price of silk on global markets.⁴⁶ In Crete, in the space of twenty years, from 1836 to 1856, the price of silk had nearly doubled.⁴⁷ Until the mid-nineteenth century, raw silk thread was produced by two methods: it was either made at home (in which case it was of poor quality) or it was produced in one of the three silk mills on the island (their raw silk thread was considered of good quality, equal to that of Piedmont silk thread⁴⁸).

Textile Manufacturing

In the mid-nineteenth century, cottage weaving (especially of wool and wool-cotton mix, but also of flax, cotton and silk) emerged in Crete. According to various estimations, cottage weaving had grown considerably, accounting for 13% of agricultural production value and 77% of livestock production value. The fabrics produced were mostly wool and wool-cotton mix (59% of the value of all fabrics), cotton-linen mix (26% of the value of all fabrics) and silk (15% of the value of all fabrics). Each weaver's cottage produced enough fabric to cover its needs, and in some cases produced textiles for the domestic market. A typical example of the connection between the predominant production of olive oil and soap and textile production regarded the weaving of woollen canvases for the collection of olives and of woollen-cotton mix sacks for the storing and export of soap. Moreover, some eastern Cretan provinces specialized in the production of specific homemade products.⁴⁹

Leather Tanning

In the mid-nineteenth century, advanced sheep and goat farming provided local tanneries with raw hides and skins which, after a rudimentary treatment, reached the local market.⁵⁰ The tanneries produced

⁴⁶ C. Issawi, *The fertile crescent, 1800-1914*, (Oxford 1988), p. 274.

⁴⁷ V. Raulin, *ibid*, p. 266.

⁴⁸ ACE, vol. 18, l'évrier 1864, p. 52.

⁴⁹ V. Raulin, *ibid*, pp. 263-266.

⁵⁰ J. Bowring, *ibid*, p. 160; V. Raulin, *ibid*, p. 268.

a type of morocco leather that was consumed locally for the production of male boots ("stivania").⁵¹ Apart from the sheepskins and goatskins that were exported unprocessed to Trieste (4/5) and Smyrna (1/5),⁵² the goatskins were used for the production of sacks and flasks for olive oil and wine.⁵³ Furthermore, the pigskins were used in shoemaking.⁵⁴ By the mid-nineteenth century, there were between 80 and 100 tanneries. These tanneries were very small, and in 1842 the French Consul reported that less than half of them could be classified as "industrialized".⁵⁵

4. The Transformation of the Cretan Economy during the Second Half of the Nineteenth Century

A. De-industrialization

The Decline of Soap Manufacturing

Since the early 1860s, the decline in foreign demand due to increased and sometimes unfair⁵⁶ competition from soap manufacturers in other

⁵¹ MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 83, 30/5/1863, 252-282.

⁵² MAEADCCC, La Canée, 26(1841-51), Consul Charpentier à Ministère des Affaires Etrangères, no. 9, 12/4/1843, 123, enclosed "Mémoire sur la situation politique, administrative, agricole, commerciale, industrielle et de navigation de l'île de Candie en 1842", 124-132; V. Raulin, *ibid.*, p. 252.

⁵³ ACE, vol. 6, Décembre 1852, p. 31.

⁵⁴ ACE, vol. 6, Décembre 1852, p. 34.

⁵⁵ MAEADCCC, La Canée, 26(1841-51), Consul Charpentier à Ministère des Affaires Etrangères, no. 9, 12/4/1843, 123, enclosed "Mémoire sur la situation politique, administrative, agricole, commerciale, industrielle et de navigation de l'île de Candie en 1842", 124-132; V. Raulin, *ibid.*, p. 268.

⁵⁶ Some Aegean soap manufacturers included impure ingredients to increase the weight of the soap by 50% in order to decrease its price [MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. -, 10/11/1864, 349-365; MAEADCCC, La Canée, 28(1861-70), Consul Chaffray à Ministère des Affaires Etrangères, no. 2, 14/9/1869, 526-538; MAEADCCC, La Canée, 29(1871-80), Consul Vaux à Ministère des Affaires Etrangères, no. 17, 20/10/1874, 124-126, enclosed Annual Commercial Report for the Island of Crete, 126-158; MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 5, 17/6/1878, 319-323], while at the same time they improperly used the trademark of the Cretan companies which enjoyed a good reputation abroad [MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. -, 10/11/1864, 349-365; newspaper *Heraklton* (*Heraklio*), 9/9/1893, no. 5; G. Kalaisakis, *ibid.*, pp. 22-23].

Ottoman regions, such as Rhodes and Mytilene⁵⁷, led to a decrease in the production of soap on Crete.⁵⁸ The markets of Anatolia were lost for Cretan soap because poor people preferred to purchase the impure but cheaper Mytilene soap. Cretan soaps were purer but more expensive, and eventually remained unsold, while Cretan soap manufacturers found themselves in a difficult position.⁵⁹ The French Consul Derche argued in March 1865 that: «On peut dire que la fabrication ne donne aucun bénéfice»,⁶⁰ while three months later he added: «Cet article est peu demandé et les savonniers ne travaillent que pour se défaire de l'huile qu'ils possèdent et qui, étant de qualité inférieure, ne peut être vendue»⁶¹.

At the same time, two coincidental factors disrupted Cretan trade in general and the soap trade in particular. In 1865, a cholera outbreak had forced the Austrian shipping company *Hoyd* (that connected the island to the mainland) to stop its vessels from docking at Crete for several months.⁶² Moreover, between 1866 and 1868 there was significant revolutionary activity on Crete against the Ottoman imperial government, with severe repercussions on trade.

In the 1870s, a number of poor olive harvests⁶³ kept the production of olive oil and the quantities of exported soap at lower levels, compared

⁵⁷ ACE, vol. 28, May 1870, p. 94; MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 5, 17/6/1878, 319-323.

⁵⁸ MAEADCCC, La Canée, 28(1861-70), Consul Chaffray à Ministère des Affaires Etrangères, no. 25, 10/5/1861, 14-27.

⁵⁹ MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. -, 10/11/1864, 349-365; MAEADCCC, La Canée, 28(1861-70), Consul Chaffray à Ministère des Affaires Etrangères, no. 2, 14/9/1869, 526-538; MAEADCCC, La Canée, 29(1871-80), Consul Vaux à Ministère des Affaires Etrangères, no. 17, 20/10/1874, 124-126, enclosed Annual Commercial Report for the Island of Crete, 126-158; MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 5, 17/6/1878, 319-323.

⁶⁰ MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. 2, 12/3/1865, 372-377.

⁶¹ MAEADCCC, La Canée, 28(1861-70), Consul Derche Ministère des Affaires Etrangères, no. 5, 15/6/1865, 385-391.

⁶² MAEADCCC, La Canée, 28(1861-70), Consul Derche Ministère des Affaires Etrangères, no. 11, 5/8/1865, 410-415.

⁶³ MAEADCCC, La Canée, 29(1871-80), Consul Chaffray à Ministère des Affaires Etrangères, no. 42, 16/11/1872, 74-76; E. Bournova, "Evolution des systèmes de crédit en Méditerranée: le cas de Crète (1870-1914)", *Histoire et Mesure*, vol. 10/1-2 (1995), pp. 27-28.

to those of previous years.⁶⁴ At the same time, due to the development and expansion of regular shipping lines (a trend that became stronger in the 1870s), soap manufacturers of other regions (Mytilene, Zakynthos) gained easy and direct access to Egyptian sodium, a basic component of soap-making.⁶⁵ Thus, the soap factories of Crete lost the comparative advantage of their proximity to Egypt and towards the end of the 1870s some of them were forced out of business (*Table 6*).

In the 1880s, the reliability of Cretan soap and subsequently of soap-trading received a severe blow when some Cretan producers, in order to avoid bankruptcy, started adding soapstone to make their soaps heavier, thus lowering the quality of their product and reducing its price.⁶⁶ The production and export of soap were drastically and abruptly reduced.⁶⁷ In 1888, according to a report by the inspector of the Cretan custom houses Nikos Stavrakis, nine out of ten soap factories had been destroyed.⁶⁸

In the early 1890s, Cretan soap manufacturing reached its lowest point. In 1893, there were only 5 factories left in operation and their production merely covered the needs of domestic consumption (*Table 6*). However, a new prospect emerged in the 1890s: the building and operation of an olive-oil refinery for the production of olive-pomace that greatly contributed to the revival of soap manufacturing during the era of autonomy (1898-1913).⁶⁹ The profitability of such factories relied on the purchase, at a very low price, of the residue of the olives

⁶⁴ MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 17, 14/11/1878, 338-339, enclosed "Observations sur les modifications introduites dans le Règlement Organique de l'île de Crète de 1868", 339-348.

⁶⁵ MAEADCCC, La Canée, 29(1871-80), Consul Vaux à Ministère des Affaires Etrangères, no. 17, 20/10/1874, 124-126, enclosed Annual Commercial Report for the Island of Crete, 126-158.

⁶⁶ Newspaper *Kriti (Crete)*, 26/11/1886, no. 824, 14/7/1886 General Assembly Meeting; N. Stavrakis, *Ektibesis pros tin genikin diikisin peri ton telonion Kritis (Report to the General Administration on the Cretan Customs House)*, (Heraklion 1888), pp. 7-8.

⁶⁷ G. Kalaisakis, *ibid.*, p. 23.

⁶⁸ N. Stavrakis, *ibid.*, pp. 7-8.

⁶⁹ Since 1892 the operation of a steam olive mill for the production of olive pomace oil has been regularly mentioned. The olive mill belonged to the French commercial company Deiss that was active in eastern Europe [newspaper *Mesogeios (Mediterranean)*, 26/2/1892, no. 13; newspaper *Mesogeios (Mediterranean)*, 5/5/1892, no. 22]. In 1912, 22 soap factories were operating on the island (G. Kalaisakis, *ibid.*, p. 25)

after they had been pressed in the primitive olive presses in the rural areas⁷⁰. These factories produced olive oil that was not edible but that could be used in the production of soap.

From Silk to Cocoon

According to information provided by the French Consuls, during the 1850s the silk mills stopped working.⁷¹ Thus, at least from the early 1860s onwards, all the raw silk that was produced was reeled in the small home-workshops in the villages.⁷²

Despite the significant attempts of the Cretan administration during the 1860s to promote sericulture (supporting the cultivation of silkworm eggs, free distribution of eggs in rural areas, translation of silk-farming guides from French and Italian)⁷³, the spread of silkworm disease across the island since the early 1860s led to the decline in silk production.⁷⁴ Moreover, sericulture, like soap manufacturing, was considerably damaged by the revolution of 1866.⁷⁵

In 1903, a study by the Department of Agriculture of the newly-established (1898) Autonomous Cretan State pointed out that the decline in sericulture and in cocoon and silk production between 1870 and 1903 had been the result of the devaluation of the price of silk (20% of the price it had thirty years earlier) due to rising competition from the Far East, the silkworm diseases, the lack of mulberry trees and of appropriate installations, and the frequent failures caused by unsupervised

⁷⁰ E. Bertrand, Consul General de France, *Ile de Crète. Exportations et importations de la Crète. Agriculture-Industrie*, (Paris), p. 6; FODCRTC for the year 1901, p. 5; FODCRTC for the year 1907, p. 11; FODCRTC for the year 1910, p. 8; FODCRTC for the year 1911, p. 7.

⁷¹ ACE, vol. 10, Février 1857, p. 4; V. Raulin, *ibid*, p. 266; MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 83, 30/5/1863, 252-282.

⁷² MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 83, 30/5/1863, 252-282.

⁷³ MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 63, 7/7/1862, 152-172.

⁷⁴ MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 5, 17/6/1878, 319-323; I. Hatzidakis, *Periigisis is Kritin (Travel in Crete)*, (Hermoupolis 1881), p. 23; newspaper *Heraklion (Heraklio)*, 29/12/1894, no. 73.

⁷⁵ MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 5, 17/6/1878, 319-323.

breeding.⁷⁶ Due to the primitive methods employed in weaving, the small quantities of homemade silk were of coarse quality and consequently were not exported to Europe but only to Anatolia.⁷⁷

Between the 1860s and the first decade of the twentieth century there was a steady transition from the production of processed material (reeled silk) to the production of raw material (cocoons).⁷⁸ This transition was also seen in Lebanon from the mid-nineteenth century, despite the fact that, due to the region's extensive specialization, much of the reeling continued to take place in the local silk-spinning mills.⁷⁹ It was a typical case of the regression of domestic production to the initial stages of the production process and subsequently of lower added-value.⁸⁰

The Stagnation of Cereal Production and Flour Imports

In nineteenth-century Crete, cereal cultivation was vital for the life of the rural population. Cereals were cultivated across the island; however, they were farmed most systematically in the fertile plain of Messara in central-southern Crete.⁸¹ Nevertheless, the Cretan economy was characterized by a lack of cereals, due to the constant population

⁷⁶ Anoterá Dieftinsis Ikonómikon (Ministry of Finance), Tmima Georgias (Department of Agriculture), *Ektheseis epi ton pepragmenon ypo tis georgikis ypiresias meta meleis pros empsibosin tis georgias tis nisou* (Report on the Activities of the Agricultural Department - Study on the Support of Agriculture on Crete), (Chania 1903), pp. 30-31.

⁷⁷ FODCRTC for the year 1907, p. 14.

⁷⁸ While during the financial year 1879-80 the value of tax on silk was 0.89% and on cocoons 0.06% [*Proypologismos ton esodon kai eksodon tis nomarhias Kritis dia tin brisin 1295, apo protis Martiou 1879 - protis Martiou 1880* (Cretan Revenue Budget Costs for the Financial Year 1295, from 1st March 1879 to 1st March 1880), Gennadius Library, Stephanos Dragoumis Archive, folder 99, subfolders 1 and 2], during the first decade of the twentieth century the value of the silk produced accounted for 0.20% and of the cocoons for 0.48% of the total value of agricultural production (A. Giannaris, *Peri tis katastaseos tis en Kriti georgias kai emporias* (Report on the Situation of Cretan Agriculture and Commerce), (Chania 1906), p. 16.

⁷⁹ In Lebanon, this small transition was the result of the use of advanced drying methods, which limited considerably the weight of the cocoons, yielding a 40-50% profit, as well as the result of the high daily wages in the silk mills and the low specialization of the workers (C. Issawi, *ibid.*, pp. 274-275, 322).

⁸⁰ Ch. Agriantoni, "Mesogeiaika agrotika proionta: I elia, I mouria kai to ampeli tin ora tis viomihantias" ("Mediterranean Agricultural Products: the Olive Tree, the Mulberry Tree and the Vineyard in the Industrial Era"), *Ta Istorika* (Historica), vol. 8 (1988), p. 76.

⁸¹ A. Giannaris, *ibid.*, p. 34.

increase.⁸² Thus Crete was forced to import food-stuffs from other Mediterranean and European regions.⁸³

Before 1857, in the tables registering the island's external trade there were no references to flour imports.⁸⁴ This is indicative of the fact that flour imports until then – if there were any – had been minimal. From 1857 onwards in the same tables there were entries concerning the quantities of flour imported. However, flour imports had already supplanted wheat and barley imports, and the domestic processing of the flour imports showed the progressive de-industrialization of the Cretan economy.⁸⁵ The closure of the steam-powered flour mill in Chania in 1865, which produced flour for local consumption, may be explained by the increased flour imports from abroad.⁸⁶ Comparing the imports of flour and cereals between the 1880s and the early twentieth

⁸² V. Raulin, *ibid.*, p. 233; FOGC 78, Turkey, 1937, Canea, Consul Dickson to the Foreign Office, no. 6, 8/1/1866, 107, enclosed Report on Maltese Immigration to Crete, 109-121; MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. 11, 5/8/1865, 410-415; FORTCC preliminary report for the year 1875, p. 1026; MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 17, 14/11/1878, 338-339, enclosed "Observations sur les modifications introduites dans le Règlement organique de l'île de Crète de 1868", 339-348; N. Kalomenopoulos, *Kritika iti topografía kai odiporika tis nisou Kritis (Cretan Issues on Topography and Travelling in the Island of Crete)*, (Athens 1894), p. 61.

⁸³ See M. Perakis, *ibid.*, vol. 1, pp. 296-300; A. Brumfield, "Agriculture and rural settlement in Ottoman Crete 1669-1898. A modern site survey", in Uzi Baram and Lynda Carroll (eds.), *A Historical Archaeology of the Ottoman Empire: Breaking New Ground*, (New York 2000), p. 46.

⁸⁴ Before 1857 there were no references concerning the commercial movement of flour – references to flour imports were found for the very first time in 1857 in a table registering commercial movement in Crete (FOGC 78, Turkey, 1397, Canea, Consul Ongley to the Foreign Office, no. 32, 2/6/1858, 244, enclosed Commercial Report on Crete for the year 1857, 246-257) indicating that, in the previous years, flour imports tended to be minimal, if any.

⁸⁵ MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. 11, 5/8/1865, 410-415.

⁸⁶ In order to calculate the total development of animal capital in Crete, all the animals were translated into animal production units. Horses and cattle were equivalent to one unit, pigs to 0.25 unit and sheep and goats to 0.1 unit of animal production [S. Petmezas, *I elliniki agrotiki ikonomia kata ton 19o eona. I periferiaki diastasi (Greek Agricultural Economy during the Nineteenth Century. The Regional Dimension)*, (Heraklion 2003), p. 334]. Also see Kostrowicky J. and Szymer J., *Guide de la typologie agricole*, Ouvrage "Hors Collection" des Cahiers de Fontany, E.N.S. (Fontenay/St.-Cloud, 1990).

century, a significant increase in the flour percentage (from 9% to 18.5%) and a decrease in the percentage of cereals (from 6.7% to 3.5%) in the total value of imports is seen (Table 7).

The Decline of Animal Husbandry and of its Products

Animal capital seemed to have been radically reduced in the second half of the nineteenth century (from 99 animal units⁸⁷ per capita in 1847⁸⁸ to 45 animal units per capita in 1914⁸⁹). This trend, which involved all types of animals, coincided with the movement of the Christian population from the mountains to the plains, the development of agriculture, the expansion of cultivated lands and the reduction of the available grasslands. In 1881, uncultivated lands that had been used as grasslands were planted with vineyards.⁹⁰ Agriculture and animal husbandry evolved as two competing activities and the balance was definitely tipped in favour of the former. The burning of forests by the pastoral populations who sought available grasslands was an indication of the lack of space necessary for their flocks.⁹¹ Finally, the regression of animal husbandry was connected with the decline in the textile and tanning industries and, of course, with the decreased production of the livestock products mentioned above.

The Influx of European Textiles and the Shrinkage of the Local Cottage-Industry Textile Production

There is no doubt that cottage-industry textile production continued

⁸⁷ V. Raulin, *ibid.*, p. 257.

⁸⁸ Ypourgion Ethnikis Ikonomias (Ministry of National Economy), Diefthinsis Statistikis (Statistics Department), *Elista statistiki tis georgikis paragogis kai aparthmisis ton zoon, ton katikidion pitnon kai kypselon ton neon eparhion tis Ellados. Etos 1914 (Annual Statistics of Agricultural Production and Registration of Animals, Domestic Birds and Beehives in the New Regions of Greece. Year 1914)*, (Athens 1916).

Systematic statistical registration of agricultural and animal production was undertaken by the Statistical Office of the Greek state for the first time in 1914.

⁸⁹ FORCC for the year 1881, p. 1150.

⁹⁰ Newspaper *Nea Erevna (New Research)*, 7/8/1901, no. 25; *Episimos Eftimeris tis Kritikis Politias (Official Gazette of the Cretan State)*, 18/8/1899, no. 69 and vol. 2, 10/8/1900, no. 33.

⁹¹ See M. Perakis, *ibid.*, pp. 195-221.

throughout the second half of the nineteenth century. However, a study of trends in the production and importation of raw materials (wool, silk, cotton, flax)⁹² in the second half of the nineteenth century shows that the production of textiles had been reduced to the self-sufficiency of households. In the second half of the nineteenth century the increased availability of European (primarily English)⁹³ fabrics impeded the production of local textiles for the domestic market.

B. The Increasing Commercialization of Agricultural Production for World Markets and the Decline in Production for Domestic Consumption

As well as olive farming, which met foreign demand with the production of olive oil and soap (especially when soap-manufacturing was at its peak), from the mid-nineteenth century onwards there were other economic activities that flourished as a result of foreign demand (constant or not).

Stable Foreign Demand: the Cultivation of Carob and Citrus Trees⁹⁴

From the mid-nineteenth century onwards the cultivation of carob and citrus trees increased to meet the constant foreign demand for these products. Carobs were exported to Malta and Italy (mostly to Genoa and Livorno), to Trieste and Greece. The sweet juice of carobs was used in confectionery or as a sugar substitute. Italy imported carobs and mixed them with bran for use as animal food for horses and mules. Syria, Egypt and Turkey also imported carobs that were

⁹² MAEADCCC, La Canée, 26(1841-51), Consul Hitier à Ministère des Affaires Etrangères, no. 7, 18/7/1843, 149-154; V. Raulin, *ibid.*, p. 292/5; MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 83, 30/5/1863, 252-282; MAEADCCC, La Canée, 29(1871-80), Consul Vaux à Ministère des Affaires Etrangères, no. 17, 20/10/1874, 124-126, enclosed Annual Commercial Report for the Island of Crete, 126-158.

⁹³ M. Perakis, *ibid.*, pp. 291, 293-294.

⁹⁴ From the 1880s onwards, the production and export of citrus fruits from the coasts of Palestine and the Lebanon increased considerably. Jaffa was also exporting oranges at the end of the nineteenth century. (C. Issawi, *ibid.*, pp. 143, 172).

used in the production of flour to feed the poor. Citrus fruits (oranges, lemons and tangerines), among the main Mediterranean export products to Europe, followed a similar development trend.⁹⁵

Coincidental Foreign Demand: Viticulture and Cotton Farming

By contrast, the foreign demand for the products of cotton-farming and viticulture was irregular. The vineyards that produced grapes, raisins and wine had been almost totally destroyed in the revolution of 1821.⁹⁶ From 1830 onwards, viticulture showed little growth, due to the heavy land tax on vineyards, consumption taxes and duties levied on all three products: raisins, wine and raki. In general, it was considered that vineyards had been abandoned.⁹⁷

From the mid-1870s, there was significant growth in viticulture, due to the increased European demand for wine and raisins resulting from the French vineyards' having been destroyed by phylloxera. The great European demand for wine resulted in a considerably higher price⁹⁸ and the Cretan population responded by planting new vines in anticipation of high profits.⁹⁹ Viticulture was encouraged by administrative measures (the most impressive being a 13-year exemption from the tithe tax, provided that cultivation was on barren land)¹⁰⁰ and took place mostly on land previously used for animal husbandry.¹⁰¹

From the mid-1880s, the English Consul Sandwith observed stagnation in viticulture and a decline in wine exports to France, since

⁹⁵ J. Bowring, *ibid.*, p. 158; V. Raulin, *ibid.*, p. 240; FOGC 78, Turkey, 1937, Canea, Consul Dickson to the Foreign Office, no. 6, 8/1/1866, 107, enclosed Report on Maltese Immigration to Crete, 109-121.

⁹⁶ V. Raulin, *ibid.*, p. 240; J. Bowring, *ibid.*, p. 158.

⁹⁷ MAEADCCC, La Canée, 30(1881-1900), Consul Cor à Ministère des Affaires Etrangères, no. 47, 15/1/1882, 57-60.

⁹⁸ MAEADCCC, La Canée, 30(1881-1900), Consul Cor à Ministère des Affaires Etrangères, no. 47, 15/1/1882, 57-60; FORTCC, 1882 for the year 1881, p. 2; Foreign Office, *Embassy and Consular Archives*, Turkey, series 195, for the year 1882, 1413, Crete, Canea, Consul Sandwith to the Foreign Office, no. 5, 11/3/1882, 92-94.

⁹⁹ K. Kalliataki - Mertikopoulou, *ibid.*, p. 67.

¹⁰⁰ FORTCC for the year 1881, p. 1150.

¹⁰¹ FORTCC for the year 1883, pp. 1137-1138; FORTCC for the year 1884, p. 956.

the phylloxera problem had been successfully addressed.¹⁰² The development of vineyards in Crete ended abruptly in 1892, when Meline, the French Minister of Agriculture, introduced protectionist tariffs on imports. Increased French production and the introduction of custom duties on wine imported to France had seriously affected Cretan wine exports by significantly lowering its price.¹⁰³

The Cretan response to the wine crisis was the industrial production of cognac and other spirits in the 1890s, the only exception to the de-industrialization that occurred in Crete during the second half of the nineteenth century. In 1893 and 1894, there were two distilleries operating in Heraklio,¹⁰⁴ the largest city in Crete that was also situated nearest to the viticulture regions. However, this industrial activity was a consequence of the 1880 wine crisis and was not an impartial entrepreneurial choice.

Cotton production in Crete in the mid-nineteenth century was limited and of poor quality. The limited quantities could not satisfy the demand of cottage-industry textile production (since each household used cotton for producing fabric) and resulted in imports of yarn from abroad.¹⁰⁵ Cotton was mixed with wool for blankets, carpets and sacks, used both for travel and transporting soap. In addition, it was mixed with linen and silk to create linen-cotton and silk-cotton fabrics. Finally, all-cotton products were also produced such as cloth, children's belts, soap-sacks and travel-sacks.¹⁰⁶

In the 1860s, before the revolution of 1866-68, cotton farming increased significantly,¹⁰⁷ due to a greater demand for cotton and the higher price it commanded in Europe following the outbreak of the

¹⁰² Newspaper *Heraklion (Heraklio)*, 23/9/1893, no. 7.

¹⁰³ Newspaper *Heraklion (Heraklio)*, 2/12/1893, no. 17 and 22/9/1894, no. 59.

¹⁰⁴ V. Raulin, *ibid.*, p. 264.

¹⁰⁵ V. Raulin, *ibid.*, pp. 265-266.

¹⁰⁶ FOGC 78, Turkey, 1880, Canea, Consul Ongley to the Foreign Office, no. 7, 10/5/1865, 214-215, enclosed Commercial Report on Crete for the Year 1864, 216-227.

¹⁰⁷ S. Petmezas, *ibid.*, p. 227.

The cessation of American cotton imports into England would have resulted in the closure of the English textile industry [C. Issawi, *The Economic History of Turkey 1800-1914*, (Chicago 1980), p. 236].

American Civil War and the loss of the main supplier (USA).¹⁰⁸ Due to the favourable weather conditions in Crete¹⁰⁹ and in order to provide material for their textile industry, the English promoted cotton farming on the island (with the distribution of cotton seed from England in 1861, 1862 and 1863)¹¹⁰ in collaboration with the local government.^{111/112} At the same time, it is interesting to note that the Egyptian peasants turned from the cultivation of cereals to cotton farming,¹¹³ and that there was an expansion of cotton farming in Syria and the Middle East in general.¹¹⁴ The decreased demand for cotton failed to sustain cotton farming in Crete, as opposed to Greece, where the surplus was channelled to the Greek textile industry.¹¹⁵

Reduced Production for the Domestic Market

The increased commercialization of the agricultural production was due to the demand of the global market, as was the case throughout the Ottoman Empire¹¹⁶. At the same time, production for the domestic market decreased, as can be seen from the de-industrialized sectors (cereal-flour, European textiles). The only exception was the cultivation of potatoes and vegetables. From 1870 onwards, potatoes substituted

¹⁰⁸ MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 63, 7/7/1862, 152-172; MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. 18, 29/11/1865, 435-440.

¹⁰⁹ MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 63, 7/7/1862, 152-172; MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 83, 30/5/1863, 252-282.

¹¹⁰ MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. -, 10/11/1864, 349-365.

¹¹¹ MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 63, 7/7/1862, 152-172; MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. 18, 29/11/1865, 435-440.

¹¹² G. Harlaftis, *A history of greek-owned shipping. The making of an international tramp fleet, 1830 to the present day*, (London 1996), p. 21.

¹¹³ C. Issawi, p. 277.

¹¹⁴ S. Petmezas, *ibid*, p. 227.

¹¹⁵ S. Pamuk, "Commodity production for world-markets and relations of production in Ottoman agriculture, 1840-1913", in Huri Islamoglu-Inan (ed.), *The Ottoman Empire and the World Economy*, (Cambridge 1987), p. 181.

¹¹⁶ M. Perakis, *ibid*, vol. 1, pp. 189-191.

part of the daily calorie intake, while vegetables were consumed increasingly by both the urban and the rural population.¹¹⁷

C. International Trade, Merchant Shipping and the Deterioration of the External Trade Balance

The commercialization of the agricultural production intensified in the mid-nineteenth century, due to the parallel development of international trade and shipping. Commercial activity in Crete followed the same developmental trend as international commerce (increased commercial movement due to increased volume and higher prices), especially in maritime trade and exchange. As was the case for the rest of the Ottoman Empire,¹¹⁸ Crete's integration into world trade and international markets was accompanied by the unsettling of the trade balance prevailing until the mid-nineteenth century and by the emergence of a long-term, constantly increasing, trade deficit, as shown in *Figure 4*.

The commercialization of agricultural production was also substantially linked to the structural transformation of merchant shipping that followed the transition from sail to steam power. The adoption of the complex, yet efficient, compound steam engine resulted in increased net tonnage and higher speeds for shipping. Furthermore, fare prices

¹¹⁷ I. Sunar, "State and economy in the Ottoman Empire", in Huri Islamoglu-Inan (ed.), *The Ottoman Empire and the World Economy*, (Cambridge 1987), p. 83.

¹¹⁸ G. Harlaftis, *ibid.*, pp. 104-105, 119-120, 130; P. Davies, "Thalassio emporio kai metafores ton 19o eona ("Maritime Trade and Transports in the Nineteenth Century"), in Gelina Harlaftis (ed.), *Istoria kai naftilia 16os-20os eonas (History and Shipping XVI-XXth century)*, (Athens 2001), pp. 252, 259; L. Fischer – H. Nordvik, "hallasies metafores kai enopiisi tis ikonomias tou Voriou Atlantikou, 1850-1914" ("Maritime Transport and the Unification of the Northern Atlantic Economy"), in Gelina Harlaftis (ed.), *Istoria kai naftilia 16os-20os eonas (History and Shipping XVI-XXth century)*, (Athens 2001), pp. 275, 287, 290-291; G. Graham, "I kiriarhia tou istioforou, 1850-1914" ("The Dominance of the Sailing Vessel, 1850-1914"), in Gelina Harlaftis (ed.), *Istoria kai naftilia 16os-20os eonas (History and Shipping XVI-XXth century)*, (Athens 2001), p. 237; V. Kardassis, *Apo tou istiou is ton atmon. Elliniki emporiki naftilia 1858-1914 (From Sail to Steam. Greek Commercial Shipping 1858-1914)*, (Athens 1993), p. 129; Y. Kaukiainen, "Journey costs, terminal cost and ocean tramp freights: how the price of distance declined from the 1870s to 2000", *International Journal of Maritime History*, vol. 18, no. 2 (December 2006), p. 17.

had decreased continually since 1860 and thus facilitated the direct and regular connection between the three major Cretan port-cities and other areas by the end of 1870, and even more so in the 1880s.¹¹⁹

Although the imported and exported merchandise had been transported via the major transit ports of the region (Syros and Piraeus, Smyrna), since the 1870s more and more ports in the Mediterranean and the Black Sea had direct connections to Crete (*Figure 5*).

Thus, the maintenance of a rudimentary external communication and transport network used for imports and exports facilitated the integration of Crete in the international division of labour and promoted the commercialization of Cretan agricultural production.

D. Underdevelopment and demotion of the Cretan Economy

In late Ottoman Crete, despite the aforementioned significant economic transformations, there were a number of impeding factors that seriously hindered the island's economic development. The lack of infrastructure, such as roads (for connection by land) and ports (for connection by sea), and the limited communications between the various regions of the island delayed the organization of a domestic market, the specialization of production and the deepening of the division of labour.

At the same time, the lack of innovation in agriculture and animal husbandry seriously delayed intensification and an increase in returns.¹¹⁹ In addition, despite an urgent need, there was no modernization of the production process and of storage facilities.

Olive Farming and Olive Oil

A multitude of problems and failures regarding olive-farming and the production and storage of olive oil have been reported. These

¹¹⁹ MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Étrangères, no. -, 10/11/1864, 349-365; V. Raulin, *ibid.*, pp. 233-234; Anotera Diefthisis Ikonomikon (Ministry of Finance), Tmima Georgias (Department of Agriculture), *Ektbeseis epi ton pepragmenon ipo tis georgikis ipiresias meta meletis pros empsibosin tis georgias tis nisou (Activity Report of the Department of Agriculture - Study on the Support of Agriculture in Crete)*, (Chania 1903), p. 4.

problems resulted in Cretan olive oil being of poor quality in the nineteenth century. Even at the beginning of the twentieth century, the olive trees were rarely pruned.¹²⁰ Moreover, the process for the harvesting of olives had not improved. The crop was left to mature and drop from the trees and was then harvested by women and children.¹²¹ Less frequently the crop was caned¹²². The caning technique posed the danger of harming the olive trees. Furthermore, the olives were left piled up for days and this resulted in an inferior quality of olive oil,¹²³ as the acidity of the product increased¹²⁴.

Even at the beginning of the twentieth century, Cretan olive oil was only exported for industrial use¹²⁵ because of its rancid taste that was the result of the lack of attention and of poor cleaning standards during production. Olives were crushed in obsolete presses.¹²⁶ The «primitive» -as they were considered by the Consuls in the 1860s - crude wooden presses achieved only partial crushing, and resulted in the partial extraction of olive oil from the crop. Throughout the nineteenth century, only 75% of the oil was extracted from the olives, while 25% remained in the crop.¹²⁷

¹²⁰ FODCRIC for the year 1907, p. 10.

¹²¹ J. Bowring, *ibid*, pp. 157-158; V. Raulin, *ibid*, p. 244; MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 83, 30/5/1863, 252-282; FOGC 78, Turkey, 1937, Canca, Consul Dickson to the Foreign Office, no. 6, 8/1/1866, 107, enclosed Report on Maltese Immigration to Crete, 109-121; MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 30, 30/4/1879, 373-378.

¹²² V. Raulin, *ibid*, p. 243; FODCRIC for the year 1907, p. 10; FODCRIC for the year 1911, p. 7; FODCRIC for the year 1910 p. 8.

¹²³ ACE, vol. 6, Decembre 1852, p. 31; FODCRIC for the year 1908, p. 15; FODCRIC for the year 1911, p. 7.

¹²⁴ Newspaper *Nea Erevna (New Research)*, 1/7/1911, no. 768; FODCRIC for the years 1912-13, p. 7.

¹²⁵ FODCRIC for the year 1907, p. 10.

¹²⁶ J. Bowring, *ibid*, pp. 157-158; V. Raulin, *ibid*, p. 244; MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 83, 30/5/1863, 252-282; FOGC 78, Turkey, 1937, Canca, Consul Dickson to the Foreign Office, no. 6, 8/1/1866, 107, enclosed Report on Maltese Immigration to Crete, 109-121; MAEADCCC, La Canée, 29(1871-80), Consul Cor à Ministère des Affaires Etrangères, no. 30, 30/4/1879, 373-378.

¹²⁷ MAEADCCC, La Canée, 28(1861-70), Consul Bertrand à Ministère des Affaires Etrangères, no. 83, 30/5/1863, 252-282; ACE, vol. 21, October 1865, pp. 45-46; FODCRIC for the year 1907, p. 11; newspaper *Nea Erevna (New Research)*, 1/7/1911, no.768.

There were also problems in the storing of olive oil. During the first decade of the twentieth century, the merchants continued to use wooden tanks, despite the fact that they were well aware of the advantages of metal tanks. The wooden tanks were occasionally sealed with a resinous substance that melted with heat and rendered the olive oil more acidic.¹²⁸ Lastly, the receptacles used for storing the olive oil were used repeatedly, without being cleaned for a long time.¹²⁹

Cereals

Cereal cultivation was characterized as "primitive" and "infantile" in the mid-nineteenth century. There was no technological innovation, no use of fertilizers, simple (primitive) wooden ploughs with an iron ploughshare were used for ploughing, and mules or donkeys were used for crop-transportation. The tools used for land cultivation were crude and unwieldy. The irrigation ducts in the fields were small, irregular and sparse.¹³⁰ In addition, the decrease in the production of cereals (and other annual crops) was due to the lack of water and to drought.¹³¹

Wine

Even at the beginning of the twentieth century, Cretan wine was considered to be of poor quality.¹³² Production and storage methods were considered «primitive», there was no pre-selection of the crop that was indiscriminately thrown into the tanks, where it was crushed by foot to produce mead.¹³³ Due to the lack of proper storage cellars

¹²⁸ FODCRTC for the years 1912-13, p. 7.

¹²⁹ Newspaper *Nea Erevna (New Research)*, 1/7/1911, no. 768.

¹³⁰ MAEADCCC, La Canée, 28(1861-70), Consul Derche à Ministère des Affaires Etrangères, no. -, 10/11/1864, 349-365; V. Raulin, *ibid.*, p. 233.

¹³¹ Anotera Dieftinsis Ikonomikon (Ministry of Finance), Tmima Georgias (Department of Agriculture), *Ektthesis epi ton pepragmenon ipo tis georgikis ipiresias meta meletis pros empsibosin tis georgias tis nisou (Activity Report of the Department of Agriculture - Study on the Support of Agriculture in Crete)*, (Chania 1903), p. 4.

¹³² FODCRTC for the year 1907, p. 11.

¹³³ V. Raulin, *ibid.*, p. 240; FODCRTC for the year 1907, p. 11; FODCRTC for the year 1910, p. 9.

and for purposes of preservation, the wine was mixed with gypsum, which worsened its taste.¹³⁴ Cretan wine was characterized by its high concentration of alcohol and was exported to Europe to be mixed with other European wines.¹³⁵

Failure to Modernize the Tanning Industry

The tanning industry, which was not modernized in the second half of the nineteenth century, declined in the 1890s.¹³⁶ In the 1900s, only ten tanneries were operating and they were mostly considered «ancient».¹³⁷ In 1907, the newspaper *Tharros (Courage)* argued that «(tanning) must develop in order to stop importing tanned leather from abroad»¹³⁸. Furthermore, even in 1913, the tanning industry was considered to be «obsolete and in decline» in Crete, since raw hides and skins were mostly exported to Austria and then re-imported as tanned leather.¹³⁹

5. Conclusions

Following the social changes that took place in Crete during the revolutionary period of 1821-28 and the decade (the 1830s) of Egyptian rule (the most important being the numerical superiority of the Christians on the island and especially in the rural areas), the land regime was also changed, as large estates were fragmented, small land-ownership became the basis of the formation of society and the land was transferred to the hands of the Christians. Nevertheless, during the second half of the nineteenth century, as a result of its integration into global markets, the Cretan economy underwent drastic transformations in line with the

¹³⁴ FODCRIC for the year 1907, p. 11; FODCRIC for the year 1909, p. 5; FODCRIC for the year 1910, p. 9.

¹³⁵ FODCRIC for the year 1907, p. 11.

¹³⁶ Newspaper *Heraklion (Heraklio)*, 9/9/1893, no. 5.

¹³⁷ A. Giannaris, *ibid.*, p. 17.

¹³⁸ Newspaper *Tharros (Courage)*, 27/9/1907, no. 4.

¹³⁹ I. Vamvakas, *Ergasie tou en Haniis dimosiou himiou (Activities of the Chania State Chemical Laboratory)*, (Chania 1913), pp. 26-28.

prevailing broader eastern Mediterranean trends: de-industrialization (in soap-manufacturing, the silk industry and textile-manufacturing), commercialization of agricultural production based on foreign demand (constant in the case of the cultivation of olives, carobs and citrus fruits, and seasonal in the case of viticulture and cotton-farming) and a decline in production for the domestic market (the decreased production of cereals was a typical case). Moreover, instead of importing food-stuffs that could be processed in Crete, a number of processed goods was imported, as in the case of cereals and flour. Despite the commercialization of agricultural production, no effort was made to export products of higher added-value (olive oil and wine in bulk, cocoons instead of silk, raw hides). Crete produced and exported raw materials and the agricultural products of intense farming, and imported manufactured goods, semi-processed products and the products of extensive agriculture. The agricultural economy of Crete remained underdeveloped and the development of the domestic market, the specialization of production and the strengthening of the division of labour were problematic. The Cretan economy gradually lost its self-sufficiency and became part of the international division of labour, presenting a negative trade balance, and, within a short time, its position within the hierarchy of the world economy declined considerably.

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Appendix

An Eastern Mediterranean economy
under transformation.
Crete in the late Ottoman era (1840-98)

TABLE 1. Cretan Population by Religion and Residence (1821, 1840)

Religion/Residence	1821	1821 %	1840	1840 %
Total population	260,000-280,000	100	152,760-172,450	100
Christians	130,000-141,650	50-53	107,000-140,000	70-81
Muslims	124,705-140,000	47-50	32,000-46,000	19-30
Towns	46,000	17	26,000-32,000	17-19
Countryside	220,355	83	127,000-140,000	81-83
Christians in towns	11,000	24	6,760	26
Muslims in towns	35,000	76	19,000	74
Christians in rural areas	130,650	59	100,000	79
Muslims in rural areas	89,705	41	27,000	21

Source

1821: J. Bowring, *Report on Candia*, (London 1839), p. 156; M. Hourmouzis, *Kritika (Cretan issues)*, (Athens 1842), p. 104; V. Raulin, *Description physique de l'île de Crète*, (Paris 1869), vol. 1, p. 207.

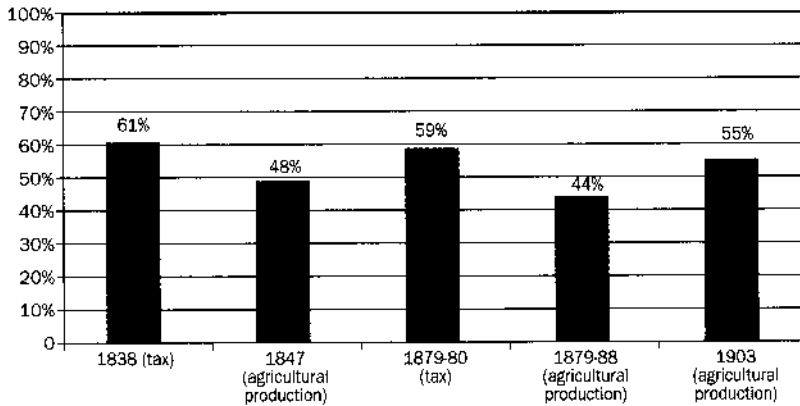
1840: J. Bowring, *Report on Candia*, (London 1839), p. 157; Ministère des Affaires Etrangères, *Archives Diplomatiques, Correspondance Commerciale des Consuls. Turquie, La Canée*, 25(1834-40), Consul Charpentier à Ministère des Affaires Etrangères, no. 32, 30/11/1840, 449-450, enclosed "Mémoire politique, commercial et statistique sur l'île de Crète (Candie)", 450-461; Ministère des Affaires Etrangères, *Archives Diplomatiques, Correspondance Commerciale des Consuls. Turquie, La Canée*, 26(1841-51), Consul Hitier à Ministère des Affaires Etrangères, no. 4, -/4/1848, 330, enclosed "Mémoire sur l'état de l'agriculture en Crète", 331-373.

TABLE 2. Cretan Population by Religion and Residence (1840-98)

Religion/Residence	1840-98 %
Christians	69-81
Muslims	19-31
Towns	14-19
Countryside	81-86

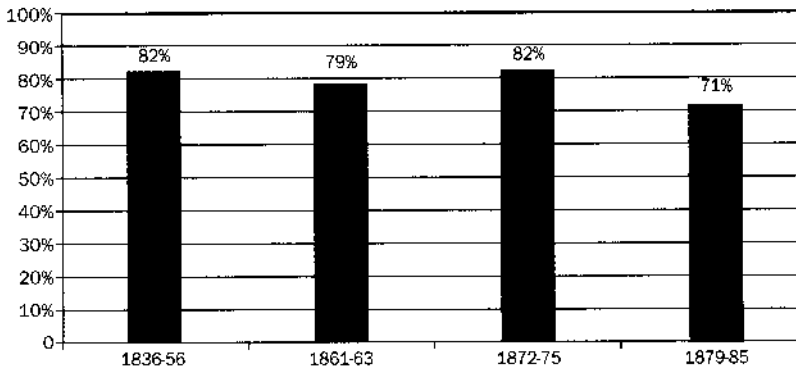
Source: M. Perakis, *Erevnes gia tin ikonomia kai tin kinonia tis Kritīs tou 19ou eona. I ikonomiki, kinoniki kai politiki ori katareftis tis "Halepas" 1878-89, (Research on the Economy and Society of Crete in the Nineteenth Century. The Economic, Social and Political Conditions of the Collapse of the "Halepa" Regime 1878-89)*, vol. 1, pp. 34-45, (Unpublished PhD Thesis, University of Crete, 2005).

FIGURE 1. Percentage Contribution of Olive Oil in the Total Value of Agricultural Production or in the Total Tax Value in Crete (1838-1903)



Source: M. Perakis, *Erevnes gia tin ikonomia kai tin kinonia tis Kritis tou 19ou eona. I ikonomiki, kinoniki kai politiki ori katarefsis tis "Halepas" 1878-89*, (Research on the Economy and Society of Crete in the Nineteenth Century. The Economic, Social and Political Conditions of the Collapse of the "Halepa" Regime 1878-89), vol. 1, p. 112, (Unpublished PhD Thesis, University of Crete, 2005).

FIGURE 2. Percentage Contribution of Olive Products (Oil and Soap) in the Total Value of Exports of Crete (1838-1885)



Source: M. Perakis, *Erevnes gia tin ikonomia kai tin kinonia tis Kritis tou 19ou eona. I ikonomiki, kinoniki kai politiki ori katarefsis tis "Halepas" 1878-89*, (Research on the Economy and Society of Crete in the Nineteenth Century. The Economic, Social and Political Conditions of the Collapse of the "Halepa" Regime 1878-89), vol. 1, p. 268, (Unpublished PhD Thesis, University of Crete, 2005).

TABLE 3. Total Number of Productive Olive Trees, Estimated Population and Number of Olive Trees per 100 Residents (1890-96)

	1890	1894	1896
Olive trees	5,827,204	6,525,324	6,926,124
Estimated population	320,144	338,357	347,464
Olive trees / 100 residents	1,820	1,930	1,990

Sources
 1890: G. Kalaisakis, *O thisavros ton eleonon tis Kritis (The Treasure of Olive Groves in Crete)*, (Chania 1912), p. 9.
 1894: Newspaper *Heraklion (Heraklio)*, 25/5/1895, no. 94.
 1896: Anotera Diefthisis Ikonomikon (Ministry of Finance), *Ikonomiki Statistiki Kritis etous 1901-02 (Cretan Economic Statistics for the Financial Year 1901-02)*, (Chania 1902).

FIGURE 3. The Value (Pounds Sterling) of the Tithe Tax on (Oil and Soap) in the Total Value of Exports of Crete (1838-1888)

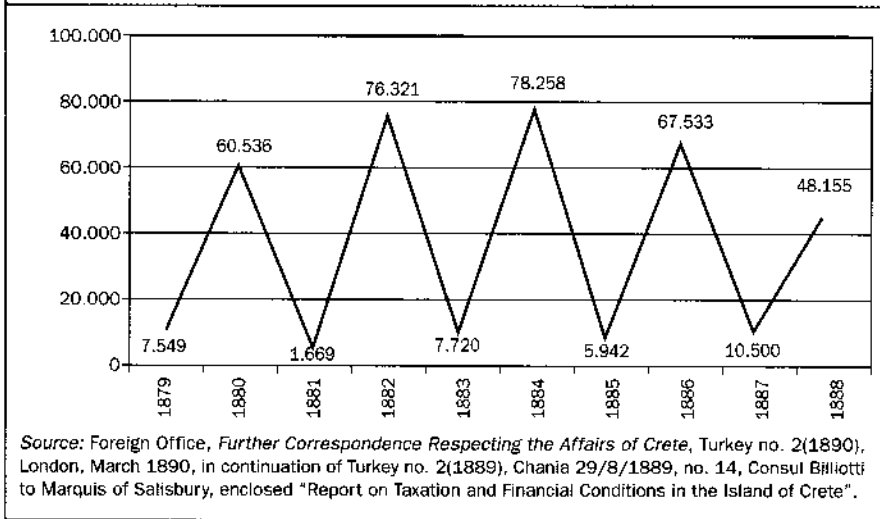


TABLE 4. The Value (Pounds Sterling) of Agricultural and Animal Production, Animal Capital and Industrial Production (Soap and Textile Manufacturing) in the Mid-Nineteenth Century

Production	Value 1847	Value 1850	Value 1850 %
Agricultural and animal production	721,499	732,964	75.51
Agricultural production	615,087		
Animal production	106,412		
Industrial production		237,718	24.49
Soap manufacturing		158,479	16.33
Textile manufacturing	81,363	79,239	8.16
Total		970,682	100.00
Animal capital	640,462	633,914	39.51

Sources

1847: V. Raulin, *Description physique de l'île de Crète*, (Paris 1869), vol. 1, pp. 247-259.

1850: *Annales du Commerce Extérieur publiées par le Département de l'Agriculture, du Commerce et des Travaux Publics (3e série d'avis divers) Turquie*, *Faits Commerciaux*, Paris, vol. 3, Janvier 1850, pp. 26-27.

TABLE 5. Analysis of the Value (Pounds Sterling) of Agricultural Production in the Mid-Nineteenth Century

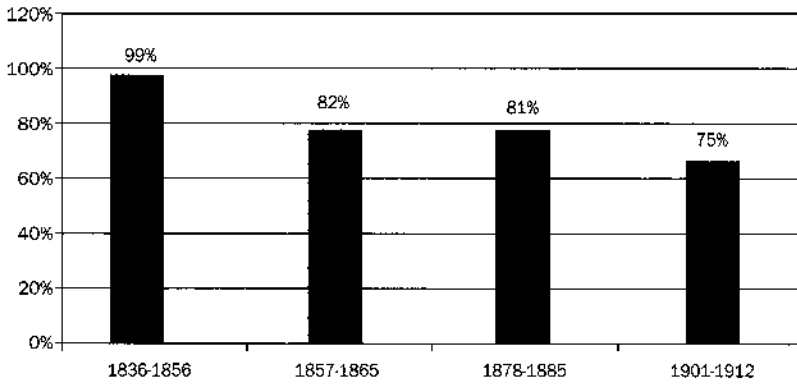
Annual crops			Perennial plantations		
Product	Value	Value %	Product	Value	Value %
Barley	62,344	10.14	Olive oil	293,390	47.70
Wheat	51,154	8.32	Wine	64,498	10.49
Maize	812	0.13	Raki	11,486	1.87
Straw	26,953	4.38	Raisins	9,192	1.49
Provender	4,053	0.66	Locust beans	4,863	0.79
Oats	27,892	4.53	Acorns	4,754	0.77
Broad bean	13,713	2.23	Chestnuts	3,803	0.62
Chickpea	8,436	1.37	Almonds	3,376	0.55
Garden vegetables	16,462	2.68	Apples	224	0.04
Cotton	3,430	0.56	Pears	99	0.02
Flax	1,911	0.31	Nuts	59	0.01
Linseed	956	0.16	Oranges and citrons	1,050	0.17
Sesame	98	0.02			
Category	Value	%	Category	Value	%
Cereals	114,310	18.50	Olive groves	293,390	47.70
Forage	31,006	5.04	Vineyards	85,175	13.85
Forage legumes	27,892	4.53	Fruit and other	17,178	2.79
Edible beans	22,149	3.60	Citrus trees	1,050	0.17
Garden vegetables	16,462	2.68			
Aromatic plants, plants used in industry and textiles	6,474	1.06			

Source: V. Raulin. *Description physique de l'île de Crète*, (Paris 1869), vol. 1, pp. 248-249

	1875	1876	1881	1893	1912
Number of soap factories in operation	53	51	25-32	5	22
<i>Sources</i>					
1875, 1912: G. Kalaisakis, <i>O thisavros ton eleonon tis Kritis (The Treasure of Olive Groves in Crete)</i> , (Chania 1912), pp. 22, 25.					
1876, 1881: I. Hatzidakis, <i>Periigisis is Kritis (Travel in Crete)</i> , (Hermoupolis 1881), pp. 12, 96.					
1893: Newspaper <i>Heraklion (Heraklio)</i> , 9/9/1893, no. 5.					

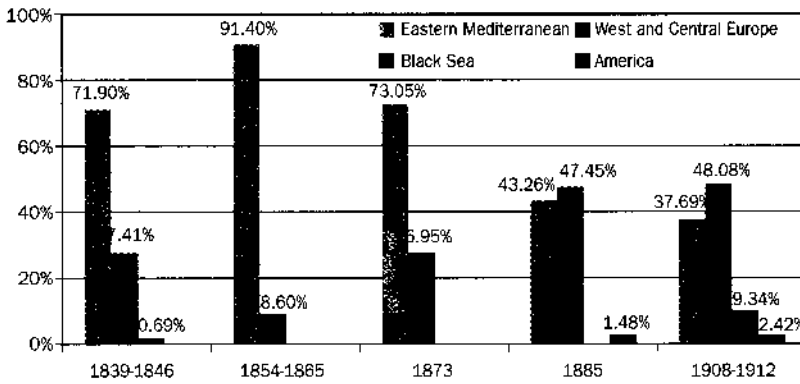
Merchandise	1881-85 %	1901-12 %
Wheat	4.1	1.1
Barley	2.6	2.4
Flour	9	18.5
Total of cereals	6.7	3.5
Total of flour and cereals	15.7	21.9
<i>Sources</i>		
1881-85: Foreign Office, <i>Reports on the Trade and Commerce of Crete for the years 1881-85</i> .		
1901-12: Anotera Diefthisis Ikonomikon (Ministry of Finance), <i>Statistiki tou eksoterikou emporiou Kritis (Cretan External Trade Statistics 1901-1912)</i> , vols. 1-12, (Chania).		

FIGURE 4. Percentage of exports over+ Imports of Crete (1836-1912)



Source: M. Perakis, *Ereves gia tin ikonomia kai tin kinonia tis Kritis tou 19ou eona. I ikonomiki, kinoniki kai politiki ori katarefsis tis "Halepas" 1878-89*, (Research on the Economy and Society of Crete in the Nineteenth Century. The Economic, Social and Political Conditions of the Collapse of the "Halepa" Regime 1878-89) vol. 1, p. 267, (Unpublished PhD Thesis, University of Crete, 2005).

FIGURE 5. The percentage distribution of the foreign trade value in Crete by region (1839-1912)



Source: M. Perakis M. *Erevnes gia tin ikonomia kai tin kinonia tis Kritis tou 19ou eona. I ikonomiki, kinoniki kai politiki ori katarefsis tis "Halepas" 1878-89, (Research on the Economy and Society of Crete in the Nineteenth Century. The Economic, Social and Political Conditions of the Collapse of the "Halepa" Regime 1878-89), vol. 1, p. 316, (Unpublished PhD Thesis, University of Crete, 2005).*

