**The London School of Economics and Political Science**

# *Sources of Economic Growth in Interwar Egypt and Turkey: Industrial Growth, Tariff Protection and the Role of Agriculture*

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# Declaration

I certify that the thesis I have presented for examination for the PhD degree of the London School of Economies and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).



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# Abstract

This dissertation presents a paired case study of the growth performance of Turkey and Egypt in the interwar period, in order to shed fresh light on the income per capita divergence that occurred between them. First, we look at the extent and determinants of agricultural growth by estimating the net agricultural output and decomposing the crop output into its components. It is shown that acreage expansion, population growth and improvement in yields led to rapid recovery in agricultural output in Turkey, whereas the increasingly intensive cultivation in Egypt was only able to offset the impact of land scarcity and the earlier deterioration in yields. We also fill a major empirical gap in the literature by estimating industrial output growth and argue that although the industrial take off started in both countries in the 1930s, the output growth in Turkey was much greater. Moreover, industrialisation was mainly driven by textiles in Egypt, whereas it was more balanced in Turkey. Finally, we explore the sources of industrial output growth by focusing on textiles. The empirical analysis based on a partial equilibrium model implies that the impact of tariff protection on domestic growth was significant in both countries, yet it was complemented by the favourable movement of relative prices and wages and, in the case of Turkey, the increase in domestic incomes in the second half of the 1930s. Overall, it is argued that the greater expansion of domestic demand in Turkey, which was particularly driven by agricultural growth, was not only responsible for the per capita divergence, but also combined with different degrees of tariff protection to lead to a notable variation between Turkey and Egypt's industrial performance. Therefore, the dissertation has implications for the experience of agricultural economies after the Great Depression. It is argued that in the presence of passive monetary and fiscal policies, factor endowments, historical development paths and geography played a prominent role in determining the extent of recovery in the 1930s.

# Acknowledgements

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There were good times and bad times. Evrim Kaya has always been with me with her endless beauty, affection and wisdom. To her this dissertation is dedicated.

# Glossary

**Ardeb** Egyptian unit of volume = 198 litres.

**Cantar** Egyptian unit of weight = 44.928 kilograms.

**Feddan** Egyptian unit of weight = 1.038 Acres= 0.42 hectares.

**FO** Foreign Office, UK.

**IUM** *İstatistik Umum Müdürlüğü*, the central government statistical agency in Turkey, later DİE (*Devlet İstatistik Enstitüsü*).

**LE** Egyptian Pound = 100 Piastres= 1000 Milliemes.

**Oke** Egyptian unit of weight =1.248 kg.

**Okka** Turkish unit of weigh=1.282 kilograms.

**Rotolis** Egyptian unit of weight =0.44928 kilograms.

**TL** Turkish Lira = 100 Piastres (*Kuruş*).

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# 1. Introduction

> "Whatever the mellowing of history may reveal, two features characterise the [interwar] period. It was an age of dislocation, and an age of experiment"
> Arthur Lewis

This dissertation presents paired case studies of economic growth in Egypt and Turkey during the interwar period. Its main motivation is their contrasting economic performances: while their income per capita was comparable at the onset of World War I, Turkey had grown significantly richer by the end of 1930s. This divergence is remarkable because the economies of Turkey and Egypt had certain fundamental characteristics in common at the time; in particular, they experienced the problems of late industrialisation as predominantly agricultural countries. What is more, neither the long nineteenth century nor the post-World War II period witnessed such a divergence. The interwar period therefore stands out. Yet while there is a large body of scholarship on various aspects of the Egyptian and Turkish economies in the interwar period, a consistent and comprehensive assessment of the extent and sources of growth in the two countries is lacking. For this reason, this work aims to go beyond the scattered pieces of evidence and the precarious generalisations that abound in the literature, in order to move towards a better understanding of the beginnings of industrialisation and the sources of divergence in Egypt and Turkey.

Why are Turkey and Egypt important? First of all, they were two large, non-oil and predominantly agricultural countries, which were together responsible for around one-half of the Middle East's total gross domestic product (GDP) in the interwar period. They were close to European markets, making them both highly exposed to changes in the world economy, especially in Europe, in similar ways. It is well known that the world economy in the interwar period witnessed successive and deepening shocks, a decline and fragmentation in international trade and persistent deflation. This led to major economic, political and social dislocations in Egypt and Turkey and neither the impact of such dislocations on domestic economies nor their responses have been adequately investigated in the historical scholarship.

The existing economic history literature on the interwar period in general, and the Great Depression in particular, is for the most part centred around the experience of industrial economies in Western Europe and North America. While the research agenda on the causes and propagation of the Great Depression and economic recovery in the 1930s is ongoing, the experience of agricultural economies has yet to be integrated with this expanding literature. The following questions therefore motivate this study: What was the impact of the severe decline in commodity prices on primary producers? What were the constraints on their responses? What were the consequences of massive changes in relative price structures in the interwar period? What forms did the inward-oriented policies take and how did they affect economic growth and industrialisation in peripheral countries?

This dissertation attempts to identify the extent and sources of growth in the agricultural and industrial sectors in interwar Egypt and Turkey, and thus suggests insights into crisis and recovery in two peripheral economies in the 1930s. It does not suggest a general explanatory framework regarding the experience of primary producers as a whole in the interwar period, since there was a large degree of diversity within the periphery in terms of the ways they were affected by external shocks and how they responded to them. However, the comparative focus on Turkey and Egypt does help to further the understanding of the extent and limits of such diversity.

Another important area to which this dissertation makes a contribution is on the empirical side. The construction of the historical economic data is of course an essential element of the economic history discipline and this work presents a modest attempt in this direction. The existing interpretations of the interwar economies of Turkey and Egypt are limited by the poor quality and insufficient amount of statistical data, so a major part of this work is to fill this gap. In particular, consistent and comparable quantitative evidence on the industrial sector is scarce, preventing proper assessments of industrialisation, so the new output estimates this work makes for the first time provide a reliable basis for discussing Egyptian and Turkish economic growth in the interwar period, following the best practices in the economic history discipline.

## 1.1. Research Motivation: Why Did Egypt and Turkey Diverge in the 1930s?

The available evidence shows that national income in Egypt and Turkey moved in tandem during the long nineteenth century. Pamuk estimates that income per capita in the current borders of Turkey grew by 0.5 percent per annum during 1820-1870 and 0.8 per cent during 1870-1914 and that the corresponding figures for Egypt were 0.4 and 0.8 percent.[1] However, the period 1913-1950 saw the beginning of economic divergence in that Turkey achieved a 0.8 percent average growth rate, whereas an almost complete stagnation was registered in Egypt. Since World War II Egypt has narrowed the gap with Turkey, particularly in the last quarter of the twentieth century. The same pattern can also be seen in Maddison data: while Turkey was around 1.3 times richer than Egypt during 1820-1914, in terms of income per capita at constant prices measured in 1990 Geary-Khamis Dollars, the relative gap increased to 2 by 1939 and varied around 2-2.5 for much of the rest of the twentieth century.[2]

Figure 1.1 looks more closely at 1913-1950 by presenting the available estimates of income per capita. Bulutay et al. produced GDP estimates for Turkey for 1923-1948 and Özel then linked that series to an estimate for 1913-1914, based on Turkey's present-day borders.[3] As for Egypt, its national income remains unknown for much of this period, but some inaccurate estimates are available for 1913 and the 1940s. They suggest that income per capita only exceeded the 1913 level in the late 1950s.[4] Hence, as will be discussed shortly,

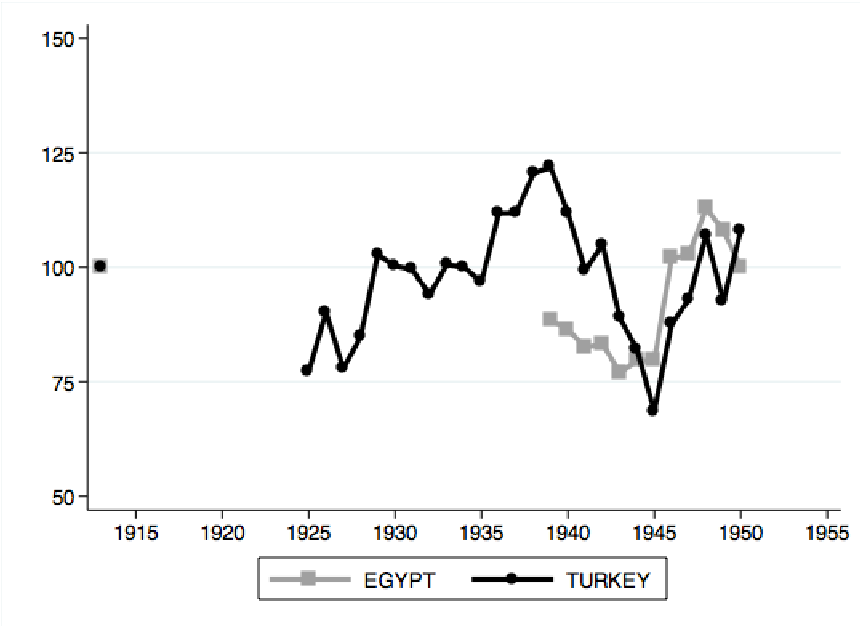
[1] Şevket Pamuk, Estimating Economic Growth in the Middle East since 1820. *Journal of Economic History*, 66(3) 2006, p.815.

[2] Angus Maddison, *The World Economy: A Millennial Perspective Historical Statistics.* Organization for Economic Cooperation and Development, 2007.

[3] T. Bulutay et al., *Türkiye'nin Milli Geliri (1923-1948).* Ankara Siyasal Bilgiler Fakültesi Yayınları, 1974; and Işık Özel, *The Economy of Turkey in the Late Ottoman and Early Republican Periods, 1907-1939: a Quantitative Comparison.* Master's thesis, Boğaziçi University, 1997 .

[4] Pamuk, Estimating Economic Growth; Mahmoud Amin Anis, *A Study of National Income of Egypt.* Ph. D thesis, London School of Economics and Political Science, 1949;

Figure 1.1.: Indices of GDP Per Capita, Egypt and Turkey (1913=100 for both countries), 1913-1950.




Note and sources: Figures at 1938 prices. Egypt: Hansen and Marzouk, *Development and Economic Policy*, pp.318-20; Khalid Ikram, *Egypt: Economic Management in a Period of Transition.* Johns Hopkins University Press, 1980, pp.396-99; United Arab Republic, *Statistical Pocket Yearbook.* Department of Statistics and Census, 1920-1939; and Pamuk, Estimating Economic Growth. Turkey: Özel, Economy of Turkey, Bulutay et al., *Türkiye'nin Milli Geliri*

income per capita has commonly been viewed as stagnant in the literature, which has been reinforced by the benchmark consumption estimates suggested by Hansen and Yousef based on monetary variables.[5] By contrast, the Turkish economy was adversely affected by the world wars, but both shocks were followed by rapid recovery. Moreover, income per capita grew in a very strong manner in the second half of the 1930s so that its level in 1939 exceeded by almost one quarter its 1913 level.

There are many major similarities between the economies of these two countries, which makes a comparative analysis viable and interesting. First of all, Egypt and Turkey were the two large non-oil producing countries in the Middle East.[6] Their population was similar in size at around 12-13 million

and Bent Hansen and G.A. Marzouk, *Development and Economic Policy in the U.A.R. (Egypt).* North-Holland, 1965.

[5] Bent Hansen, Income and Consumption in Egypt, 1886/1887 to 1937. *International Journal of Middle East Studies*, 10 1979; and Tarik Yousef, Egypt's Growth Record Under Economic Liberalism, 1885-1950: A Reassessment Using New GDP Estimates. *Review of Income and Wealth*, 48 2002.

[6] Roger Owen and Sevket Pamuk, *A History of Middle East Economies in the Twentieth*

people in 1927, and both had 70-80 percent of their labour force employed in agriculture. Their average income was probably very close by 1914, as stated above. Throughout the long nineteenth century, both had experienced growth in the export sector and decline in traditional manufacturing. In the interwar period, moreover, they adopted broadly similar economic policies: open economy policies and negligible state intervention before 1929-1930, the beginning of import substitution during the 1930s, more systematic and elaborate government intervention and import substitution in the post-war years up to the 1970s and finally trade liberalisation and a shift towards an export orientation from the 1980s onwards.[7] Furthermore, both Egypt and Turkey faced a severe decline in the prices of their agricultural goods and a deterioration in their terms of trade after the Great Depression. Economic nationalism gained currency in both countries starting from World War I and new emerging elites increasingly called for greater support for industrialisation and development.

There is no doubt that there were significant differences as well: the factor endowments in agriculture, the degree to which they were vulnerable to external shocks and the capacity to respond to such shocks varied. As will be seen in this dissertation, such differences are crucial in explaining their contrasting growth performances in the interwar period. The following sections, first, provide a brief account of macroeconomic developments in Egypt and Turkey before and during the interwar period, with an emphasis on the shortcomings of the historical literature. Then, we discuss the main points raised in the economic history scholarship on interwar economies as to how both industrial and agricultural countries coped with the impact of the Great Depression, especially their policy choices and their consequences. In doing so, we develop a general conceptual framework in which policy choices and economic performance in Turkey and Egypt can be placed. Finally, the methodology and contribution of this dissertation are set out.

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*Century.* I.B. Tauris, 1998, p.234-35.

[7] Bent Hansen, *Egypt and Turkey: Political Economy of Poverty, Equity and Growth.* World Bank, 1991, p.xiii.

# 1.2. Historical Background

## 1.2.1. Interwar Turkey: Recovery, Depression and Growth

The nineteenth century witnessed a rapid economic integration of the Ottoman Empire into the world economy. After the Napoleonic Wars, European commercial penetration into the Middle East gained momentum and in the second half of the century it was accompanied by a financial expansion via foreign lending and direct investment in ports, railroads and trade. This process resulted in a significant sectoral dislocation in the economy of the Ottoman Empire. First, cheap imports to a large degree replaced traditional local manufactures and, second, agriculture became more and more commercialised. The volume of foreign trade progressively increased and agricultural production came to be more oriented towards export sectors, particularly in the coastal regions of Anatolia, which were connected to foreign markets via railroads and ports. In this respect, the Ottoman Empire had a similar experience to most of the world economy's periphery before World War I.[8]

The impact of World War I on Turkey's economy cannot be overstated. The republic, which was founded in 1923, took over a devastated economy, as a number of major political, economic and demographic changes had taken place during a series of wars that had lasted more than a decade. In the present-day borders of Turkey, around one fifth of the population had been lost as a result of wartime casualties, the deportation of the Armenians and the population exchange between Turkey and Greece.[9] The decline in population not only meant a loss of labour force but also a reduction in human capital, as the Greeks and Armenians, for instance, had been more involved in trade and manufacturing than the Muslim population before World War I.[10] Besides, the

[8]For economic developments in the Middle East during the nineteenth century, see Şevket Pamuk, *The Ottoman Empire and European Capitalism, 1820-1913: Trade, Investment and Production*. Cambridge University Press, 1987; Roger Owen, *The Middle East in the World Economy 1800-1914*. Methuen, 1981; and Charles Issawi, De-industrialisation and Re-industrialisation in the Middle East Since 1800. *International Journal of Middle East Studies*, 12(4) 1980.

[9]Casualties are estimated at 3 million, 1.2 million Greeks left the country and half a million Turks immigrated from Greece and the Balkans. The total population was around 13 million in 1924. Şevket Pamuk, Intervention During the Great Depression: Another Look at Great Depression. In Şevket Pamuk and Jeffrey Williamson, editors, *Mediterranean Response to Globalization before 1950*. Roudledge, 2000, p.325. For the change between 1913-1925, see Table 1.1.

[10]In 1919, 73 percent of 3,300 manufacturing enterprises were owned by Greeks and 85

series of wars had reduced the urban population by 20 percent between 1880 and 1920 and, finally, agricultural production and the animal stock almost halved between 1913 and 1923.[11]

Therefore, the recovery in all segments of the economy during 1923-1929 was a result of demographic recovery and idle resources being brought back into use in agriculture and industry. As mentioned above, the available estimates show that income per capita in the 1920s grew rapidly and came close to its 1913 level by 1929/30.(Table 1.1) Foreign trade was restored, agricultural production grew in line with the increasing population, and manufacturing, however small it was, contributed to the process. The output in agriculture and industry is estimated to have grown rapidly by 50 percent and 80 percent respectively between 1925 and 1929.[12] However, the rise of income per capita remained at 33 percent due to rapid population growth.

As for the policies of the 1920s, in 1925 the government abolished the tithe (an in-kind agricultural tax), which had been an important source of government revenues, and introduced instead a number of cash taxes. A large-scale railroad construction program was also initiated for both security and economic reasons, which continued until World War II. Although it is hard to measure, the impact of these two policies is commonly considered favourable for agricultural development.[13]

Meanwhile, economic nationalism and protectionist zeal had been gaining currency since the war. Decisions taken in the Izmir Economic Congress in 1923 set industrialisation and the creation of a truly Turkish entrepreneurial class as the primary objectives of policies.[14] But policy options were small in

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percent of employees were non-Muslims. Sericulture was one of the sectors that was particularly badly hurt by the loss of the non-Muslim population. Yahya Tezel, *Cumhuriyet Döneminin İktisadi Tarihi 1923-1950.* Yurt Yayınevi, 1982, p.87.

[11] Tezel, *Cumhuriyet Dönemi*, p.89; Pamuk, Intervention During the Great Depression, p.326; and Tezel, *Cumhuriyet Dönemi*, p.91.

[12] The problems with these estimates will be discussed in the subsequent chapters. For now, it should be stated that the new industrial output estimates presented in the Chapter 3 show that these figures have an upwards bias for 1923-1929, but the revisions made in this dissertation do not alter the timing of recovery.

[13] For instance, only 2-3 percent of cereal output was marketed in Erzincan, an eastern city, in the 1920s. The railroad extension probably increased market opportunities by expanding market integration. İlhan Tekeli and Selim İlkin, *1929 Buhranında Türkiye'nin İktisadi Politika Arayışları.* Ortadoğu Teknik Üniversitesi, 1977, p.37.

[14] Boratav reminds us that the economic idea called "national economy" that had been formed before World War I was partly implemented during the war and received official acceptance after 1923. Korkut Boratav, *Türkiye İktisat Tarihi, 1908-1985.* Gerçek Yayınevi, 1988, p.13.

Table 1.1.: Main Economic Indicators for Turkey, 1913-1939

| | Population | GNP (1913 prices) | GNP per capita (1913 prices) | Imports/GDP | Exports/GDP | Agricultural value added | Industrial value added |
|---|---|---|---|---|---|---|---|
| | '000 | TL million | TL | % | % | TL million (1913/14 prices) | TL million (1913/14 prices) |
| 1913 | 15948 | 173.4 | 10.96 | 15.8 | 11.4 | 90.9 | 15.0 |
| 1925 | 13372 | 113.2 | 8.46 | 15.8 | 12.6 | 48.0 | 8.3 |
| 1929 | 14237 | 160.3 | 11.26 | 12.1 | 7.3 | 74.5 | 14.0 |
| 1932 | 15167 | 156.3 | 10.31 | 7.5 | 8.8 | 62.2 | 11.4 |
| 1939 | 17516 | 233.9 | 13.35 | 6.1 | 6.6 | 104.0 | 22.1 |

Source: Özel, Economy of Turkey

number until 1929 because the Lausanne Treaty of 1924 placed sanctions on import policies, effectively ruling out any possible revision of the tariff schedule until 1929. Nonetheless, the government still took a number of measures to support local entrepreneurs. Thus, İş Bankası and Sanayi and Maadin Bankası were founded in 1924 and 1925, in order to extend credit for national enterprises. Sugar and tobacco processing were brought under private monopolies, and, most importantly, the Law for the Encouragement of Industry, passed in 1927, provided subsidies and concessions for domestic industrial enterprises.

The year 1929 was, however, the turning point for both internal and external reasons. The economic sanctions of the Lausanne Treaty ended in 1929 and the government had been planning to make a radical revision on the tariff schedule. This caused a speculative increase in imports in anticipation of the rise in tariff rates.[15] By coincidence, it was also the year the first instalment of the Ottoman debt was to be paid.[16] As a result, the Turkish Lira swiftly depreciated in 1929, which led the government to implement exchange controls. In this sense, it can be maintained that Great Depression was not the ultimate cause of policy makers' protectionist leanings, but it did reinforce the tendency.

The depression was transmitted to Turkey by a sharp decline in commodity prices. Wheat prices declined by around 60 percent between 1929 and 1932 and stayed there until the war. The shock was also equally severe in the

[15] Tekeli and İlkin, *1929 Buhranı*, pp.78-83

[16] Turkey took over two thirds of Ottoman debt and paid the first instalment in 1929. The rest of it was never paid. Boratav, *Türkiye İktisat Tarihi*, p.44.

prices of other crops, such as cotton and sugar beet, but their prices slightly recovered after 1933. As seen in Figures 1.2 and 1.3, Turkey's net barter terms of trade declined by 40 percent between 1929 and 1932 and its exports at constant prices decreased by around 35 percent. The crisis was most severely felt in the foreign trade-oriented regions of the country because the decline in export prices led to an increase in the real value of taxes and credits.[17] The interior cereal-producing regions are likely to have been less seriously affected because of the smaller degree of market involvement, but in any case the agricultural sector as a whole undoubtedly suffered from the depression.[18] As a response to the declining prices, the government initiated a wheat purchasing program in 1932, but its impact remained limited.[19]

Turkey's main policy choices took shape in this deflationary environment and no major shift occurred throughout the 1930s.[20] The government decided to balance trade by decreasing imports and not by depreciating the currency. On the contrary, the TL appreciated against the US Dollar and British Sterling by around 40 percent between 1929 and 1934, and parities remained there until the end of the decade.[21] The total money in circulation was kept stable during the 1930s at around TL 160-190 million. Bank deposits remained constant until 1936 and slightly increased thereafter, while the volume of bank credits followed the same trend, as its share in GDP did not rise during the decade.[22] Finally, the share of government expenditure stayed between 15 and 18 percent of GDP during the 1930s.[23] Therefore, both monetary and fiscal policies remained fairly strict and orthodox, and it is remarkable that policy

[17] The economic hardships drove peasants to try various survival strategies, like short-term migration and crop diversification. Also some small peasants underwent foreclosures and started sharecropping. Elif Akçetin, Anatolian Peasants in Great Depression. *New Perspectives on Turkey*, Fall 2000. On the decline in debt payments immediately after the depression, see Yusuf Saim Atasagun, *Türkiye'de Zirai Kredi.* Kenan Basımevi, 1939.

[18] The growing discontent among the peasantry in Western Anatolia led to the enormous support for the opposition Free Republican Party in the 1931 election. The party was immediately closed down after the election. Cem Emrence, Politics of Discontent in the Midst of the Great Depression: The Free Republican Party of Turkey (1930). *New Perspectives on Turkey*, 23 2000.

[19] Pamuk, Intervention During the Great Depression, pp.334-35; and Tezel, *Cumhuriyet Dönemi*, p.362.

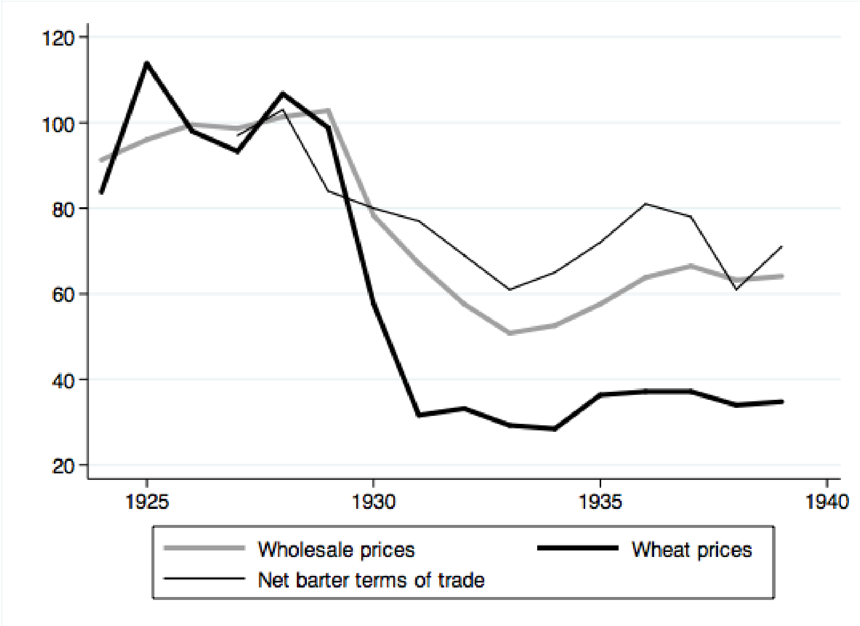
[20] For a detailed account of policy initiatives in the early stage of the depression, see Tekeli and İlkin, *1929 Buhranı*.

[21] Tezel, *Cumhuriyet Dönemi*, p.154.

[22] Tezel, *Cumhuriyet Dönemi*, p.111.

[23] Tezel, *Cumhuriyet Dönemi*, p.388-89.

Figure 1.2.: Turkey's Foreign Terms of Trade and Local Prices (1927-28=100), 1924-1939




Source: Tezel, *Cumhuriyet Dönemi*, p.382.

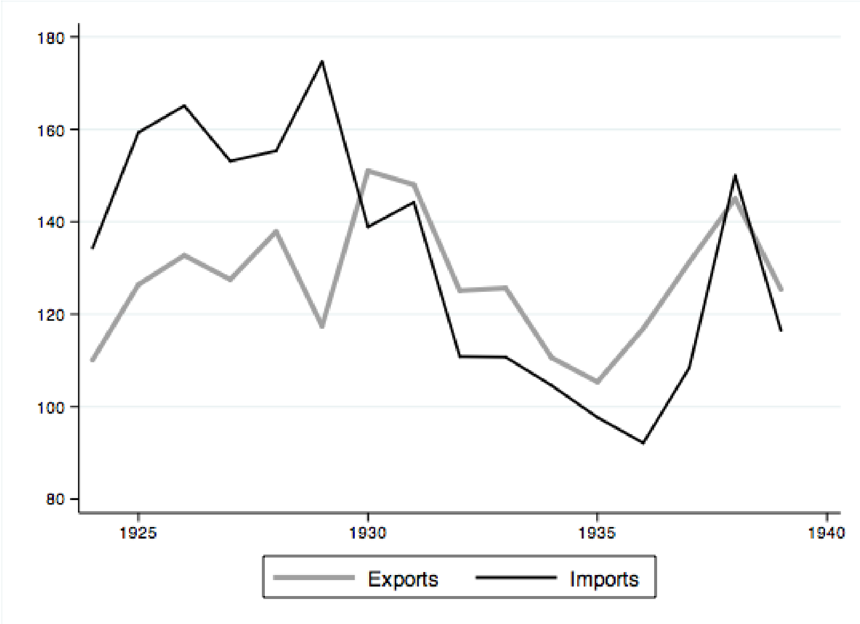
makers fanatically avoided expansionary policies, unlike their counterparts in many other countries at the time.

A large degree of policy activism was, however, exhibited in the field of foreign trade. With the tariff reform of 1929, the average ad valorem equivalent tariff increased from 13 percent in 1929 to 46 percent in 1930, and remained around 40-50 percent during the rest of the decade. Consumption goods, moreover, were taxed ever more heavily than raw materials and intermediate goods, so effective rates of protection increased more than the nominal rates. In 1931 tariffs were complemented by import quotas, then after 1933, besides upward revisions in tariffs, quotas were replaced with quotas stipulated in bilateral agreements. As part of Germany's strategy to expand towards Southeast Europe, clearing arrangements began to frame the foreign trade of Turkey in the same year. By the end of decade, a large part of Turkey's foreign trade was being carried out through the clearing system and Germany's share in exports and imports had increased significantly.[24]

Against this background, the period after 1932 saw strong economic growth.

[24]The share of Germany and Austria in exports increased from 14 to 37 percent and in imports from 17 to 51 percent between 1929 and 1939. Tezel, *Cumhuriyet Dönemi*, p.149.

Figure 1.3.: Turkey's Exports and Imports at 1938 Prices (TL Million), 1924-1939




Source: Turkey, İstatistik Umum Müdürlüğü, *Dış Ticaret İstatistikleri*. 1925-1939.

Between 1932 and 1939 agricultural value added increased by two thirds, industrial value added doubled and as a result GDP per capita increased one quarter, while the share of imports in GDP almost halved between 1929 and 1939 and that of exports kept decreasing (Table 1.1). The growth remarkably took place without any recovery in the price level, thanks to the rise in physical output. However, as Pamuk argues, agricultural growth, particularly in the second half of the 1930s, has largely gone unnoticed in the literature.[25] In a few instances, it was attributed to the good harvests, the increasing rural labour force or the open land frontier.[26]

The historiography has instead paid most attention to industrial growth, which has predominantly been explained by import substitution and *etatism*.[27] Hence, imports significantly declined and their share in GDP dropped from around 15 percent in the 1920s to 6-7 percent during the 1930s. Moreover, the import composition changed in favour of raw materials and intermediate

[25]Pamuk, Intervention During the Great Depression.

[26]Gülten Kazgan, Türk Ekonomisinde 1927-35 Depresyonu, Kapital Birikimi ve Örgütleşmeler. In *Atatürk Döneminin Ekonomik ve Toplumsal Sorunları*. İktisadi ve Ticari İlimler Akademisi Derneği, 1977, p.266; and Tezel, *Cumhuriyet Dönemi*, p.323.

[27]Boratav, *Türkiye İktisat Tarihi*, p.59; and Tezel, *Cumhuriyet Dönemi*, p.258.

goods, which is consistent with processes of import substitution. The share of consumption goods in imports declined from 63 percent in 1925 to 20 percent in 1939, whereas the share of intermediate goods increased from 21 to 41 percent and investment goods from 5 to 22 percent.[28] On the other hand, major changes also took place in relative domestic prices and national income, which means that these import statistics alone are not enough to demonstrate that import substitution was responsible for industrialisation. The extent to which industrial output growth was due to import contraction therefore remains to be definitively ascertained.

Protectionism aside, the rhetoric of official policies began to be geared towards *etatism*, that is, state-led industrialisation, in 1932.[29]*Etatism* was possible because the new ruling elite organised around Mustafa Kemal's Republican People's Party was based on an urban bureaucracy that had emerged from the ranks of former military and civilian officials and intellectuals. The wars and subsequent developments had swept aside the older Ottoman aristocracy and non-Muslim wealthy groups, while undermining the remaining interest groups, such as trade associations. Consequently, there did not exist powerful landed or foreign interests that could put pressure on the government's policy choices after 1923. The first five-year plan, which was more a list of investment projects rather than an elaborate planning document, was formulated with the help of Soviet experts and started to be implemented in 1934.[30] From then on, the state rapidly emerged as an investor and entrepreneur in key sectors, such as textiles, leather, tobacco, sugar and mining. During the 1930s around 20 large state enterprises were established and they began to assume a major role.[31]

Nonetheless, the conventional thinking in the existing literature seems to be more based on rhetoric rather than substance. For instance, Tezel argues that the economic growth and industrial expansion in the 1930s was mainly

[28]Tezel, *Cumhuriyet Dönemi*, p.109.

[29]The term *etatism* was first formulated in 1931 and was integrated into the program of the ruling Republican People's Party in 1932. Korkut Boratav, Kemalist Economic Policies and Etatism. In A Kazancıgil and E. Özbudun, editors, *Atatürk : Founder of a Modern State*. C. Hurst, 1981, p.171. For a comprehensive discussion and chronology of the policy shift towards *etatism*, see İlhan Tekeli and Selim İlkin, *Uygulamaya Geçerken Türkiye'de Devletçiliğin Oluşumu*. 2nd edition. Bilge Kültür ve Sanat, 2009.

[30]Pamuk, Intervention During the Great Depression, p.330. The second plan was initiated in 1938 but its implementation was delayed until the post-war period.

[31]Pamuk, Intervention During the Great Depression, p.331.

accounted for by the public sector, and Boratav maintains that the largest part of production in industry was carried by public enterprises. Pamuk has, however, pointed out that although the plan was successfully implemented, the role of *etatism* has been exaggerated because only ten percent of total industrial employment was accounted for by state enterprises when the plan was completed.[32] Instead, the output growth in industry was achieved by thousands of small- and medium-scale factories and workshops. Furthermore, the increase in the public share of total investment from one forth during 1927-1929 to 50 percent by the end of the 1930s is misleading because around half of it went into railroads and other means of transportation.[33] This does not deny that a substantial contribution was made by the state, since the small- and medium-scale enterprises benefited from backward and forward linkages with the government factories, but the overemphasis on their role leads to bias in the interpretation of the industrial expansion of the 1930s.

In short, then, the second half of the 1930s saw both strong industrial and agricultural growth and increasing state intervention. However, the sources of growth have never been studied carefully. The economic historiography, as stated above, has often been preoccupied with the relationship between the role of the state and industrial growth. The evidence for the role of imports substitution has been limited to the figures of import rates and the increase in the share of domestic goods in the consumption of certain commodities. However, the impact of changes in national income and relative price substitution effects on the industrial expansion has attracted insufficient attention.

### 1.2.2. The Interwar Egyptian Economy: "Development Without Growth"[34]

The economic transformation in Egypt and Turkey during the long nineteenth century was mainly similar in nature, while the differences lay in the extent of the export orientation under free trade and the particular forms it took.

The attempts to transform the Egyptian economy begun by Muhammad Ali

[32]Pamuk, Intervention During the Great Depression., p.331.
[33]Pamuk, Intervention During the Great Depression, p.331.
[34]Tignor uses this term to refer to the absence of improvement in the well-being of the masses despite certain structural changes in the interwar Egyptian economy. Robert Tignor, *State, Private Enterprise and Economic Change in Egypt, 1918-1952.* Princeton University Press, 1984.

in the early nineteenth century accelerated after 1850s and reached their peak during 1882-1914 under British rule.[35] Muhammad Ali had a well-defined economic policy based on two elements: the introduction and expansion of cotton cultivation and the development of a modern industry under strict government control. His radical project eventually met with half success: Egypt became a large cotton producer and exporter, but his premature endeavour to establish a modern factory system failed. Subsequently, the period 1820-1914 witnessed the making of a large export-oriented economy. Based on fertile soil and the Nile, cotton cultivation expanded so much that Egypt came to supply 4-5 percent of the world cotton output by the turn of century. Since Egyptian cotton was mainly long and extra long staple, Egypt's share in this particular part of the crop even reached 40 and 70 percent respectively by the turn of century.[36] Although many other crops were also produced, cotton remained by far the most important, providing around 75-80 percent of the country's export revenues in its heyday in the early twentieth century.[37] On the other hand, manufacturing remained limited to the traditional and naturally-protected industries and those related to the processing of exports until 1914, probably more strictly than in Turkey.[38] Charles Issawi's well-known phrase "lopsided development" succinctly characterises this dualism.[39]

The emergence of such a large commercial export economy was facilitated by a number of factors. First, irrigation was at the heart of process. The shift from basin to perennial irrigation through large-scale investments in canals, dams and barrages, particularly after the British occupation in 1882, resulted in a great increase in the cultivated area, which was the main source of output growth before World War I.[40] Although the production was still carried out by small peasant families on small plots with traditional techniques, there occurred a technical revolution as far as water use is concerned. Second, the process was accompanied by the inflow of foreign investment and capital,

[35]Robert Mabro, *The Egyptian Economy, 1952-1972.* Clarendon Press, 1974, p.7.

[36]Charles Issawi, *Egypt at Mid-Century.* Oxford University Press, 1954, p.112.

[37]Issawi, *Egypt at Mid-Century*, p.198.

[38]For a detailed assessment of the emergence of a cotton-based economy in Egypt, see Roger Owen, *Cotton and the Egyptian Economy, 1820-1914.* Oxford University Press, 1969; and a brief summary provided by Robert Mabro and Samir Radwan, *The Industrialisation of Egypt, 1939- 1973.* Clarendon Press, 1976, p.9.

[39]Charles Issawi, Egypt Since 1800: A Study in Lop-sided Development. *Journal of Economic History*, 21(1) 1961.

[40]Patrick O'Brien, *The Revolution in Egypt's Economic System.* Oxford University Press, 1966, pp.3-4.

Table 1.2.: Main Economic Indicators, Egypt

| | Population thousands | GDP LE million | GDP per capita LE | Exports/GDP % | Imports/GDP % |
|---|---|---|---|---|---|
| 1913 | 12338 | 154 | 12.5 | 18.0 | 15.9 |
| 1929 | 14596 | n.a. | n.a. | n.a. | n.a. |
| 1939 | 16522 | 183 | 11.1 | 19.0 | 18.6 |
| 1950 | 20350 | 254 | 12.5 | 18.3 | 22.3 |

Sources: Hansen and Marzouk, *Development and Economic Policy*, pp.318-20; Ikram, *Egypt: Economic Management*, pp.396-99; United Arab Republic, *Statistical Pocket Yearbook*; Pamuk, Estimating Economic Growth; Egypt, Ministry of Finance, Statistical Department, *Annual Statement of Foreign Trade*. Cairo: Government Press, 1910-1946; and D.C. Mead, *Growth and Structural Change in the Egyptian Economy*. Homewood, 1967.

which provided long-term credit for irrigation and land reclamation and short-term credit for cotton cultivation. Trade and commerce also came to be largely controlled by European capital. Third, the period saw the creation of large estates of over 50 feddans held as private property. The large landowners controlled around 45 percent of all land in 1917 and the roughly 12,000 families owning these estates administered their land partly by directly cultivating the land with seasonal labour and service tenants and partly by renting out the rest.[41] The result was a highly unequal land and wealth distribution.

The economic problems faced by Egypt in the interwar period were heavily determined by this earlier development. For one thing, Egypt had already brought all its cultivable land into production by the onset of World War I because of the limited land across the Nile Valley and the amount of water available.[42] Most of the irrigation work had been completed by 1914 and the cultivated area remained stagnant during 1917-1937 (Table 1.3). In addition, the land/labour ratio declined as a result of population growth and Egypt was transformed from a labour-scarce to labour-abundant economy. Even before 1914, Egypt became one of the countries with a high population densities, with 700 persons per square kilometre.[43] Furthermore, perennial irrigation and multiple cropping had serious consequences, as the shortage of sufficient drainage had caused salination and waterlogging, driving down

[41] Owen and Pamuk, *History of Middle East Economies*, p.31; and Tignor, *State and Private Enterprise*, p.10. For a detailed history of the development of landownership in Egypt, also see Gabriel Baer, *A History of Landownership in Modern Egypt 1850-1950*. Oxford University Press, 1962.

[42] Issawi, *Egypt at Mid-Century*, p.102.

[43] Owen and Pamuk, *History of Middle East Economies*, p.30.

Figure 1.4.: Egypt's Terms of Trade and Cotton Prices (1953=100), 1913-1955


Sources: Terms of trade calculated from the export and import indices in Mead, *Growth and Structural Change*, Table V.A.7. Cotton prices from M. el-Imam, *A Production Function for Egyptian Agriculture 1913-1955*. The Institute of National Planning, 1962.

cotton yields.[44] Therefore, in order to reverse the downward trend in yields, a significant amount of investment in drainage was needed.

Last but not least, Egypt's economy and income had become greatly exposed to external shocks due to its nineteenth-century development. As seen in the Figure 1.4, Egypt's terms of trade collapsed during World War I and then saw a sharp recovery in the first half of the 1920s. But the period 1925-1943 again witnessed a massive decline.[45] The change in cotton prices followed more or less the same pattern, placing a strong pressure on national income and consumption. The sharp decline in capital flows was also another major issue, as cotton production was largely financed by foreign investment, which first declined during the 1907 financial crisis and was then persistently low during the interwar period.[46]

Agricultural development in the interwar period was arrested by these factors inherited from the pre-war period. Total output at constant prices

[44] Owen and Pamuk, *History of Middle East Economies*, p.31.

[45] According to Issawi, one reason for the collapse of Egypt's terms of trade was, inter alia, that cotton was facing growing competition from synthetic fibres and increasing output in other countries. Issawi, *Egypt at Mid-Century*, p.246-47.

[46] Owen and Pamuk, *History of Middle East Economies*, p.33.

Table 1.3.: Trends in Egyptian Agriculture, 1917-1947

| | Total output LE million (at 1938 prices) | Cultivated area million feddans | Cropped area million feddans | Cotton yields cantar/feddan |
|---|---|---|---|---|
| 1917 | 45.21 | 5.27 | 6.62 | 3.75 |
| 1927 | 63.87 | 5.54 | 6.61 | 4.01 |
| 1937 | 65.12 | 5.28 | 8.36 | 5.37 |
| 1947 | 49.39 | 7.76 | 9.17 | 5.08 |

Source: Acreage and cotton yields from Owen and Pamuk, *History of Middle East Economies*, p.246. Output figures (three-year moving average) calculated from el-Imam; and deflated by wholesale prices obtained from Mitchell.

increased slightly during the 1920s but remained constant during the 1930s (Table 1.3). The cropped area increased by around one fourth during 1917-1937, outpacing the growth of the cultivated area.[47] The amount of drainage was extended, more chemical fertilisers were applied, and there was a continuous attempt to improve seeds.[48]

In the face of a severe decline in cotton prices, the Egyptian government first pursued a supply-side policy. A restriction on the cotton acreage was imposed in 1921-1923, and continued in 1926-1929, 1931 and 1932.[49] In addition, the government purchased and held back cotton in order to increase prices in 1921, 1926 and 1929.[50] However, the policy of restricting the cotton acreage was abandoned in 1933, based on the assumption that the Egyptian crop was too small to affect world cotton prices and then the policy was shifted to increase output as much as possible.[51] In the early 1930s, the government also provided temporary relief for cotton producers, such as tax reductions and an arrangement with mortgage companies to reschedule debts. As long-term measures, Credit Agricole was founded to provide loans for small peasants, and there were attempts to increase agricultural productivity by means of drainage extension, heightening the Aswan Dam and seed improvement.[52]

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[47] O'Brien, *Egypt's Economic System*, p.7. The cultivated area here refers to the acreage cultivated any time in a year, whereas the cropped area includes the land cultivated in summer and/or winter. Crucially, this means that when the same piece of land is cultivated in both summer and winter, it is counted twice in the cropped area.

[48] Owen and Pamuk, *History of Middle East Economies*, p.40; and Issawi, *Egypt at Mid-Century*, p.101.

[49] Owen and Pamuk, *History of Middle East Economies*, p.38.

[50] Issawi, *Egypt at Mid-Century*, p.122.

[51] This assumption is generally accepted by scholars. But Yousef recently argued that the Egyptian crop had market power. Tarik Yousef, The Political Economy of Interwar Egyptian Cotton Policy. *Explorations in Economic History*, 37 2000.

[52] Owen and Pamuk, *History of Middle East Economies*, p.39.

Meanwhile, the agricultural crisis and the difficulties of World War I had raised concerns about specialisation. The motto of nationalist circles and the new emerging Egyptian elite became "diversification" via industrialisation.[53] The major economic document of Egyptian nationalism published in 1918 set the agenda that was going to be followed by almost all governments in the interwar period.[54] It called for greater government support for industrialisation, increasing agricultural productivity and Egyptian rather than foreign interests.

However, there existed serious constraints on the government's capacity to pursue an active industrial policy in the 1920s. First of all, although the British unilaterally declared Egypt to be an independent country in 1922, its independence in terms of economy policy was strictly limited. The earlier trade agreements had removed tariff autonomy until 1930; the government was not able to carry out a tax reform until 1936, when the Capitulations providing foreigners certain privileges were abolished; and fiscal and monetary policies remained quite passive. The Egyptian pound remained tied to the Sterling Pound until 1947 at a fixed parity and an independent central bank was lacking.[55] Governments adhered to orthodoxy with a balanced budget policy or, preferably, small surpluses.[56] Hansen and Marzouk asserts that the passive and conservative policies were mainly designed to promote the interests of big landowners and merchants.[57]

In this way, a gradual decolonisation left its mark on Egyptian policy making in the interwar years. The presence of powerful landed and British interests substantially prevented the nationalist elements from implementing their developmental agenda, as policy making was shaped by continuous and complex bargaining between various groups within the Egyptian elite, which mainly included landowners, the British, foreign capital and the new bourgeoisie with industrial interests.[58] Owen and Pamuk maintain that the eco-

[53] Issawi, *Egypt at Mid-Century*, p.140.

[54] Egypt, *Rapport de la Commission du Commerce et de L'industrie.* Imprimerie Nationale, 1918.

[55] The right to issue notes was given to the National Bank of Egypt, which was supervised by the Bank of England through its advisory board. Owen and Pamuk, *History of Middle East Economies*, p.33.

[56] Mabro, *Egyptian Economy*, p.17.

[57] Hansen and Marzouk, *Development and Economic Policy*, p.19.

[58] Owen and Pamuk argue that although most of the British officials left government service in 1922-23, the remaining few and the British High Commission could pressure the government. Owen and Pamuk, *History of Middle East Economies*, p.36.

nomic and political influence of large landowners was effectively augmented after 1922 due to their influence on the large peasant electorate.[59] For instance, they occupied 58.5 percent of all parliamentary committees during 1924-1952. Similarly, the fierce debates on tax reform after 1936 prevented an upward revision in the land taxes, which was another instance of landowners' influence on policy making.

Against this background, the tariff reform of 1930 was very important in terms of its impact and consequences. The reform replaced the uniform 8 percent import duty with carefully designed three-tiered specific rates. Raw materials were rated at 4-8 percent, intermediate goods at 10-15 percent and final goods at 15-30 percent. Besides the frequent revisions of tariff rates over the 1930s, the most important development in this field was the depreciated currency surtax placed on cotton and rayon textile imports of Japanese origin in 1935. This aimed to counteract Japan's aggressive export policy and caused a serious reduction in Japanese imports, which favoured both local producers and Lancashire. Prohibitive duties on cereals were also put in place, in order to secure the domestic market for landowners facing erratic cotton prices.

The tariff reform is commonly considered as the source of industrial growth in the 1930s, but the evaluation of industrial performance suffers from a lack of reliable statistics and data.[60] In the absence of consistent estimates and measures, the literature largely draws on Samir Radwan's estimates of the capital stock, import statistics, census figures for employment, and some scattered output data on cement, sugar and tobacco. Based on such evidence, it is usually accepted that the 1930s saw significant output growth and the beginning of import substitution in Egypt.[61] One driver of industrial growth is considered to be the tariff reform and another was that landowners and merchants directed their investment towards industry in the face of the slump in cotton prices.[62] It can also be added that Bank Misr, which was founded in 1920 as Egypt's new emerging elite sought to finance national enterprises,

[59] Owen and Pamuk, *History of Middle East Economies*, p.37.

[60] Owen and Pamuk, *History of Middle East Economies*, p.43-44; O'Brien, *Egypt's Economic System*, p.14; Issawi, *Egypt at Mid-Century*, p.141; and Roger Owen, Egypt in the World Depression: Agricultural Recession and Industrial Expansion. In Ian Brown, editor, *The Economies of Africa and Asia in the Inter-War Depression.* Routledge, 1989, p.141.

[61] Issawi, *Egypt at Mid-Century*, p.141; and Hansen and Marzouk, *Development and Economic Policy*, p.2.

[62] O'Brien, *Egypt's Economic System*, p.13.

played a significant role in mobilising resources.[63]

World War II gave a further stimulus to industrial expansion as a result of the isolation it brought about. Normal trade linkages were disrupted and Egyptian factories could even export some of their produce to the neighbouring Middle Eastern countries. Moreover, the allied troops stationed in Egypt during the war increased demand for manufactures.[64] At its peak, Issawi calculates that their total expenditure reached one fourth of national income.[65]

For Owen and Pamuk, although there is not much doubt about the poor performance of the Egyptian economy in the interwar period, there is less consensus on why it occurred.[66] Three possible explanations have been suggested: the low level of investment at around 5-6 percent of national income, capital outflow after World War I and Egypt's vulnerability to external shocks. On the other hand, O'Brien, Issawi and Mabro all emphasise the importance of population growth, which offset any improvement in national income.[67] Obviously, given that land productivity was quite high in Egypt by international standards, the insufficient absorption of the labour force by other sectors, mainly industry, was the crux of the issue. Commenting on the latter, Issawi points out that given the narrowness of the domestic market due to low incomes and unequal land distribution, "the needs of the mass of her inhabitants for industrial goods [were limited] to a few gallons of kerosene, a few kilograms of sugar, a few yards of cotton cloth and a few pounds of tobacco, [so] there is no scope for a modern capitalist industry".[68]

Therefore, a number of possible factors, from population growth and lack of investment to small domestic market, have been suggested to explain Egypt's sluggish GDP performance but all such explanations remain as reasonable hypotheses that have not been tested sufficiently. In particular, the lack of quantitative evidence on the industrial sector has hindered a more comprehensive assessment.

[63] O'Brien, *Egypt's Economic System*, p.14. For a detailed monograph on Bank Misr, see Eric Davis, *Challenging Colonialism: Bank Misr and Egyptian Industrialization, 1920-1941*. Princeton University Press, 1983. Also note that the Egyptian Federation of Industries was founded in 1922 as a lobbying group.

[64] O'Brien, *Egypt's Economic System*, p.17; and Issawi, *Egypt at Mid-Century*, p.141.

[65] Issawi, *Egypt at Mid-Century*, p.141.

[66] Owen and Pamuk, *History of Middle East Economies*, p.35.

[67] O'Brien, pp.2-3; Issawi, *Egypt at Mid-Century*, p.93; and Mabro, *Egyptian Economy*, p.17.

[68] Issawi, *Egypt at Mid-Century*, p.249

## 1.3. Great Depression and Recovery in the 1930s: The Global Experience

In the sections above we have briefly set out the macroeconomic developments in Turkey and Egypt in the interwar period. The main point is that in response to the unfavourable movement in commodity prices and terms of trade in the 1930s, both countries resorted to import repression, although the extent and intensity of protectionism varied between them. In what follows, we attempt to place this policy choice in an international context by discussing the policy responses to the Great Depression in both industrialised and agricultural countries. The dominant view of the Great Depression emphasises the role of the policy framework on the extent of the subsequent recovery, so much of the focus of the present discussion is on the latter. Nonetheless, in view of the geographical and empirical constraints of this literature, we also underline the importance of more structural determinants of economic performance, such as historical legacies, geography and inter-sectoral relationships.

### 1.3.1. Theory and Evidence

What marked the world economy in the 1930s was the sharp decline in commodity prices, slow recovery in national economies and the failure of world trade to return to the pre-depression levels. As opposed to the *belle époque*, when commodity flows were free, capital and labour internationally mobile, and world trade grew to an unprecedented scale with the help of a stable international currency system based on the Gold Standard, the role of policies were more critical in the economic performance of national economies in the 1930s.

Recovery in most countries depended on the home market rather than exports due to the persistent crisis in export sectors. The now dominant view of the Great Depression, which is discussed shortly, considers adherence to the Gold Standard to be the most important factor behind the timing and extent of recovery, as this policy choice had a crucial impact on whether expansionary policies could be implemented.[69] Accordingly, the countries that devalued

[69]This section is largely based on Barry Eichengreen, *Golden Fetters*. Oxford University Press, 1996; Peter Temin, *Lessons from the Great Depression*. MIT Press, 1989; Barry Eichengreen and Jeffrey Sachs, Exchange Rates and Economic Recovery in the 1930s. *Journal of Economic History*, 45 1985; Barry Eichengreen and Douglas Irwin, The Slide

their currencies were more able to use expansionary policies to stimulate domestic demand and therefore performed better than others that defended the Gold Standard or adhered to fixed exchange rates. This view is, however, predominantly based on the experience of industrialised countries and the variation between the performance of countries that stuck to more passive policies are not sufficiently addressed. In this respect, Turkey and Egypt provide a good illustration of the subject, as their experience conforms with the main hypothesis of this framework on the one hand but also points to its shortcomings on the other.

The dominant view thus asserts that adherence to the Gold Standard, as an ideology or ethos, played a key role in the transmission and deepening of the depression and therefore the timing and extent of the recovery. Accordingly, the massive decline in commodity prices and capital flight from the countries in deficit during 1929-1931 combined with the policy responses within the framework of the Gold Standard to result in a contractionary cycle. Once it was observed that the rules of the gold standard failed to help exit from the slump, many countries, faced with the severe decline in export earnings, worsening trade balances and capital flight, began to adopt exchange controls and increase tariffs to isolate the home market from the external shocks around 1931. These initial policy responses were not due to the theoretical realisation of the negative impact of the Gold Standard, but rather to the extent of a shock that was so large that governments needed to take measures to stop the impact of deflation on national economies and to promote recovery. However, over the course of the 1930s, such ad hoc policies became systematic and more elaborate. Britain's departure from gold in 1931 was a critical moment, since many countries followed suit by devaluing their currencies, in addition to or in tandem with other measures. On the other hand, many others continued to defend the Gold Standard by sticking with artificially fixed exchange rates.

The implication of this thesis is important. Since the rules of the Gold Standard pushed countries into a deflationary cycle, the recovery from the Great Depression largely depended on getting rid of the golden fetters, that is, on abandoning the Gold Standard. But the departure from gold was not

to Protectionism in the Great Depression: Who Succumbed and Why? *Journal of Economic History*, 70 2009; and Ben Bernanke, Macroeconomics of the Great Depression: A Comparative Approach. In Ben Bernanke, editor, *Essays on Great Depression*. Princeton University Press, 2000.

sufficient to stimulate growth, as it was also necessary to abandon financial orthodoxy. The possible heterodox expansionary policies, to the extent that policy autonomy existed, were devaluation, protectionism, monetary expansion and fiscal stimulus.[70] However, within the institutional and intellectual frameworks inherited in each country from the past, the policy choices were not as many. In principle such policies were designed to shift domestic demand towards locally produced goods. While devaluation helped to expand domestic credit, boost exports or raise the domestic prices of foreign goods, thus switching the demand to domestic sales, import repression with fixed exchange rates was less compatible with expansionary policies.

But why did some countries stay on gold for so long? Eichengreen argues that domestic politics and the enduring legacy of the economic events of the early 1920s explain why some countries were late to leave.[71] For instance, in the countries like France, which had experienced high and persistent inflation earlier, discretionary monetary policies were viewed as the source of instability, whereas in other countries such as Britain, which had avoided inflation, policy makers were more willing to experiment. The decision also reflected the differences in the balances of political power, as the tendency for devaluation that raised the prices of trade goods was favoured by producers of traded goods and farmers, whereas it was opposed by creditors and those who produced exclusively for the home market.[72] Moreover, there is further evidence that in addition to the experience of high inflation, the severity of deflation, degree of terms of trade shocks, political instability and the existing trade patterns affected how long countries stayed on gold.[73].

Since Turkey and Egypt adopted protectionist policies in the 1930s, we need to discuss the shift towards protectionism in more detail. The protectionist measures in the 1930s sought, in the first place, to check the decline in agricultural prices and then became much more systematic and comprehensive. Immediately after 1929, Germany, France and Italy introduced higher

[70] Eichengreen and Sachs, Exchange Rates and Economic Recovery, p.926.

[71] Eichengreen, *Golden Fetters*, p.23; Eichengreen, *Golden Fetters*, pp.10-11; and Douglas Irwin, *Trade Policy Disasters*. MIT Press, 2012.

[72] Eichengreen, *Golden Fetters*, p.287.

[73] Holger Wolf and Tarik Yousef, Breaking the Fetters: Why did Countries Exit the Interwar Gold Standard? In Timotty Hatton, Kevin O'Rourke and Alan Taylor, editors, *The New Comparative Economic History: Essays in Honor of Jeffrey G. Williamson*. MIT Press, 2007; and Nikolaus Wolf, Scylla and Charybdis: Explaining Europe's Exit from Gold, January 1928–December 1936. *Explorations in Economic History* 45 2008

tariffs on primary goods, which was followed by the similar response by many other countries. The US followed suit in 1931 with the Smooth-Hawley Act, and Britain opted for an upward tariff revision in 1932. The main tool was tariffs in this very early stage of the depression, but the financial crisis in Germany and Austria in the summer of 1931 led to a dramatic reshaping of commercial policies. First, tariffs were revised upward and, second, they came to be supplemented by quantitative import restrictions and exchange controls.[74] Eventually, even when world industrial production and income reached pre-depression levels by the end of the 1930s, national economies remained relatively isolated, as shown by the serious lag in world trade. Lewis explains this lag as a result of the trade restrictions introduced after the depression.[75]

Eichengreen and Irwin maintain that national commercial policies in the interwar period were strongly associated with exchange rate policies.[76] Accordingly, the cross-country variation in the use of protectionist measures indicates how and why import-restricting policies were increasingly adopted: those countries which preferred to remain on gold were more likely to restrict foreign trade because they lacked an independent monetary policy, so they resorted to trade restrictions to shift demand toward domestic production.[77] In other words, the reaction of individual countries to deflation and the crisis in the export sector was to reflate home markets, which depended on expansionary monetary policies or import repression. The countries that allowed depreciation had a number of instruments to address deflation and unemployment, whereas the choice of defending fixed rates severely limited policy options, leaving trade repression as an effective policy to favour domestic producers against foreign competition.[78]

[74]League of Nations, *Commercial Policy in the Interwar Period: International Proposals and National Policies*. League of Nations, 1942; and Eichengreen and Irwin, Slide to Protectionism.

[75]Arthur Lewis, *Economic Survey 1919-1939*. 3rd edition. George Allen and Unwin LTD, 1953, p.59

[76]Eichengreen and Irwin, Slide to Protectionism. For similar arguments see Irwin, *Trade Policy Disasters*; and Charles H. Feinstein, Peter Temin and Gianni Toniolo, *The World Economy Between the World Wars*. Oxford University Press, 2008, p.135.

[77]Note that a similar argument had been suggested much earlier: the recovery, after 1932, was observed in all countries pursuing expansionist credit and/or work-creation policies behind a depreciated or controlled currency, except the gold bloc countries where deflation continued until 1936. League of Nations, *Commercial Policy in the Interwar Period*, p.67.

[78]It is clear that Britain does not fit easily into this framework, as the upward tariff revision

Now let's turn to the sectoral aspects of economic recovery in the 1930s. As a whole, as demonstrated in the movement of prices, the fall in agricultural prices hit the bottom in 1932, and recovered by only a small margin until the end of decade. This is why national policies could only provide short-term relief for the agricultural sector against indebtedness due to the increase in the real value of taxes and debts. In the long term, countries had a few options: encouraging the shift towards cash crops, stimulating production via more intensive use of inputs such as chemical fertilisers or acreage expansion, if possible. However, there were powerful constraints on the impact of such policies due to rigidity in demand and supply, so the scope for agricultural growth was limited, which was one of the reasons why most governments turned their attention to the industrial sector. On the other hand, the impact of the agricultural crisis on national income and industrial growth has largely been ignored in the empirical literature on recovery in the 1930s. The issue is elaborated by Madsen, who shows that the crisis in agriculture had spillover effects on other sectors, as a sharp decline in prices led to a fall in the purchasing power of the agricultural population without symmetric effects on the welfare of those who gained.[79] His study looks at industrial countries, so it is clear that such spillover effects should have been much more pronounced in agricultural countries because of the larger share of agriculture in national income.

In short, then, the dominant theory of economic recovery in the 1930s views the failure of concerted action after the Great Depression and adherence to the Gold Standard as the primary causes of the transmission and deepening of the deflationary forces. This is why the 1930s witnessed a large range of policy experimentation at the national level. In principle, as Feinstein, Temin and Toniolo states, the relief from the depression during the 1930s primarily had to come from domestic expansion and industrial recovery in particular depended on the interaction between government policies and domestic demand.[80] It is understood from the above discussion that national policies

in 1932 followed devaluation in 1931. Yet, Eichengreen and Irwin maintains that the British tariff revision was not an economic necessity; rather, it was the outcome of the rise of conservative politics plus the balance of payments problems to a lesser degree. Eichengreen and Irwin, Slide to Protectionism.

[79] Jacob Madsen, Agricultural Crisis and International Transmission of GD. *Journal of Economic History* 61(2) 2001.

[80] Feinstein, Temin and Toniolo, *The World Economy Between the World Wars*. 2008, p.163.

aimed to stimulate domestic markets in a number of ways: the countries that went off gold devalued their currencies and capitalised on the expansionary monetary and fiscal policies, which allowed them to perform better than those that adhered to fixed exchange rates. That was because the countries that defended fixed rates had to resort to import repression on a larger scale to shift demand away from imports, but the impact of protectionism on growth was more limited because of sluggish domestic incomes.

On the other hand, although the view summarised above convincingly argues for the better performance of the devaluing countries, it is not without shortcomings. First, it does not address variation between the economic performance of the countries that adhered to fixed rates and passive policies. Second, its geographical coverage is mostly limited to the industrialised countries, so a look at the experience of primary producers such as Egypt and Turkey may help to refine some of these issues.

### 1.3.2. Peripheral Economies Through the Depression: A Blessing in Disguise?

As stated above, the interwar peripheral economies have not received due attention in comparison with the industrialised ones. There only exists a small number of valuable comparative histories and a relatively larger number of country-specific studies looking at various aspects of national economies. The following pages briefly attempt to discuss the insights emanating from such studies to understand the particular economic problems the developing regions encountered in the 1930s and relate them to the broader historiography discussed above.

Broadly speaking, the interwar depression was transmitted to the developing countries through the decline in agricultural prices and the sharp deterioration in their terms of trade. By the 1920s, most agricultural economies had already been integrated into the world economy as agricultural exporters since, as Rothermund states, subsistence agriculture was already a myth by the 1930s as far as most of the peasants in the primary producers were concerned.[81] They began to suffer from declining prices in the second half of the 1920s, but at that stage large capital inflows ameliorated the difficulties of the export sector. Therefore, the Great Depression came up as such a paradigm-

[81]Dietmar Rothermund, *Global Impact of the Great Depression*. Routledge, 1996, p.10.

shifting external shock that few historians could doubt that the 1930s was a turning point for the periphery.[82]

In one way, the difference between the experience of periphery and industrial countries in the interwar era was a matter of degree. The sharp downward trend in prices was a worldwide phenomena, yet it was much more pronounced in agricultural prices, so primary producers more severely felt the deflation that rapidly translated into a decline in export prices and earnings, terms of trade and domestic incomes. As a whole, the value of Latin American and Asian exports declined by 22 percent and their terms of trade deteriorated by 20 percent between 1929-1932.[83] While export prices were declining more than prices of their imports, the nominal interest rate on foreign debt remained the same, which increased the fiscal burden and worsened the balance of payments position. An increasing share of exports therefore had to be allocated for debt servicing.[84] At the same time, the inflow of foreign capital was substantially reduced.[85] Defaults started in 1931 and only a few countries maintained normal debt servicing by 1934. During the depression, primary producers thus found themselves with a massive debt burden, a crisis in their export sectors and a decline in national income.

On the other hand, the peripheral economies also differed from industrial ones in a more fundamental way, since the continuation of deflation in the early 1930s and the prolonged difficulties worsened the expectations about a possible recovery, which encouraged radical policy shifts in many countries.

[82] Nonetheless, there are still doubters. Haber, for instance, rejects the existence of a divide by arguing that Latin America already had substantial industry before 1930 and import-substituting industrialisation was a product of a historically longer process. S. Haber, Political Economy of Industrialisation. In Victor Bulmer-Thomas and J.H. Coatsworth, editors, *The Cambridge History of Latin America: Vol II The Long Twentieth Century*. Cambridge University Press, 2006, p.537.

[83] Angus Maddison, *Two Crises: Latin America and Asia, 1929-38 and 1973-83*. Development Centre of the Organisation for Economic Co-operation and Development, 1985, pp.13-14.

[84] Victor Bulmer-Thomas, *The Economic History of Latin America Since Independence*. 2nd edition. Cambridge University Press, 2003, p.191. Diaz-Alejandro recalls that as early as 1929 Latin America had showed signs of skipping scheduled services of external debt or blocking profit remittances. C. Diaz-Alejandro, Latin America in the 1930s. In Rosemary Thorp, editor, *Latin America in the 1930s: The Role of Periphery in World Crisis*. Macmillan, 1984, p.20.

[85] US lending declined from 300 million dollars to negligible levels between 1927 and 1933, which particularly affected Latin America. N. Fleisig, US and non-European Periphery During the Early Years of the Great Depression. In Herham Van Der Wee, editor, *Great Depression Revisited*. Martinus Nijhoff, 1972, p.157.

Doubts about orthodox liberal economic policies increasingly grew, the reliance on export sectors and raw material production came to be questioned and policy makers were more and more convinced of the need for a sharp break with the old policy paradigms. Not least, the concomitant rise in protectionism in the industrial countries and the influence of nationalist feelings in the periphery motivated such shifts in policy orientation. Therefore, import restrictions, exchange controls, devaluations and debt default began to be pursued with the empowerment of the mostly urban-based political groups that came to power in the midst of the crisis.[86]

The new policies were mainly oriented towards the industrial sector and proved successful by and large thanks to the strongly protected domestic markets: the most update comparison of industrial output between countries shows that although industrialisation in the periphery can be dated back to the late nineteenth century, it spread across the periphery on a large scale in the 1930s.[87] During the 1930s Latin America, the European periphery and the Middle East all outperformed the industrial leaders (Germany, the US and the UK).[88] Moreover, this also translated into stronger GDP growth. As opposed to the growth patterns in the late nineteenth century, many regions in the periphery performed better than Western Europe during the interwar period. Between 1913 and 1950, income per capita grew by 1.4 per cent per year in Latin America, 1.5 percent in Eastern Europe and 1 percent in Africa, whereas the average annual growth rate was as low as 0.8 percent in Western Europe. The exception was Asia, excluding Japan, which saw a 2 percent decline per year.[89]

The comparison of the cases of Asian and Latin American economies in the 1930s is particularly interesting because it points to the endogeneity of policy responses, as subsequent policy changes were associated with the severity of shock. Maddison argues that the depression was more heavily felt in Latin

[86]Bulmer-Thomas, *Economic History of Latin America*, p.222; and Maddison, *Two Crises*, p.23.

[87]Jeffrey Williamson, Kevin O'Rourke and Agustin Benetrix, The Spread of Manufacturing to the Poor Periphery 1870-2007. *Social Science Research Network Working Paper* 2013. This can also be compared with the findings of Paul Bairoch, International Industrialisation Levels from 1750 to 1980. *Journal of European Economic History*, 11 1982 and League of Nations, *Industrialisation and Foreign Trade*. League of Nations, 1943, p.14.

[88]Williamson, O'Rourke and Benetrix, Spread of Manufacturing, p.7.

[89]The growth rates are based on Maddison's data. Feinstein, Temin and Toniolo, *The World Economy Between the World Wars*, p.8.

America than in Asia: during 1929-1932 Latin American GDP declined by 13 percent, whereas Asia saw a fall of just 3-5 percent.[90] The fall in import volume was greater in Latin America and the terms of trade worsened more sharply. The reason for the difference was that there were closer linkages between Latin America and the US, where the recovery was more delayed and in addition Asia had more diversified exports. By 1932, almost all Latin American countries had left the gold standard and followed expansionary policies, whereas Asian growth was slower and Asian governments remained more orthodox in policy orientation.

Diaz-Alejandro also considers the economic performance of individual countries during the 1930s to be a result of the magnitude of the exogenous shocks, combined with the policy measures undertaken to adjust to them and the resilience of local private agents in responding to the new constellation of profit opportunities.[91] He argues that the ability to manipulate policy instruments in countries with nominal sovereignty were greatest in countries that were large (such as Brazil) or had autonomous public sectors. By contrast, smaller or highly dependent countries had little room for manoeuvre. Furthermore, it was not only policies that determined economic performance because other structural features, such as the characteristics of traditional exports and the extent of foreign control of banking and land, also played a pivotal role in determining the elasticity of response to the new relative prices.[92]

Diaz-Alejandro's argument is in accordance with the argument on the role of devaluation in economic recovery set out above.[93] Reactive countries devalued more than passive countries and they moved forward more speedily. Haber agrees by pointing out that smaller economies industrialised later and less completely compared to larger economies.[94] Similarly, Campa argues that the findings of Eichengreen and Sachs regarding the connection between devaluation and the extent of recovery was also true of Latin America, as devaluing countries fared better than the passive countries.[95] In reactive coun-

[90] Maddison, *Two Crises*, p.16-17.
[91] Diaz-Alejandro, Latin America, p.18.
[92] In a similar manner, Fleisig argues that the effects of depression in the periphery depended on the type of exports, degree of diversification of exports, organisation of export industries, and the responsiveness of the import-competing sector. Fleisig, US and non-European Periphery During the Early Years of the Great Depression, p.175.
[93] Diaz-Alejandro, Latin America, p.23.
[94] Haber, Political Economy of Industrialisation, p.537.
[95] Jose Manuel Campa, Exchange Rates and Economic Recovery in the 1930s: An Extension

tries, fiscal policy also contributed to the maintenance of aggregate demand, at least in the sense of not balancing the budget. Other policies that were implemented included land reform (in Mexico), further credit provisioning and public works.[96]

What was common in all peripheral economies was that output growth outstripped the expansion of domestic consumption that either followed sluggish GDP growth or declined.[97] Bulmer-Thomas maintains that recovery was assured if the import-competing sector expanded more than the contraction in the export sector, which required a growth in nominal demand.[98] He looks at the sources of income growth in the Latin American countries and finds that the increase over the 1930s was either due to the revival of exports or increases in home final demand, particularly in private consumption.[99] The latter was a reflection of loose monetary and fiscal policies. Once the home demand recovered, domestic producers were provided the opportunity to satisfy a market in which the relative prices of importables had increased.[100]

On the other hand, the insights emanating from these comparisons are bound up with the particular characteristics of the cases they are based on. Although they are useful in pointing out the role of exchange rate and expansionary policies in the context of Latin America, the case of economies that adhered to fixed exchange rates needs further elaboration. The Eastern and Southeastern European countries are a good case in point, since their experience in the 1930s differed so much from many Latin American or Asian countries. Teichova argues that there were remarkable similarities in the quick and sustained industrial growth in the agrarian Southeastern economies.[101] Although the role of government in economic life increased almost everywhere

to Latin America. *Journal of Economic History*, 50(3) 1990.

[96]Diaz-Alejandro, Latin America, p.35.

[97]Diaz-Alejandro, Latin America, p.40-41.

[98]Bulmer-Thomas, *Economic History of Latin America*, p.205.

[99]Bulmer-Thomas, *Economic History of Latin America*, p.209. Rothermund also asserts that the recovery in Latin America was to a larger extent due to the revival of exports than the Economic Commission for Latin America (ECLA) economists believed. Rothermund, p.99.

[100]Also, since consumer credits were scarce, demand for non-durables, rather than durables, such as beverages and textiles, underwent substantial growth. Bulmer-Thomas, *Economic History of Latin America*, p.209

[101]Alice Teichova, East-Central and South-East Europe 1913–1939. In Peter Mathias and Sidney Pollard, editors, *The Cambridge Economic History of Europe, vol. 8, The Industrial Economies: The Development of Economic and Social Policies.* Cambridge University Press, 1989, pp.939-42.

after the depression, it was more pronounced in the Eastern European and Balkan countries, as autarchic inclinations were greatly enhanced by the nationalist and dictatorial regimes in those countries after 1929.[102] Governments came to exercise strict control over international payments and foreign trade in order to prevent currency depreciations and maintain trade balances. State intervention also aimed to offset the shrinkage in domestic demand via cartel legislation, forced syndicalisation and direct state entrepreneurship. In this way, industrial growth in those countries was strictly associated with import policies, as the composition of imports sharply shifted away from consumer goods, which were increasingly supplied by import-substituting local producers.[103]

In such a strict framework, therefore, bilateralism with Germany seemed the only way out to ease the depression in the region's export sectors.[104] Lampe and Jackson argue that clearing arrangements increasingly replaced the use of convertible currencies at fixed exchange rates, which encouraged barter trade.[105] They show that the share of clearing in the foreign trade of Bulgaria, Greece, Romania and Yugoslavia exceeded one half in the second half of the 1930s and in these arrangements the ReichMark was consistently overvalued to attract imports from the region. [106]

It is impossible to overlook the fact that Turkey had much in common with Eastern and Southeastern European countries in terms of import-repressing policies, conservative exchange rate policies, the rise in state entrepreneur-

[102] A similar emphasis can be found in Derek Aldcroft, *The European Economy 1914-2000.* Routledge, 2001, p.76.

[103] Teichova, East-Central and South-East Europe 1913–1939, p.956. For similar arguments, see John R. Lampe and Martin R. Jackson, *Balkan Economic History, 1550-1950: From Imperial Borderlands to Developed Nations.* Indiana University Press, 1982, p.491.

[104] The League of Nations argued that the goal of the clearing policy was to open trade controls to help export industries.(League of Nations, *Commercial Policy in the Interwar Period*, p. 70). Similarly, Henderson points out that the clearing system aimed at increasing trade volume, even at low terms of trade, and Balkan countries enjoyed a ready export market in return.(Hubert Douglas Henderson, International Economic History of the Interwar Period. In *The Interwar Years and Other Papers.* Oxford University Press, 1955. – chapter 4, pp. 35-36)

[105] Lampe and Jackson, *Balkan Economic History*, pp.461-64.

[106] The rationale of German policy is a matter of controversy. For Kitson, Germany gave up terms of trade advantages by paying higher prices for imports from the Eastern European countries, but for Neal, it was less costly than usually thought. Michael Kitson, The Move to Autarky: The Political Economy of Nazi Trade Policy. *Department of Applied Economics, University of Cambridge, Working Paper No.9201* 1992; and Larry Neal, The Economics and Finance of Bilateral Clearing Agreements: Germany, 1934-8. *Economic History Review*, 32(3) 1979.

ship, the favourable domestic environment for import-substituting activities and finally the increasing role of the clearing system. This Eastern European policy pattern does not, however, contradict the theoretical framework described above, since it seems that while protectionism was pursued in the region to divert industrial demand towards domestic production, the state sector increased to make up for the lack of investment or to boost the domestic demand via government demand.

In a nutshell, the crisis in the periphery was the derivative of the depression in the industrial world, whereas the recovery was to a certain extent their own product. In the terminology of Diaz-Alejandro, the interaction between the extent of shock, policies and the capacity of domestic agents to exploit the opportunities determined economic performance. The experience of developing countries differed from the industrial core in terms of the origins of the crisis. For them, the depression was almost totally external, as the peripheral economies were more exposed to external shocks and their capacities to respond were more limited. These differences led to a more dramatic shift in policy orientation than in the industrial countries. The policies mainly grew inward looking in all countries, while the devaluation and expansionary policies were more common in Latin America and led to earlier recoveries. By contrast, the countries that maintained fixed exchange rates resorted to import repression and government intervention more heavily, as we saw in Eastern Europe. However, whatever the policy instruments were, the main policy objective was to divert demand towards domestic production, due in part to the persistent crisis in the export sector or the empowering of the import-substituting interests.

Yet such policies were not costless. Inward-looking policies brought artificially high domestic prices, price distortions and entrenched the interests of certain domestic groups, which exploited the economic opportunities created by the new policy orientations. But it is also true not only that economic recovery during the 1930s was greatly helped by the heterodox policies but that many reactive countries also made progress towards the structural change and the beginning of industrialisation.

## 1.4. Dissertation Contents and Structure

The main themes this dissertation addresses and its methodology are based on an understanding of the role of agriculture and industry in economic recovery in the 1930s. First, the economies of Turkey and Egypt were predominantly agricultural, so the dynamics of agricultural growth had direct and indirect effects on aggregate income. The direct effect was due to the large share of the agricultural sector in GDP, which was no less than one half in both countries. The indirect effect was the result of spillover effects to other sectors. In principle, agriculture supports the industrial sector by providing cheap food, labour, savings and demand for manufactures.[107] And in interwar economies the role of agriculture was even greater, not only in agricultural economies but also in industrial countries. As shown by Madsen, this was because the role of foreign trade was reduced and the recovery was mainly dependent on home markets where rural demand was a major part of domestic demand.[108]

For this reason, pinning down the extent and determinants of agricultural growth is the essential step towards understanding economic performance as a whole. Second, despite the lack of structural change in Turkey and Egypt, both countries seemingly witnessed industrial growth during the 1930s, even though the quantitative evidence has been inadequate up to now. The beginning of industrialisation during the 1930s in both countries has been attributed to various factors, such as the rise in protectionism, state intervention and changes in investment patterns due to the agricultural crisis. However, all these remain as reasonable hypotheses that need to be elaborated upon. Therefore, the measurement and explanation of agricultural and industrial growth are the main methodology employed in the present work. In discussing industrial growth, the import-restricting policies are given special attention. What was the extent of agricultural and industrial growth? And what were their determinants? In particular, what was the impact of tariff protection on industrial growth?

In answering these questions, the present work does not cover other important aspects of economic performance. For one thing, this is not a growth-accounting exercise. Estimates of capital and labour are not available or are

[107]Bruce Johnston and John Mellor, The Role of Agriculture in Economic Development. *American Economic Review*, 51(4) 1961; and W. Arthur Lewis, *Evolution of International Economic Order*. Princeton University Press, 1977.

[108]Madsen, Agricultural Crisis

not of sufficient quality to do such an analysis. Moreover, the time frame of the present study is limited to 1925-1939 for Turkey and 1919-1939 for Egypt, so it does not allow us to capture the long-term aspects of economic growth. This choice is largely driven by the available quantitative data, although focusing on the interwar period provides a more coherent time frame in terms of external shocks and the policies adopted in each country. Therefore, the reader should bear in mind that we are interested in the short-term sectoral analysis and policy responses to external influences, rather than the fundamental causes of economic growth.

Similarly, this work is not concerned with policy making per se either. While the Turkish historiography emphasises import-substituting industrialisation and *etatism* during the 1930s, the Egyptian literature is mostly concerned with the problems of the agricultural sector. This difference is meaningful in view of the different intellectual traditions and the importance of cotton in Egyptian economy. From the very beginning of the Turkish Republic, industrial development has been considered by policy makers and intellectuals the most crucial means of achieving 'independence', 'self-sufficiency' or development itself, whereas the role of cotton in the Egyptian economy was so large that even when industrialisation was urgently desired, agriculture continued to be seen as an essential prerequisite of industrial development. The policies adopted during the 1930s remarkably show this contrast. While they were oriented towards the urban sector in Turkey despite the largeness of the rural populations and the difficulties in agriculture, Egypt pursued a balanced-growth model aiming to sustain the expansion of both agriculture and industry. Here, however, we are less concerned with the origins of these different policy approaches than with their effects.

The dissertation is composed of three parts. The first and second parts, each including three chapters, present, first, the measurement and analysis of agricultural growth, second, measurement of industrial growth and, third, an explanation of industrial growth in Turkey and Egypt respectively. These two parts follow almost the same methodologies in each chapter in the same order. Finally the last part, which is Conclusion, brings together the findings of earlier chapters by comparing and contrasting the interwar Turkish and Egyptian economies.

Chapter 2 examines agricultural growth in Turkey by making some corrections to the existing output series and further decomposing the crop output value into its components (yields, prices, acreage and crop-mix) for the benchmark years. This exercise shows the extent to which output growth was determined by each factor. As pointed out above, agricultural growth in the second half of the 1930s has to a large extent been ignored in the received wisdom and the chapter argues that it was driven not only by an open land frontier, as largely suggested in the literature, but also the concomitant improvement in yields, particularly of wheat and cash crops. Finally it calculates the average per capita farm income, which shows how the rural demand for manufactures changed.

Chapter 3 turns its attention to the industrial sector. The existing interpretations of industrialisation in Turkey during the 1930s largely draw on the aggregate value added series provided by Bulutay et al..[109] But the construction of this series raises doubts about its accuracy. In order to provide a more consistent and reliable series, we first estimate the growth of physical output in each major sector and combine them by using constant value added shares, adjusted for the change of output composition over time. The new series corrects for the upward bias in the existing series and, in addition, shows the sectoral aspects of industrial growth. it is shown that the aggregate output increased by between 8.7 percent per annum over 1925-1939, the textiles grew most and the other sectors also saw substantial growth.

Trade policies are the subject matter of Chapter 4. Since exchange rates, monetary and fiscal policies were not particularly expansionary in Turkey, protectionism appears to have been the most significant policy tool employed to stimulate domestic industries. On the other hand, however, the industrial sector also enjoyed favourable relative prices, low wages and beneficial changes in the agricultural sector. Therefore, the analysis in this chapter aims to differentiate between such effects. The empirical framework employed for this purpose is a partial equilibrium analysis and its focus is textiles, which is chosen because, first, it was the leading growth sector within manufacturing during the 1930s, second, import substitution was deepest in textiles and, third, the supply and demand elasticities were probably close for cotton, silk, woollen textiles and hemp goods. The panel data estimates show that both tariff-inclusive import prices and domestic income were strong predictors of the growth of textiles output.

[109] Bulutay et al., *Türkiye'nin Milli Geliri*.

Chapter 5 discusses growth in Egyptian agriculture. The decomposition of crop output shows that the increase in yields to a considerable extent offset the impact of the constraint on expansion of acreage under cultivation and massive decline in prices, which is in line with the arguments for the shift towards more intensive cultivation in the interwar period. Afterwards the chapter presents the first estimates of value added in agriculture and per capita farm income. The main argument of this chapter is that the performance of Egyptian agriculture was noteworthy in view of the massive shock in cotton prices, as well as the previous deterioration in yields and structural constraints.

Chapter 6 attempts to estimate the industrial output growth in major sectors in Egypt at the sectoral and aggregate level for the first time. Just as in Chapter 4, the main sources are direct output data derived from various sources, such as British trade reports, the official statistics on raw material consumption and foreign trade data. The results are cross checked with the existing qualitative data, previous benchmark estimates and consumption estimates. It s shown that the industrial growth grew by 1.3 percent per annum over 1919-1939. The chapter also finds that industrial growth was highly skewed in Egypt during the 1930s, in that very strong growth in textiles (7.9 percent per annum over 1919-1939) stands in stark contrast with the stagnation or moderate growth in other sectors. Also, this pattern was the main difference with the Turkish pattern.

Chapter 7 repeats the partial equilibrium analysis of textiles output for Egypt. It turns out that the tariff-inclusive import prices and the aggregate prices relative to the raw material prices were significant drivers of output growth, whereas domestic income put a check on further expansion. It is argued that while import-repression worked out quite well in stimulating textiles output, the stagnant home demand limited the scope of growth in non-textiles sectors.

Chapter 8 puts together the findings of the earlier chapters to compare and contrast the economic experience of Egypt and Turkey. It presents the main arguments of this dissertation in a more compact form, while also looking at the role played by monetary and fiscal policies in the 1930s. The main argument put forward is that in both countries macro policies remained passive and/or pro-cyclical, but the policy activism was exhibited in field of import policies. In this sense, the protectionist policies were more aggressive in Turkey. However, the effect of the difference in policy activism was more observed on the extent of industrialisation rather than on the income per capita divergence. Instead, the latter was the result of the combination of different sets of factor endowments, the structural constraints inherited from the earlier period, different paths of institutional development. Turkey was well endowed with factor endowments, particularly in agriculture, conducive to economic growth, which was in most likelihood helped by state entrepreneurship, whereas Egypt suffered from the economic constraints inherited from pre-World War I period and massive external shocks, that combined to led to stagnant domestic demand. Furthermore the lack of political and institutional capacity in Egypt added to the growth deadlock when expansionary policies were most needed.

Consequently, this dissertation presents a detailed quantitative assessment of the growth performance in Egypt and Turkey in the interwar period. It not only sheds light on the extent and sources of economic performance in these economies, but also fills a major empirical gap in the literature by suggesting new agricultural and industrial output series. Based on paired case studies of two large economies in the Middle East, it also contributes to a better understanding of the experience of primary-producing countries in the interwar depression.

# 2. Agriculture in Interwar Turkey: Overcoming Deflation

## 2.1. Introduction

The present chapter focuses on the growth of agricultural production in Turkey. To begin, it would be useful to recapitulate the main features of Turkish agriculture by the beginning of 1920s, as was outlined in the Introduction. First and foremost, the agricultural sector was characterised by an open land frontier and relative labour force scarcity due to the wartime losses of the earlier decade. This particular factor composition in favour of land became one of the key factors determining agriculture's growth path up to the 1950s. Second, commodity markets were to a large extent fragmented, with the coastal cash-crop producing areas, the Aegean and Mediterranean regions, being more integrated with foreign markets, whereas the Anatolian hinterland largely consisted of small loosely connected localities. Third, the average farm size was small, as owner-operator peasant families with a pair of oxen and a piece of land was the rule, except in a few regions where landlordism and sharecropping was prevalent, such as Southeast Anatolia and the cotton-producing regions, Çukurova in the South and Söke in the West.

It is therefore plausible to maintain that at the beginning of the 1920s the new republican regime took over a farm sector where there was a long way to go in terms of land use, market integration and commercialisation, so that the prospect of agricultural growth was bright at least in the short and medium term. Since three quarters of the total labour force was employed, and around one half of the national income was produced, in the farm sector, its growth potential was key to overall macroeconomic growth.

The conventional wisdom has nonetheless focused on two issues with regard to the agricultural sector in the interwar period. First, the concept of recovery has been put forward, which refers to the fact that much of the resources, basically land, remained unused during the earlier decade due to the wartime mobilisation of the labour force and the large-scale population exchanges. Most of the growth in the coming decades was consequently dependent on the recovery of the population and thus of the land under cultivation.[1] This interpretation is not totally wrong, yet it is not an adequate account because, as will be shown shortly, agricultural net output returned to the levels of the prewar period by 1930, and slightly earlier in per capita terms, so the growth of the 1930s cannot be explained by any kind of *recovery* concept.(Figure 2.2)

Second, much of the literature has underlined the role of massive deflation in the immediate aftermath of the Great Depression and the deteriorating domestic terms of trade for agriculture, which left the rural population worse-off until World War II. Accordingly, the peasantry was squeezed in the interest of rapid industrialisation during the 1930s.[2] The weakness of this argument is that the increase in crop output in the second half of the 1930s goes largely unnoticed, as has been pointed out in a few studies.[3] While it is true that after 1929 peasants had to pay more and more for the same amount of industrial goods, rural welfare cannot be explained only by relative prices, especially given that agriculture still grew despite persistently low prices. Under the assumptions of limited land, labour and capital, the agricultural sector might have been worse off in competing against other sectors for production factors. Yet if there are under-utilised resources in place, as was the case in Turkey in the interwar years, it can be argued along the lines of dual economy models that the sectoral relationship can be mutually reinforcing rather than competitive because agriculture can simultaneously ensure both cheap food and demand for industrial products without sacrificing farm output. This chapter shows that this was the case in Turkey, as agriculture supported industrial growth due to various factors, such as the open land frontier, population growth and increasing land productivity. It is shown that the argument that the agricultural growth of the early republican period relied almost exclus-

[1] Hansen, *Egypt and Turkey*, p.477.

[2] Boratav, *Türkiye İktisat Tarihi*, pp.61-62.

[3] Şevket Pamuk, İkinci Dünya Savaşı Yıllarında Devlet, Tarımsal Yapılar ve Bölüşüm. In Şevket Pamuk and Zafer Toprak, editors, *Türkiye'de Tarımsal Yapılar*. Yurt Yayınevi, 1988; Ayça Akarçay, *Agricultural Growth in the 1930s*. Master's thesis, Boğaziçi University, 1999; Pamuk, Intervention During the Great Depression; and Kazgan, Türkiye Ekonomisinde Depresyon.

ively on the expansion of land acreage and population growth is rather over simplistic, as it ignores the substantial improvements in crop yields and the complex dynamics of agricultural growth.

This chapter presents, to begin with, the revised estimates of agricultural (crop and livestock) output by making a number of major and minor revisions to the existing data. It then pins down the sources of the agricultural growth in order to suggest a reasonable explanation of why it occurred. To do so, the crop output series are decomposed into their components (price, acreage, yield and crop composition). And finally farm income per capita is calculated to get a sense of changes in rural welfare, as well as to obtain a sensible measure of rural demand for the products of other sectors. The period covered is 1925-1939, as reliable aggregate evidence does not extend back earlier.

## 2.2. Revised Output Estimates

Bulutay et al. provide the most comprehensive estimates of agricultural production before World War II as part of their study of Turkey's national income.[4] Almost all the historiography now rests on this study, as no further revision to it has been made. At the time, Bulutay and his colleagues made use of all the official data on output, prices and acreage, making some revisions to the raw data to be able to link it with the official figures of the post-1948 period.[5] Methodologically, they calculated the market value of the agricultural produce, farm and livestock output, including fisheries and hunting, net of production costs. The crop base is quite comprehensive as they took into account all the major field crops (cereals and the cash crops like sugar beet, cotton and tobacco), fruits and vegetables.[6]

İstatistik Umum Müdürlüğü (IUM), the central government institution which collected and published economic data, started to publish annual series on output and acreage, on which Bulutay et al. relied, in 1928.[7] Then, the

[4] Bulutay et al., *Türkiye'nin Milli Geliri*.

[5] Note that by "acreage" we mean the cropped area rather than the cultivated area, on which no information exists.

[6] The full list of products is: wheat, barley, rye, maize, beans, broad beans, peas, lentils, vetch, tobacco, sugar beet, potatoes, cotton, sesame, onion, cobnuts, walnuts, pistachio, figs, grapes, apples, pears and olives.

[7] The Merkezi İstatistik Dairesi (Central Statistical Agency) was established in 1926 and renamed İstatistik Umum Müdürlüğü in 1930 with Law 1554. Turkey, *Resmi Gazete*, 1418, 8/2/1930. For a brief history of the institution, see Türkiye İstatistik Kurumu:

subsequent official publications incorporated information extracted from the 1927 Agricultural Census to their annual series. And for 1925-26, the incomplete data collected from regional administrations were linked by the IUM to the series that followed. While they admitted that this discontinuity in the construction of the series possibly caused inconsistencies in the data, Bulutay et al. had no choice but to use this data set, since there was no way of making a systematic and extensive correction.

However, a closer inspection suggests that some useful corrections are necessary and possible. Firstly, the official cotton series seems improbable, as the yield figures show an unusual and dramatic decline from the 1920s onwards (from 300-500 to 100-200 kg per hectare) for no explicable reason and in contrast to the trend in the yields of other crops.[8] Bulutay et al. notices this problem and suggests replacing the official series with new ones based on the assumption that cotton yields were equal to their 1930 level for the years prior to 1931.[9] Obviously, their suggestion is far from satisfactory.

Instead of this arbitrary solution, we will here construct new raw cotton output series by going back to the original regional sources and reconstructing all the output series from the beginning. Cotton is perhaps the only crop for which such an extensive reconstruction is possible because its cultivation and marketing were concentrated in the Adana and İzmir regions, where the regional commodity exchanges published a number of data sources and market reports. These localities were the centres of two large cotton-producing regions, Çukurova-Mersin and the Aegean respectively, which were responsible for no less than three quarters of the gross cotton output of the country.[10] Thus the present series are based on the sources published by the Adana Commodity Exchange and the Izmir Chamber of Commerce and Industry.[11]

The methodology proceeds as follows. First, the annual cotton output of

http://www.tuik.gov.tr/UstMenu.do?metod=tarihce

[8]The most detailed sources on the cotton output of Adana and surrounding regions, which produced more than half of the aggregate cotton output, does not show any negative trend in cotton yields. Süleyman Sergici, *Adana Ticaret Borsasının Ellinci Yıl Kitabı.* Adana Ticaret Borsası, 1964; Adana Ticaret ve Zahire Borsası, *Adana Ticaret ve Zahire Borsası Yıllığı*

[9]Bulutay et al., pp.19-20.

[10]Adana Ticaret ve Zahire Borsası, Yıllık, 1938/1939.

[11]Adana Ticaret ve Zahire Borsası, Yıllık; İzmir Ticaret ve Sanayi Odası, *Izmir Ticaret ve Sanayi Odası Mecmuası*, 1933(8) and 1939(1); "Bugünkü ve yarınki Türk pamukçuluğu", İzmir Ticaret ve Sanayi Odası, Mecmua (October 1935); and Zeki Doğanoğlu, *Mıntıkamızın Kitabı.* Ege Sanayi ve Ticaret Odası, 1930, pp. 53-64.

Table 2.1.: Cotton Output Series for Turkey, 1923-1939

| | Adana | İzmir | Iğdır | Sum of regional output | Weight equivalent of a bale | Total documented output | Own total estimate | Official total output | Bulutay et al (1974) estimates |
|---|---|---|---|---|---|---|---|---|---|
| | bales | bales | bales | bales | kg | tons | tons | tons | tons |
| 1923 | 52114 | 25125 | 12000 | 89239 | 200 | 17848 | 24195 | | 30096 |
| 1924 | 104228 | 28715 | 12000 | 144943 | 200 | 28989 | 39298 | | 38935 |
| 1925 | 63188 | 22500 | 12000 | 97688 | 200 | 19538 | 26486 | 76011 | 49576 |
| 1926 | 48331 | 27500 | 12000 | 87831 | 200 | 17566 | 23813 | 27342 | 13167 |
| 1927 | 61662 | 25000 | 12000 | 98662 | 200 | 19732 | 26750 | 38905 | 28251 |
| 1928 | 49119 | 35000 | 12000 | 96119 | 200 | 19224 | 26060 | 76110 | 50599 |
| 1929 | 95170 | 30000 | 12000 | 137170 | 207 | 28394 | 38492 | 63556 | 52719 |
| 1930 | 83763 | 26000 | 12000 | 121763 | 204 | 24840 | 33673 | 51435 | 51435 |
| 1931 | 79067 | 18000 | 12000 | 109067 | 206 | 22468 | 30458 | 61746 | 61746 |
| 1932 | 34353 | 20000 | 12000 | 66353 | 221 | 14664 | 19879 | 19879 | 19879 |
| 1933 | 39319 | 35000 | 12000 | 86319 | 219 | 18904 | 27791 | 27791 | 27791 |
| 1934 | 85004 | 50000 | 12000 | 147004 | 203 | 29842 | 37762 | 37762 | 37762 |
| 1935 | 106827 | 60000 | 12000 | 178827 | 215 | 38448 | 52228 | 52228 | 52228 |
| 1936 | 113974 | 50000 | 12000 | 175974 | 213 | 37482 | 51068 | 51068 | 51068 |
| 1937 | 122609 | 70000 | 12000 | 204609 | 221 | 45219 | 67185 | 67185 | 67185 |
| 1938 | 110514 | 100000 | 12000 | 222514 | 206 | 45838 | 64731 | 64731 | 64731 |
| 1939 | | | | | | | 63950 | 63950 | 63950 |

Source: See the text.

three principal regions (the Aegean, Çukurova and Iğdır) is obtained. It is possible to derive the uninterrupted annual series for the Aegean and Çukurova regions, but we have only two data points for Iğdır, which was a small production area in eastern Anatolia: 12,000 bales (a local unit of weight) in 1929 and 12,500 bales in 1939. Since these numbers indicate some degree of constancy over time and the output of Iğdır represents a small share of the aggregate (less than 10 percent), we prefer to take Iğdır's output as equal to 12,000 bales for all years. The next step is to convert this into the weight in tons. The weight equivalent of a bale varied from one region to another and it was usually taken to be equal to 200 kg, although this changed every year. Adana sources provide the precise equivalent of one bale for each year after 1930, which varied between 200-220 kg. Therefore, these figures are used for 1930-1939, and for the earlier years we assume that one bale equals 200 kg. In this way, this method provides the sum of cotton output in three major regions for 1925-1939.

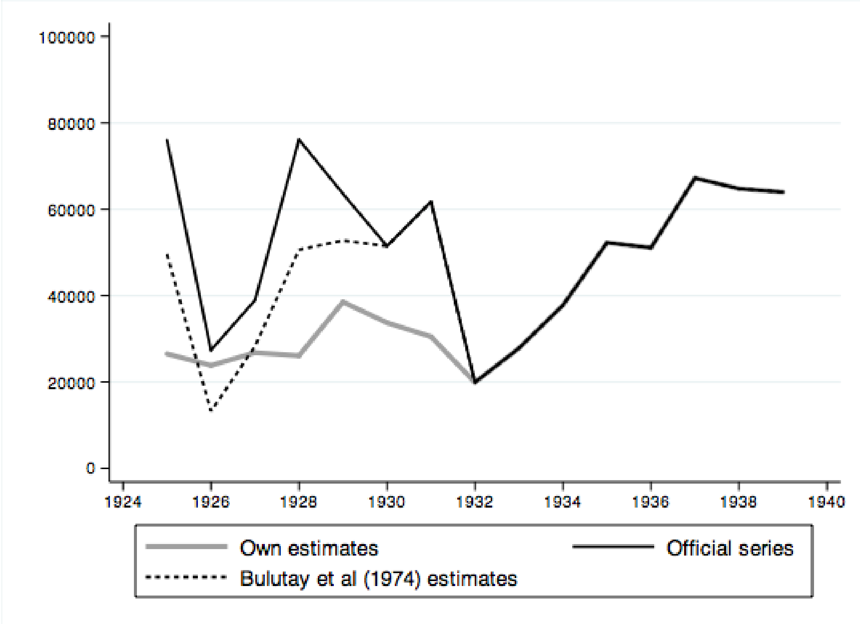
These figures appear as moving in perfect line with the official series after 1931, so they seem reliable and we can extrapolate the official 1932 figure with our sum of regional output for the earlier period ("own total estimate" column in Table 2.1). The difference between our own series of cotton output and the existing ones is clearly observed in Figure 2.1, which shows that both official estimates and Bulutay et al.'s arbitrary correction leads to a massive upward bias for the 1920s. However, one should expect an increase in cotton output due to the greater use of local raw cotton in local factories and the continued improvements in the cotton yields in the 1930s – just as our new estimate implies. These points will be taken up shortly.

The second revision to the existing dataset is that we add the cotton seed series derived from the cotton output estimates. To do so, the estimated cotton output is simply multiplied by two to obtain the seed output. This coefficient is obtained from Adana Ticaret ve Zahire Borsası, Yıllık, which also gives the cotton seed prices of the Adana Commodity Exchange for 1925-1939.[12] Since Adana was the most important location in the cotton seed trade at the time, those prices can be considered representative.

Finally, the last revision regards wheat output: Bulutay et al. change the original wheat output series by decreasing all the annual figures by a fixed

[12] Adana Ticaret ve Zahire Borsası, Yıllık.

Figure 2.1.: New and Old Cotton Output Series for Turkey (tons), 1925-1929




Source: Table 2.1

amount, which is justified by referring to the method the IUM employed to correct for the 1948 wheat figure in another study due to over-reporting in that year.[13] But this does not seem to be well justified because it cannot be arbitrarily taken for granted that there were the same reporting biases in different years. For this reason, here we instead use the official series for wheat production.

As far as output and acreage data are concerned, no further changes are made to the official series. However, it should be noted that the corrections to cotton and wheat are important owing to their high shares of total output value.

As for the price data, Bulutay et al. relies on Aktan, who produced the most comprehensive and reliable documentation of the farm-gate prices of field crops for the period after 1926.[14] For fruit and vegetables, Bulutay et al. make their own estimates. Their main handicap is that all the original price series are replaced by the ones which they produce by extrapolating the official 1948

[13]Bulutay et al., *Türkiye'nin Milli Geliri*, p.7. The IUM revised downward the reported wheat output of 1948 from 4.9 million to 4.4 million tons. Likewise, Bulutay et al. decrease the reported figures by the same ratio for all the earlier years, because they want to maintain consistency with IUM's methods.

[14]Reşat Aktan, *Türkiye'de Zirai Mahsül Fiyatları*. Ankara Siyasal Bilgiler Fakültesi Yayınları, 1955.

figures back all along to the earlier years with Aktan's series. However, the latter series are used as proxy because they intend to link the post-1948 series with the earlier period. However, as in the case of wheat production, this is far from satisfactory. Therefore, we prefer to stick with Aktan's original data for the years after 1926. Finally, Bulutay et al. (1974) calculates 1924-1925 prices based on the change of export and import prices, which is reasonable for the export goods but not for the others. Instead, we base the 1925 prices on the change of wholesale Istanbul prices between 1925 and 1926, which is the only available price data for 1925.[15] All the details on sources can found in the Data Appendix of this chapter.

Based on this methodology, Tables 2.4-2.6 present the revised output, price and acreage series for 15 field crops and the output and price data for eight fruits during 1925-1939. Note that barley output is left out from this calculation of the agricultural output because it was used as the major animal feed and double counting in total value added needs to be avoided. The fruit output is based on four separate series: hazelnuts, figs, grapes and olives, for which the output figures are available for the entire period. The series are then multiplied by a fixed coefficient, 1.32, because the ratio of the value of these four fruits to the whole fruit output, which also includes walnuts, pistachios, apples and pears, was around 0.76 (1/1.32) with only a very small variation during 1933-1939.

On the cost side, Bulutay et al. calculates the costs of seeds, chemical fertilisers, manure, animal use, gasoline, machinery maintenance, waste, irrigation and weeding. Among them, we only take into account seed and fertiliser costs, oil, machinery maintenance costs and waste, since other figures are either no more than simple guesses making up a very minimal part of the costs (in the case of the irrigation and weeding) or are ignored, in the case of animal use and manure, because they are the output of livestock and, as said above, the double counting in the estimation of the gross value added of farm and livestock output should be avoided.[16]

To calculate the annual seeding cost, the seeding rates are multiplied by the next year's crop acreage and the average current prices. We use the seeding rates for the field crops as calculated by the IUM, which are assumed to be

[15] İstanbul Ticaret ve Zahire Borsası, *İstanbul Ticaret ve Zahire Borsası Yıllığı*.

[16] The cost of weeding and irrigation is estimated as 0.3 percent of total cultivation costs in 1948. Bulutay et al., *Türkiye'nin Milli Geliri*, p.38.

constant over the whole period.[17] As for the fertiliser costs, since Turkey was not a chemical fertiliser-producing country, the volume of fertilisers used was small in amount and wholly dependent upon imports, which were well documented in the foreign trade publications.[18]

Other estimates of costs follow Bulutay et al.. In line with the official method, we assume the waste rate was 3 percent for cereals and other field crops and 15 percent for fruit and vegetables.[19] Oil and machinery maintenance costs are estimated by Bulutay et al. by extrapolating the 1948 figure with the change in the area under cultivation. The method seems sensible because there was not any significant increase in the use of machinery and the number of tractors until the 1950s. Indeed, the large-scale use of modern facilities such as water pumps, tractors, etc. only started in the 1950s.[20] Table 2.7 presents the estimated costs of seeds, machinery, maintenance, oil and chemical fertilisers.

Finally, the livestock value series in Bulutay et al. (meat, wool, raw skin and dairy products) are of relatively high quality, as they follow the national income accounting practice of the IUM in the postwar period.[21] We use the same series, while deducting the value of manure, because manure was an input into crop production.

Figure 2.2 presents the net agricultural output (both crop and livestock) in gross and per worker terms. Our estimates are extended back to 1913 to gauge the extent and timing of the post-war agricultural recovery.[22]Both series

[17]Seeding rates are taken as follows: Wheat (180 kg/ha), barley (165 kg/ha), rye (180 kg/ha), maize (60 kg/ha), beans (100 kg/ha), broad beans (200 kg/ha), lentils (80 kg/ha), vetch (80 kg/ha), peas (120 kg/ha), potatoes (2500 kg/ha), cotton (40 kg/ha), onions (400 kg/ha) and sesame (30 kg/ha). Bulutay et al., *Türkiye'nin Milli Geliri*, Table 2.10.

[18]Bulutay et al., *Türkiye'nin Milli Geliri*, Table 2.12. Super phosphate and ammonium phosphate only came to be produced in Turkey from the 1940s onwards.

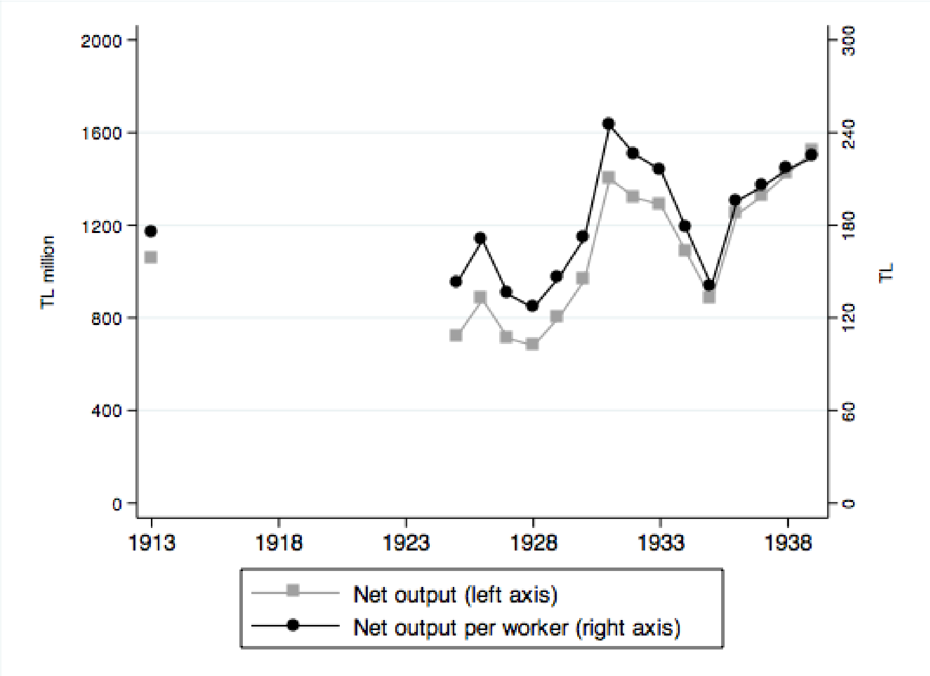
[19]Bulutay et al., *Türkiye'nin Milli Geliri*, p.38.

[20]Unfortunately, the data on the number of various kinds of agricultural machinery in the 1927 and 1950 censuses are not precisely comparable, since the coverage changes over time. However, the number of tractors did stay around 1000-1750 between 1936 and 1948, when there was a boom in the numbers due to the Marshall Program. Similarly, other tools and machines did not proliferate during the 1940s. Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Zirai İstatistik Özetleri 1936-1956*. 1957.

[21]Bulutay et al., *Türkiye'nin Milli Geliri*, Supplementary Tables 19-23.

[22]For the 1913 level of agricultural output, see Özel, Economy of Turkey, p.12. The rural labour force is obtained from Turkey, Devlet İstatistik Müdürlüğü, *İstatistik Göstergeler 1923-1990*. 1990. The labour force is assumed to have changed at the same rate as the total population between 1913 and 1925. For deflating the current-price output figures, we calculate a Laspeyres crop price index, based on our dataset of 16 crops between 1925

Figure 2.2.: Turkey's Net Agricultural Output: Total and Per Worker (1927 Prices), 1913-1939




Source: Table 2.8.

show that by 1930 the net output had returned to its 1913 level, although the gross output followed it by a short time lag. Having a sharp decline between 1931 and 1935, output was restored in 1936 at a level slightly higher than in 1913. The extent and cause of the decline in output can best be seen in the movement of prices in Figure 2.3, which shows that prices halved in a few years after 1929 and decreased by almost two-thirds in the case of wheat.[23] In the rest of the decade, cereal prices remained stable, while cash crops saw a small recovery. Therefore, the agricultural recovery was almost completed by 1930, as per capita output reached pre-war levels and the sharp collapse in output in the early 1930s was corrected from 1936 onwards.

and 1929. Then it is linked to 1913 with the "combined price index" of Özel, Economy of Turkey, p.11. Note that the population and agricultural output figures that Özel referred to are already corrected for the current borders of Turkey.

[23]Silier's claim that the decline in agricultural prices started in 1926 rather than 1930 is misleading, in that it is based on the temporary decline after 1925, which was corrected in the following years. Oya Silier, *Türkiye'de Tarımsal Yapının Gelişimi (1923-1938)*. Boğaziçi Üniversitesi, 1981, pp.50-51.

Figure 2.3.: Major Crop Prices in Turkey (Nominal TL, 1927=100), 1925-1939


Source: Table 2.5.

## 2.3. Sources of Output Growth

The preceding section argued that agricultural output at current prices followed a recovery-decline-growth cycle with a high degree of volatility, which mostly reflected the atypical price pattern of the time. However, it is not obvious why growth occurred in the second half of the 1930s, given that it took place against the backdrop of persistently low agricultural prices. One therefore needs to identify the sources of this output growth, which has not been attempted so far in the literature. The decomposition analysis provided below aims to pin down the role of area expansion, yields and prices in the change in crop output.

In the agricultural economics literature, a number of methods have been developed since the 1960s to break down total output into its components.[24] Since we are interested in the contribution of each factor to the rate of change rather than to the absolute value of output *per se*, we employ a multiplicative model developed by Jamal and Zaman, which expresses the total change in output as the multiplication of changes in the acreage, yield, price and crop-

[24]For a brief evaluation of additive and multiplicative methods and alternative component specifications, see Kiran Kumar Kakarlapudi, Decomposition Analysis of Agricultural Growth: a Review of Measurement Issues. *Munich Personal RePEc Archive* 2007.

composition components. The index formulas can be found in Appendix A.[25] The first three components seem rather straightforward, while the crop composition needs a few words. By including it, the aim is to account for the switch to higher-valued crops due to the change of value of each crop per unit of area. So when the acreage component is described as the change of total acreage under cultivation, then the crop-composition effect is proxied with the relative share of each crop in the total acreage and weighted by yields times prices.

Our dataset covers the acreage, yield and prices series for 16 crops for the period 1925-1939 (Tables 2.4,2.5 and 2.6) and Table 2.2 presents the results of the decomposition analysis. The figures in the main lines represent the change of each parameter from the base year to the final year, that is, $X_t/X_o$ where t is the final year and o the base year. For instance, the total output increased by 86 percent and the price index increased by four percent between 1925 and 1929, whereas the crop-mix index declined by one percent. The multiplication of all component changes provides the total change. The contribution of each component to the change in total output is then shown in parentheses beneath each line. For instance, between 1925 and 1929, the change in prices explains 6.7 percent of the total change in output, while yields account for 87.4 percent. In this way, all figures in parentheses add up to 100 in each period.

If one looks at the whole period under consideration, 1925-1939, the total output seems to have increased by a modest amount, 12 percent, yet the component growth rates varied greatly: while the average prices declined by 66 percent, the common yield index increased by 75 and the acreage index by 48 percent. Both 1925 and 1930 saw good harvests, unlike 1927, 1928 and 1932, so the yields referred to above represent peak-to-peak figures in terms of yields. Therefore, it seems that, in order of importance, the massive deflation was offset by improving yields and land expansion. Meanwhile, crop composition did not make any significant contribution.

On the other hand, the growth dynamics showed a notable variation in the sub-periods. Three distinct periods can easily be discerned from the movement of total output: moderate growth during 1925-1929, peak-to-trough during 1929-1932, and trough-to-peak during 1932-1939. However, since the rainfall was extremely bad in 1932, 1933 is taken as a reference year in con-

[25] Haroon Jamal and Asad Zaman, Decomposition of Growth Trend in Agriculture: Another Approach. *Indian Journal of Agricultural Economics*, 47(4) 1992.

Table 2.2.: Crop Output Decomposition, Turkey

| | Total output change | Price change | Yield change | Crop-composition change | Acreage change |
|---|---|---|---|---|---|
| 1925-29 | 1.86 | 1.04 | 1.72 | 0.99 | 1.04 |
| % | (100) | (6.73) | (87.40) | (-0.84) | (6.72) |
| 1929-33 | 0.28 | 0.30 | 0.93 | 1.01 | 1.01 |
| % | (100) | (95.66) | (5.57) | (-0.47) | (-0.76) |
| 1933-39 | 2.15 | 1.37 | 1.09 | 1.03 | 1.40 |
| % | (100) | (41.35) | (10.72) | (3.79) | (44.14) |
| 1935-1939 | 1.59 | 0.99 | 1.32 | 1.03 | 1.18 |
| % | (100) | (-2.88) | (60.26) | (7.13) | (35.49) |
| **1925-39** | **1.12** | **0.44** | **1.75** | **0.98** | **1.48** |

Note: In each line the base year value is equal to 1 and the multiplication of the change in each component yields the total output change. The figures in the parentheses represent the contribution of each factor to the total change.

ducting the decomposition for each sub-period, in order to avoid the impact of random rainfall shocks. In this way, the second-stage decomposition made for sub-periods leads to a number of observations. First, 86 percent of the increase in crop output during the recovery period (1925-29) is predominantly explained by rising yields, whereas the acreage expansion remained quite limited (4 percent). Second, during 1929-1933 output contracted by 72 percent and 96 percent of this decline was due to the massive deflation, which was helped by a concomitant deterioration of yields that accounted for 5.6 percent of the decline. As prices dwindled and profits collapsed, the lower yields dealt the final blow.[26] Finally, from trough to peak during 1933-39, the output increased by 115 percent and this was accounted for by land expansion (44 percent), recovery in prices (41 percent) and recovery in yields (10 percent). This was also the first time that crop composition made a positive contribution to overall growth (3.8 percent), which reflects the limited but sustained efforts to encourage the production of cash crops, such as cotton, tobacco and sugarcane, in accordance with the rapid industrial development of the time.

[26] One piece of anecdotal evidence shows that farmers tended to decrease the amount of land they cultivated with wheat in the face of declining prices in 1929 and 1930 in some localities, such as Kırklareli, a Thracian town in the far north-western corner of Turkey. However, this might have been more of the case in labour-scarce places like the whole of Thracia, since prices went down so much that the profits did not cover labour costs. Hakkı Nezihi, *İstanbul Mıntıkasının İstihsal ve İhraç Maddeleri*. Sanayi Nefise Matbaası, 1931, pp.11, 52. However, this may not have been the case in land-scarce areas, since the total acreage remained almost the same.

It should also be noted that a recovery in prices took place during 1933-1935 so if the reference year is taken as 1935 instead of 1933, as in the final row of Table 2.2, the output was 59 percent higher in 1939 and the contribution of acreage, yields and crop-composition were 35, 60 and 7 percent respectively, while prices actually pulled down the output slightly.

It is quite remarkable that the post-1933 recovery has attracted so little attention. What is curious about it is that crop prices remained low until World War II, which made quantity increases the only source of output growth. As Pamuk argues, this was far from a statistical artefact, as the alternative sources, like foreign trade statistics, also reflect the trend shown in the official output figures.[27]

Pamuk argues that two different "but not mutually exclusive" explanations are possible.[28] The first relates to the effect of government policies, which likely induced higher output and/or productivity. These policies include the abolition of tithes in 1925, the rapid expansion of railways, which extended the existing lines towards the interior regions (mainly the central and eastern provinces), the wheat purchasing programs and, not least, the development of the state's involvement in agricultural research and innovation.[29] It is generally accepted that both the abolition of tithes and the expansion of railroads brought about substantial changes in farmer's incentive structures. The tax burden, as will be argued shortly, was effectively reduced in the 1930s relative to 1925, and the railways probably allowed farmers in the interior regions to exploit new market opportunities.[30] Akarçay supports this argument, for instance, by finding a positive correlation between railroad connections and output increases in the 1930s.[31] Other government policies may, however, have been less important. While state research programs on seeds and cultivation

[27]Pamuk, Intervention During the Great Depression, p.335. While Turkey was a net importer in cereals before 1920s, it became a net exporter in the following decade. Also, in an earlier piece Pamuk, İkinci Dünya Savaşı cites Eldem, who checks alternative sources for the existence of this output growth and finds no inconsistency. Pamuk, İkinci Dünya Savaşı, p.95; and Vedat Eldem, Türkiye'de Sanayileşme Hareketi. *İstanbul Üniversitesi İktisat Fakültesi Mecmuası*, 8 1947

[28]Pamuk, Intervention During the Great Depression, p.335.

[29]Toprak also underlines the other institutional developments which might have increased market efficiency, such as the standardisation of weights and the development of local commodity exchanges. Zafer Toprak, Türkiye Tarımı ve Yapısal Gelişmeler, 1900-1950. In Şevket Pamuk and Zafer Toprak, editors, *Türkiye'de Tarımsal Yapılar*. Yurt Yayınevi, 1988, pp.20-22.

[30]Toprak, Türkiye Tarımı.

[31]Akarçay, Agricultural Growth, p.78-80.

techniques became increasingly well organised in the 1930s, Tekeli and İlkin argue that their impact on cereal production was to be observed no earlier than 1940. For instance, the wheat seeds developed in the research centres were distributed to farmers on a very minimal scale before 1943.[32] Similarly, the Agricultural Bank was assigned to purchase wheat in 1932 to prevent further declines in prices and it increased its purchases over time, yet its impact may not have been particularly significant.[33] In the 1932/33 season, the bank purchased around one percent of the total wheat and six percent in the subsequent season. Given that around one third of the crop was marketed, the bank seems to have bought 20 percent of the total marketed output.[34] Hatipoğlu argues that wheat purchases remained rather modest in the 1930s and it was only during World War II that the Soil Products Office, which replaced the Agricultural Bank in 1938, assumed an increasingly important role by enlarging its purchases so much so that 28 percent of the total output, that is, close to the whole marketed output, was purchased by the Office in 1944.[35] The modest impact of state purchases in the 1930s is also claimed by Pamuk, who compares the domestic and international wheat prices but finds no disparity between them.[36]

The second explanation Pamuk puts forward is the demographic recovery and peasant behaviour in response to deflation.[37] The role of population growth obviously made it possible to increase the acreage under cultivation. This had been one of the main aspects of Turkish agriculture since the nineteenth century, but the huge population loss during wars and the deportation of the non-Muslim population made for an acute labour shortage in the countryside in the early 1920s. The rapid recovery in the labour force and the increase in its male composition facilitated acreage expansion over the whole interwar period. Pamuk further puts forward a behavioural hypothesis regarding the relationship between prices and peasants.[38] Accordingly, it was

[32]İlhan Tekeli and Selim İlkin, Devletçilik Dönemi Tarım Politikaları: Modernleşme Çabaları. In Şevket Pamuk and Zafer Toprak, editors, *Türkiye'de Tarımsal Yapılar*. Yurt Yayınevi, 1988, p.56.

[33]Law 2156, Turkey, no. 2395, 8/5/1933.

[34]Tekeli and İlkin, *Uygulamaya Geçerken*, p.112.

[35]Şevket Raşit Hatipoğlu, *Türkiye'de Zirai Buhran*. Yüksek Ziraat Enstitüsü, 1936, pp.110-13.

[36]Pamuk, Intervention During the Great Depression, p.336.

[37]Pamuk, Intervention During the Great Depression, pp.336-37.

[38]Pamuk, Intervention During the Great Depression, p.337.

likely that peasant families responded to the low prices by increasing work effort or "working harder to cultivate more land", in order to maximise their income by ignoring the opportunity cost of leisure. He refers to the increase in the cultivated land-labour ratio as supporting evidence.[39]

Although the existing evidence does not permit a conclusive analysis, it is possible to derive some useful insights based on aggregate and geographical data. To explore the pattern of recovery of crop output in the 1930s, we suggest considering the quantity growth in terms of acreage and yields separately as we did in the output decomposition presented above.

First, the expansion in cultivated acreage can obviously be explained by population growth. Indeed, the cultivated acreage per labourer showed the expected movement, that is, decline in the early stage of the deflationary period and increase in the later stage, but the long-term trend remained quite stable (Figure 2.4).[40] A similar pattern is also observed in the cultivated land per draft animal, except that the late 1930s witnessed a small relative decline in that ratio. Furthermore, the rapid increase in the number of iron ploughs, which were superior to the old-fashioned wooden ones, helped both to open new fields and possibly to increase the yields on the existing fields.[41] Tezel also agrees on the simultaneous relationship between population increase and acreage expansion: as the new rural families emerged, the new fields were opened to cultivation to the extent that the existing local property structures allowed the land resources to expand.[42]

As for the increasing yields, the pattern is more difficult to explain since one intuitively expects yields to decline, or at least not to increase, as a result of more marginal land being brought under cultivation. To figure out whether any structural trends or random shocks were behind such a development requires some further elaboration. We first look at the trend growth rate of individual crops over 1928-1939, when the both acreage and output fig-

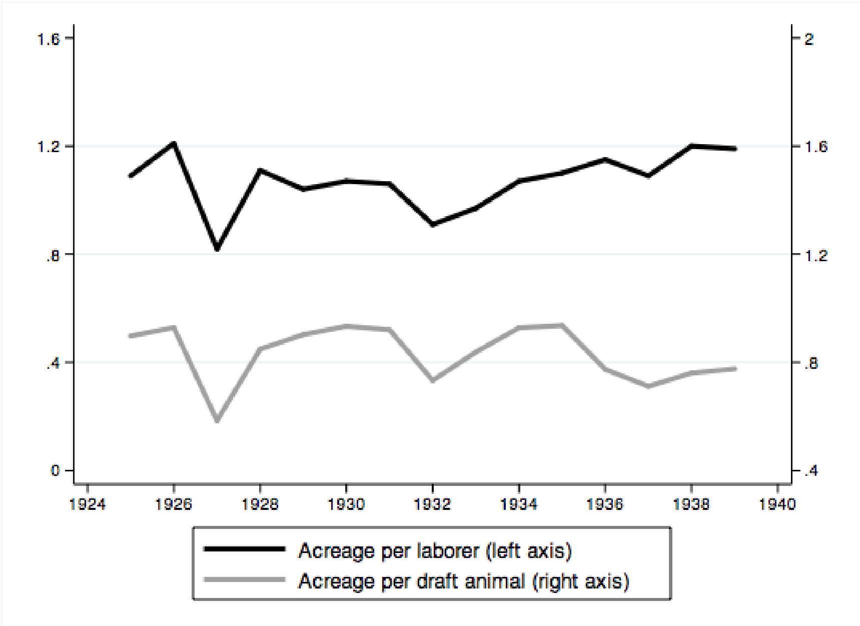
[39]Akarçay elaborates more on this hypothesis, yet she does not provide additional evidence to support it. Akarçay, Agricultural Growth.

[40]Total cultivated area is divided by the official rural labour force estimates from Turkey, Devlet İstatistik Müdürlüğü, *İstatistik Göstergeler*. For the land/animal ratio, the total land under cultivation is divided by the sum of cattle, buffaloes and horses. The use of horses as draft animals was particularly encouraged in the 1930s. Tekeli and İlkin, Devletçilik Dönemi Tarım, pp.79-82.

[41]The number of iron ploughs in use were as follows: 211,000 in 1927, 266,000 in 1933, 410,000 in 1936 and 440,000 in 1940. The jump in the plough stock seems to have happened between 1933 and 1936. Tezel, *Cumhuriyet Dönemi*, p.326.

[42]Tezel, *Cumhuriyet Dönemi*, p.325.

Figure 2.4.: Acreage Per Labourer and Draft Animal in Turkey (Hectares), 1925-39




Source: Table 2.8

ures were most reliable because these estimates are based on the same official source.[43] Among 15 crops we find that the yields of wheat, cotton, tobacco, potatoes and sugar beet show positive trends, while other crops did not have any trend.[44] The annual growth rates are as follows: 3.2 percent for wheat, 4.7 percent for cotton, 1.9 percent for tobacco, 4.7 percent for potatoes and 6.7 percent for sugarcane. Since these five crops on average make up 64 percent of the total output value during 1928-1939, they drive up the common yield index.

The rise in the yields of cash crops is far from surprising due to the sustained government efforts to increase the yields and in a few cases – for example, sugarcane – the close supervision of cultivation by the buyers.[45] Cotton, sugar beet and tobacco were largely supported by import substitution in the corresponding industries, price guarantees and high import tariffs. The price

[43] SIS started to publish the annual crop data from 1928 onwards and extrapolated the data back to earlier years using separate sources.

[44] We exclude cotton seed since its yield is the same as cotton. The natural logarithm of yields is regressed over the time trend to find the trend growth rate for each crop.

[45] Tekeli and İlkin, Devletçilik Dönemi Tarım, p.61. Also see Tekeli and İlkin, *Uygulamaya Geçerken* for the developments in sugarcane cultivation. Tekeli and İlkin, *Uygulamaya Geçerken*, pp.127-30.

incentives encouraged farmers to not only produce more but also to allocate the better areas for such crops. For instance, two German agricultural experts reported on sugarcane cultivation in 1940 and pointed out the existence of much better conditions in the sugar beet fields compared to those of other crops and the larger water and fertiliser use.[46]

Furthermore, the systematic effort to adopt better seeds is most obvious in the case of cotton.[47] The continuous seed experimentation led to the exploration and adoption of new types, called Cleveland and Akala, which were superior to the local types in terms of the price premium and fineness of cotton fibres spun from it.[48] Cleveland quickly spread after 1934 in Adana and accounted for more than half of total cotton output in the 1938/39 season.[49] More importantly, new seeds not only resulted in a greater price premium, but also in higher yields.[50]

The increase in wheat yields, by contrast, was a different case. It was the major staple crop and produced in almost all corners of the country, where totally different climatic regimes prevailed. However, the regional comparison of the change of wheat yields and acreage gives a very striking perspective. For all nine regions that had different geographical and climatic characteristics, we work out the trend growth rates of wheat acreage and yields over 1928-1939 and look into the differences and similarities of regional patterns.[51] To negate the effects of random shocks, we take 3-year moving averages of yield estimates. What is revealed is a clear regional dualism (Table 2.3). On the one hand, in the commercialised coastal regions (the Aegean and Mediterranean) and in the Central Plateau the quantity increases were chiefly due to increasing

[46] T. Roemer and G.Blohm, *Türkiye'de Pancar Ziraati Hakkında Rapor*. Zerbamat Basımevi, 1940, pp.35-36. Also for the description of the seed distribution and close inspection of cultivation by the factory experts, see Gustav Mikusch, *Şeker Sanayimiz Hakkında Rapor*. Ankara Başvekalet Matbaası, 1934, pp. 34-35.

[47] For the research efforts in cotton cultivation, see Tekeli and İlkin, *Uygulamaya Geçerken*, pp.130-133.

[48] Cleveland was developed at the seed-breeding stations in Adana, through experiments on the American seeds that started in 1926. It was close in quality and price to the American Upper Middling type. Adana Ticaret ve Zahire Borsası, Yıllık, 1938/39.

[49] In January 1936 Law 2903 (Law of Cotton Reclamation) allowed the government to determine what kind of the seeds to be planted in each location. For a brief discussion and for the subsequent laws, see Tekeli and İlkin, *Uygulamaya Geçerken*, pp.130-132.

[50] Adana Ticaret ve Zahire Borsası, Yıllık, 1938/39, p.218.

[51] The regions are as follows: Central, Aegean, Marmara, Mediterranean, Eastern, South-eastern, Black Sea, Central Plateau, South-western. See Akarçay, Agricultural Growth, pp.52-53.

Table 2.3.: Regional Growth Rates of Wheat Yields and Acreage in Turkey, 1928-1939

| | Yields | | Acreage | | Average rainfall | |
|---|---|---|---|---|---|---|
| | Trend | Growth rate | Trend | Growth rate | Trend | Growth rate |
| Central | n.t. | | strong | 4.2% | n.t. | |
| Aegean | strong | 5.8% | n.t. | | n.t. | |
| Marmara | n.t. | | strong | 8.2% | n.t. | |
| Mediterranean | strong | 5.8% | weak | -2.7% | n.t. | |
| Eastern | n.t. | | strong | 10% | n.t. | |
| South-Eastern | n.t. | | strong | 3.3% | n.t. | |
| Black Sea | n.t. | | strong | 3.3% | n.t. | |
| Central Plateau | strong | 8.2% | n.t. | | weak | 4.6% |
| South-Western | n.t. | | strong | 6.2% | n.t. | |

Note: n.t.: no trend. Strong: trend at 95% significance level. Weak: trend at 90% significance level.

yields rather than acreage expansion. On the other hand, the wheat acreage was significantly expanded in all the other regions, where yields were stagnant. In other words, the improvement in yields and acreage expansion did not overlap at a regional level. On the contrary, yields were stable on average in the regions where the area under wheat swiftly increased.

In addition to this, we check the average rainfall change in all regions and find that there was not any significant positive trend in the Aegean and Mediterranean regions where yields improved. In this respect the Central Plateau stands out as the only region where rainfall significantly increased.[52] Therefore, Kazgan's argument that larger rainfall caused increased output does not seem useful.[53] What is more, the fact that the rise in yields was observed in crops apart from wheat, cotton, sugarcane and tobacco and that they were cultivated in very diverse climates rules out the possibility that rainfall can explain the higher productivity.

This regional dualism in the growth of wheat output can be interpreted via the relationships between land availability, population recovery and switches between different crops. The best possible explanation seems to be that population growth translated into higher land productivity in the more commercial coastal regions because there was little additional available land and thus lim-

[52]The average rainfall figures between 1929-1939 were obtained from Turkey, İstatistik Umum Müdürlüğü, *İstatistik Yıllığı.*.

[53]Kazgan, Türkiye Ekonomisinde Depresyon, p.266.

ited scope for extensive growth. On the other hand, in the other regions, the increasing manpower might have led to land expansion under cultivation as the scope of intensive growth was quite limited in view of the technical backwardness and capital scarcity in those regions. In this sense, the mechanism Pamuk refers to – that is, the response of peasant families to low prices – might have worked in different ways in different geographies. Other developments at the time, such as better seeds, credit expansion, and the increasing number of iron ploughs and draft animals, might have contributed to this positive exchange between factor endowments. As stated above, any interpretation of output growth in the 1930s on such limited evidence has to be insufficient, but this brief crop-based and regional analysis provides an important insight: it seems that in the places where the land frontier was not open, effort was directed towards increasing yields, whereas in land-abundant localities, mostly interior regions, extensive growth tended to be accompanied by stagnant yields because the new land brought into production was more marginal.

## 2.4. An Estimate of Agricultural Income

As stated in the introduction, the lack of consumption data does not allow us to identify how the growth of the agricultural output in the second half of the 1930s was transmitted to the non-farm sectors, particularly to manufacturing. There is no doubt that the increasing output of both cash crops and cereals provided the necessary raw material at low prices and helped to keep industrial wages low. However, to be able to make a reasonable inference about the demand for manufactures, we need to estimate agricultural incomes more precisely, which requires two more key variables: taxes and credits.

Students of interwar economic history are familiar with Fisher's debt-deflation theory, which argues that nominally fixed cash payments became one of the crucial economic and, not least, political issues in the US and many other countries after the Great Depression due to the dramatic falls in commodity prices. Accordingly, the rise in the real value of debt and taxes led many farmers into a debt cycle, which brought about a collapse in land markets, widespread bankruptcies, and the foreclosures of the rural banks.[54] However,

[54]Temin, *Lessons*, p. 64; and Irwing Fisher, The Debt-Deflation Theory of Great Depression. *Econometrica* 1933.

in what follows we argue that Turkey did not experience a serious rural financial crisis due to the underdeveloped credit markets and the small degree of commercialisation in the countryside, as well as government efforts to mitigate the cash shortages that were felt in certain regions. Therefore, the financial distress was limited to a few years after 1929, but as soon as the recovery began in 1933, such problems were overcome.

### 2.4.1. Taxes

The system of rural taxation in Turkey underwent a number of significant institutional changes in the Ottoman period.[55] From the 15-16th to the 19th centuries there occurred a transition from *timar*, the feudal tenure system, to different forms of tax farming, through which the central authority sold the right of the collection of the in-kind tax from the peasants, the tithe, to various intermediaries, in return for a fixed predetermined amount of money for a certain period.[56]

Although the tithe was one major source of state revenues in the early years of the republican regime (1923-1925), the government abolished it and introduced a new and modern tax system in 1925. It was based on a number of new cash taxes to be collected by the state agencies rather than intermediaries and also increased the excise taxes on certain goods.[57] The importance of such a major institutional reform can be seen in the share of the tithe in wheat output. In principle it was raised at 10 percent of wheat output. If a 20-30 percent marketing ratio is assumed, with the rest consumed for self-consumption or seeding, then the 10 percent tax was equivalent to around one third of the total cash earnings of the bulk of the farmers.[58]

The amount of rural taxes collected is well documented in the official pub-

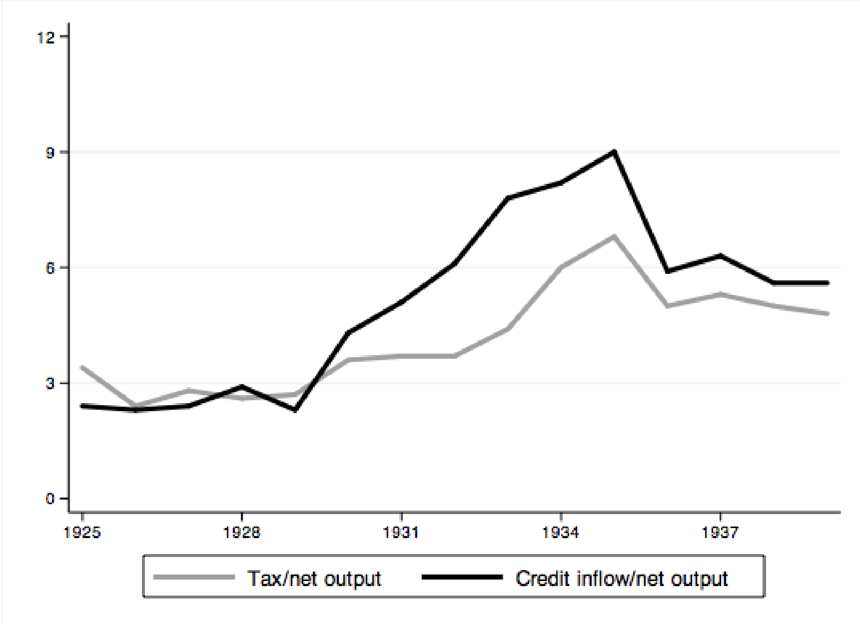
[55] Şevket Pamuk, *Osmanlı-Türkiye İktisadi Tarihi 1500-1914*. İletişim Yayınları, 2005.

[56] Tax farming effectively became a mode of domestic borrowing, as the state financed its deficits by increasing the duration of the contracts and demanding a larger share of the future taxes in advance. Pamuk, *Osmanlı-Türkiye*, pp. 146-52. Moreover, tax collection became an arena of political struggle between the central authority of the empire, which sought to establish a strong central bureaucracy and to finance military expenditures, and local elites, *ayan*, who attempted to restore their own financial and political authority over their regions.

[57] Reşat Aktan, *Türkiye'de Zirai Vergiler*. TMMOB Ziraat Mühendisleri Odası, 1965; and Çağlar Keyder, *The Definition of a Peripheral Economy: Turkey 1923-1929*. Cambridge University Press, 1981.

[58] Keyder, *Definition of a Peripheral Economy*; and Nezihi, *İstanbul Mıntıkasının İstihsal ve İhraç Maddeleri*.

Figure 2.5.: Taxes and Net Credit Inflow in Turkey, 1925-1939




Source: Taxes and credit data from Atasagun, *Türkiye'de Zirai Kredi*, vol. 3. Net agricultural output is our own estimate (Table 2.8).

lications on state finances, *Mali İstatistikler*, which is also recapitulated by Atasagun.[59] The type of taxes that were applied during the period 1924-1939 were as follows: the tithe (1923-1925), land tax (1925-1935), animal taxes (whole period) and the wheat tax (1934-1941), which was intended to support wheat prices. Among them, the land and animal taxes formed the largest part. The ratio of total tax payments to net agricultural output is a telling indicator: it declined from 7-8 percent during 1923-24 to 2-3 percent during 1925-29, and then 4-6 percent during the 1930s (Figure 2.5).[60] The financial distress can be seen in the rise in the taxes/output rate in the early 1930s. As a result, the new tax system reduced tax burden on the peasantry from a long-term perspective, but in the short term 1930-1935 was a difficult period. At a minimum, it seems sensible to assume that the introduction of cash taxes must have contributed to the commercialisation of the countryside by forcing the peasantry to enter the cash nexus on a greater scale than before.

[59] Atasagun, *Türkiye'de Zirai Kredi*.

[60] The net output figures of 1923/24 are from Bulutay et al., *Türkiye'nin Milli Geliri*. Others are our own estimates.

### 2.4.2. Net Credit Inflow

The formation of formal rural credit institutions goes back to 1863 when Midhad Pasha, the governor of Niş and Tuna (two Balkan provinces), founded small credit institutions of an experimental nature, named Memleket Sandıkları, to help farmers to access cash when needed.[61] Thereafter, they were expanded throughout the Ottoman Empire.[62] The principle was simple: the *sandıklar* were self-financed, short term, credit oriented (from three months to a year) and decentralised. After two decades of experimentation, these micro-credit institutions were integrated under the Agricultural Bank in 1888, which became the main channel through which formal credit was mobilised for the agricultural sector, not only in the Ottoman period, but also in republican Turkey.[63] The bank provided loans for farmers as well as for the farmer co-operatives, which significantly expanded in number and size in the interwar period.[64] Tekeli and İlkin argue that after the Great Depression the government preferred the provision of extra loans to the reduction of interest rates, and that the credit cooperatives were given tax exemptions.[65]

Atasagun's monograph on the Agricultural Bank is an extensive quantitative and qualitative source, giving the breakdown of the type and amount of loans, repayments, outstanding debts and the regional distribution of the loans, as well as the description of the ways the bank operated. Since we are here interested in the net financial flow to the agricultural sector, we need to know the total credits net of repayments. Whether the repayments were made on the principal or interest does not matter for our purpose. According to the accounts of the Agricultural Bank and the credit cooperatives, the repayments notably lagged behind the new loans supplied, implying that the loss

[61] T.C. Ziraat Bankası, *Yüzyıllık Teşkilatlı Zirai Kredi.* T.C. Ziraat Bankası, 1964; and T.C. Ziraat Bankası, *Ziraat Bankası 50 Senelik Hayat ve Faaliyeti.* 1939.

[62] At the beginning, the capital needed was mobilised through a part of state-owned land being cultivated by the farmers of villages cooperatively. After a certain period, a new tax (15 kg of wheat per oxen) was issued to specifically finance loans.

[63] There was also a number of banks providing short-term loans of smaller amounts: national banks, such as Ottoman Bank, Türkiye İş Bankası and Türk Ticaret Bankası, while many provincial banks funded the production of certain crops, including Milli Aydın Bankası (figs), Manisa Bağcılar Bankası (grapes), and Akhisar Tütüncüler Bankası (tobacco). See Atasagun, *Türkiye'de Zirai Kredi*, vol.. 3, pp.142-45.

[64] The origin of cooperatives can be traced back to the 1880s, though they started to give loans in 1929. The total number of cooperatives increased from 191 to 591 (covering around 10 percent of all villages in Turkey) during the 1930s. Atasagun, *Türkiye'de Zirai Kredi*, vol. 2, pp.64-65.

[65] Tekeli and İlkin, *1929 Buhranı*, pp.187-88.

of the bank and cooperatives was compensated for from government funds.[66] The loans other banks advanced are not taken into account since, as Atasagun maintains, they were short-term small loans (with at most one year of maturity).[67] He also predicts that the informal loans varied between 5-14 TL million throughout the period, which was around one fourth of the total loans of the Agricultural Bank in 1925. But there is not any substantial evidence on the precise size of the informal loans.

Therefore, we define the total credit inflow as the new loans advanced by cooperatives or the Agricultural Bank net of all repayments, and it turns out that it was about 3 percent of the net agricultural output during 1925-1929. However, it increased up to 9 percent during 1929-1934, which outstripped the increase in the taxes/output ratio. In this respect, the credit expansion seems to have more than offset the rise in the tax burden (Figure 2.5). Given that the loans were distributed mainly in the commercial regions, we can argue that the financial distress was cancelled out by the loan injection.[68]

Summing up, it can be argued that the sharp deflation after 1929 did not result in a major financial crisis for two reasons: First, commercial relations had not diffused into all regions and across all segments of the peasantry. The land mortgage system was non-existent and rural banks were small in number and only provided short-term credits in small sizes. The crisis, however, severely hit the commercial regions that were connected to the foreign and domestic markets. On the other hand, first, the credit expansion mitigated the impact of the crisis, as demonstrated in the figures of new loans, in those regions, and second, such financial difficulties became less of a problem from the mid-1930s due to the recovery in output. Besides the small degree of commercialisation, the tax reform of 1925 also reduced farmers' tax burden, as measured by the tax ratio to net output.

### 2.4.3. Per Capita Agricultural Income

It is now possible to present the disposable farm income per capita, which is taken to be equivalent to the net output net of tax payments and the loan

[66] Atasagun, *Türkiye'de Zirai Kredi*, pp.131-33.

[67] Atasagun 1939, p.223.

[68] For the geographical distribution of the credit cooperatives and thus how the cash crop-producing areas benefited from the loans more than others, see Atasagun, *Türkiye'de Zirai Kredi*, vol. 3, p. 230.

outflow divided by the size of the rural population. The rural population series is derived from the official population estimates: three population censuses were carried out in 1927, 1935 and 1940.[69] These benchmark figures show a constant rural population share of around 75 percent of the total population. This suggests that there was not any significant difference between the growth rate of rural and urban areas. We therefore extrapolate these benchmark figures on the basis of the total population's growth rate.

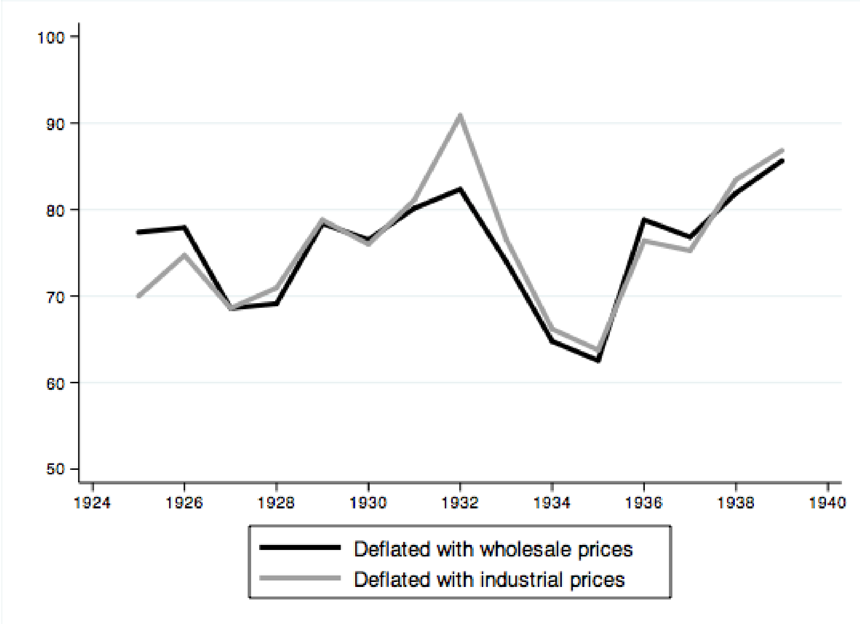
Before proceeding, one needs to be reminded of the potential shortcomings of this particular methodology of income estimation: we do not consider the labour costs and rents. This is for two reasons. First, we are only interested in the net available income *within* the agricultural sector, while the question of rents and labour costs is more about the distribution of total rural income between the tenants, landowners, landless labourers and small cultivators that inhabited it. Any potential bias in making this assumption can be assumed to be small because the dominant pattern of land use in Turkey was small- or middle-scale land holdings cultivated by independent peasant families. Wage labour was hired only at certain times of the year, when extra labour was needed particularly in cash-crop cultivation. In any case, wages cannot be considered a net resource outflow from agriculture because those who sold their labour were predominantly the peasant families who had seasonal surplus labour time. Similarly, the renting out of land was limited to a few regions and thus absentee landlordism was only an exception in Turkey. Second, since we are mainly interested in the change of farm income, taking into account wages and rents would not have much impact on the final estimates, given that there is no evidence that the share of wages and rents, however small it might have been, changed in the interwar era.

Figure 2.6 presents the new estimate of disposable per capita agricultural income at 1927 prices. The current prices are deflated in two ways, first with the aggregate wholesale price index, and secondly with the industrial price index, both with the base year as 1927, so that we can see the difference if the industrial price level differs from the other prices by a large margin.[70] A couple of inferences can be made from this picture: first of all, the farm income per capita largely follows the net agricultural output in terms of broad trends:

[69] Turkey, Devlet İstatistik Müdürlüğü, *İstatistik Göstergeler*.

[70] For the price indices, see Bulutay et al., *Türkiye'nin Milli Geliri*, Supplementary Table 25.

Figure 2.6.: Farm Income Per Capita in Turkey (TL, 1927 prices), 1925-1939




Source: Table 2.12.

gradual improvement in the 1920s, which was followed by a sharp decline until 1934-35, and a quick recovery in the second half of the 1930s (Figure 2.2). This is so due to the fact that credit expansion and tax payments cancel each other out to a large extent. Second, there does not seem to be a consistent disparity between the farm-income estimates deflated in different ways, except between 1931-1933. Last and more importantly, there is no doubt that the rapid increase in farm income after 1935 gave a strong stimulus to industrial expansion in the 1930s, as will be discussed in Chapter 4.

## 2.5. Conclusion

In summary, the growth performance of the agricultural sector in interwar Turkey was determined by a number of major factors: relative land abundance, demographic recovery and the massive decline in commodity prices. The 1920s saw a recovery period, when both net agricultural output and farm income returned to the pre-war levels. Thereafter, the massive output decline of the early 1930s was reversed by the successful recovery of the rest of the decade. This chapter first calculated the net output by making a few major and minor revisions to the existing official quantitative evidence. Second, it discussed the sources of the change in output over 1925-1939 by means of an output decomposition and by looking into some regional and crop-based patterns. Finally, it presented an estimate of farm income, which is a proxy of the rural demand for manufactures. The last section linked this chapter with the following ones.

The economic historiography has mostly missed the last stage of output growth by treating the whole interwar period as a whole. However, it was remarkable since it took place in the face of persistently low prices. The output decomposition carried out in this chapter shows that the output increase after 1935 was due both to acreage expansion and an improvement in the yields. The former was related to increasing manpower and the greater number of draft animals and iron ploughs. On the other hand, the yield improvement was crop-specific: it was driven by higher productivity in cash crops (cotton, sugar beet and tobacco) and wheat. The literature suggests several ways to explain the increasing yields of cash crops, whereas the case of wheat is more interesting. Although our analysis is not fully conclusive, the existing evidence indicates that the increasing wheat output had an interesting regional dualism: in mostly interior regions, land expansion translated into output growth, whereas in the most commercial regions (the Aegean and Mediterranean) it was due to the increase in yields. Therefore, the dominant interpretation of interwar agricultural growth as an example of extensive growth should not be overstated.[71] Instead, it should be considered to be a result of the relationship between population growth, land expansion and land productivity. What is more, the contribution of the larger cultivation of cash crops such as cotton, tobacco and sugar beet should not go unnoticed.

[71]Şevket Pamuk and Zafer Toprak, Sunuş. In *Türkiye'de Tarımsal Yapılar*. Yurt Yayınevi, 1988, p.16.

## 2.6. Appendix

### Data Sources on Commodity Prices

- Wheat, barley, maize, beans, cotton, sugarcane and tobacco:

  1926-1939 farm-gate prices. Source: Aktan, *Türkiye'de Zirai Mahsül*.

- Rye:

  1927 price is the weighted average of regional farm-gate prices (Turkey, Devlet İstatistik Enstitüsü, *1927 Ziraat Tahriri Neticeleri*. 1950). Other years are derived by extrapolating the 1927 price with barley prices, which are used as a proxy because both barley and rye were used primarily as animal feed.

- Potatoes:

  1927 price is the weighted average of regional farm-gate prices (Turkey, Devlet İstatistik Enstitüsü, *1927 Ziraat Tahriri*). Other years are derived by extrapolating the 1927 price with the annual average retail prices of potatoes in Istanbul (Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Fiyat İstatistikleri*. 1941, p. 46).

- Sesame:

  1927 price is the weighted average of regional farm-gate prices (Turkey, Devlet İstatistik Enstitüsü, *1927 Ziraat Tahriri*). Other years are derived by extrapolating the 1927 price with Istanbul Commodity Exchange annual average prices (Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Tarım İstatistikleri 1928-1936*. 1937; and Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Fiyat İstatistikleri 1941*).

- Onion:

  1927 price is the weighted average of regional farm-gate prices (Turkey, Devlet İstatistik Enstitüsü, *1927 Ziraat Tahriri*). In the first stage, to get 1927-1939 prices, 1931-1940 Istanbul retail prices (Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Fiyat İstatistikleri 1941*) are extended back by the Istanbul wholesale price index (İstanbul Ticaret Odası, *Istanbul Ticaret Odası Mecmuası*). Then the 1927 farm-gate price is extrapolated forward by this index.

- Fruits:

  Bulutay et al., *Türkiye'nin Milli Geliri*.

- Broad beans, chickpeas and lentils:

  1927 price is the weighted average of regional farm-gate prices (Turkey, Devlet İstatistik Enstitüsü, *1927 Ziraat Tahriri*). For the other years, the 1927 price is extrapolated with bean prices in Aktan, *Türkiye'de Zirai Mahsül*.

- Vetch:

  1936 farm-gate price (Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Tarım İstatistikleri 1928-1936*) is extrapolated by bean prices.

- 1925 prices:

  The commodities are classified as export goods and others. The former includes hazelnuts, grapes, figs, olives, cotton, tobacco and sesame, whose 1926 prices are extended back by the export unit prices. For the rest, the 1926 prices are extended back by the annual average prices of the Istanbul Commodity Exchange (İstanbul Ticaret ve Zahire Borsası, Yıllık).

# Data Tables

Table 2.4.: Crop Acreages (Hectares) in Turkey, 1925-1940

| | Wheat | Barley | Rye | Maize | Broad beans | Chickpeas | Beans | Lentils |
|---|---|---|---|---|---|---|---|---|
| 1925 | 3129640 | 862988 | 139146 | 474834 | 49279 | 61117 | 64646 | 29563 |
| 1926 | 3541984 | 1529258 | 195494 | 346729 | 108096 | 28184 | 32137 | 23554 |
| 1927 | 2439838 | 1010360 | 174664 | 174914 | 21372 | 28095 | 27463 | 10460 |
| 1928 | 2842500 | 1553700 | 361800 | 342200 | 58100 | 34400 | 81300 | 33700 |
| 1929 | 2774420 | 1380400 | 222000 | 463801 | 49100 | 53100 | 54900 | 22000 |
| 1930 | 2809300 | 1511300 | 199800 | 378501 | 30700 | 57200 | 62800 | 35200 |
| 1931 | 2902290 | 1484180 | 246277 | 420701 | 48500 | 64100 | 78800 | 26400 |
| 1932 | 2656467 | 1365050 | 169660 | 364200 | 51700 | 44600 | 59100 | 29200 |
| 1933 | 2686502 | 1376488 | 344094 | 447482 | 63539 | 50496 | 119554 | 29306 |
| 1934 | 3155761 | 1609250 | 274945 | 436772 | 57889 | 81742 | 104596 | 41266 |
| 1935 | 3429404 | 1724020 | 305991 | 409361 | 67876 | 74226 | 68091 | 34812 |
| 1936 | 3530257 | 1817713 | 374785 | 423576 | 74073 | 70706 | 67888 | 29899 |
| 1937 | 3303109 | 1747761 | 339530 | 471649 | 63830 | 70422 | 66326 | 27759 |
| 1938 | 3830341 | 1959695 | 455956 | 469341 | 63928 | 67515 | 69641 | 30400 |
| 1939 | 3973133 | 1998801 | 425308 | 469034 | 74405 | 69284 | 69828 | 32314 |
| 1940 | 4381420 | 2092789 | 463808 | 509990 | 71661 | 72486 | 76414 | 34684 |

| | Vetch | Potatoes | Sugarcane | Cottonseed | Cotton | Onion | Sesame | Tobacco |
|---|---|---|---|---|---|---|---|---|
| 1925 | 132783 | 25546 | 3700 | 173951 | 173951 | 26801 | 70771 | 66288 |
| 1926 | 89939 | 26574 | 5022 | 46201 | 46201 | 15808 | 105963 | 70082 |
| 1927 | 67489 | 13580 | 8678 | 99128 | 99128 | 9439 | 46005 | 88605 |
| 1928 | 151700 | 26400 | 9100 | 177542 | 177542 | 12000 | 49400 | 66210 |
| 1929 | 141500 | 66200 | 10700 | 184979 | 184979 | 12300 | 45200 | 52647 |
| 1930 | 159300 | 31400 | 8900 | 275385 | 275385 | 19300 | 73600 | 70856 |
| 1931 | 125500 | 45400 | 14900 | 216740 | 216740 | 26200 | 66700 | 74683 |
| 1932 | 91800 | 30100 | 17400 | 155651 | 155651 | 20700 | 55500 | 27974 |
| 1933 | 144435 | 35502 | 11271 | 161632 | 161632 | 19831 | 70551 | 51037 |
| 1934 | 143912 | 65239 | 57887 | 196719 | 196719 | 17622 | 65481 | 48647 |
| 1935 | 127802 | 46644 | 25630 | 210602 | 210602 | 18204 | 66146 | 54062 |
| 1936 | 128965 | 54625 | 28773 | 253663 | 253663 | 38976 | 71873 | 84800 |
| 1937 | 104577 | 53180 | 28049 | 308574 | 308574 | 35946 | 64251 | 94500 |
| 1938 | 115059 | 55687 | 22920 | 275249 | 275249 | 39079 | 57730 | 84001 |
| 1939 | 114046 | 63436 | 36878 | 292643 | 292643 | 41805 | 66633 | 76043 |
| 1940 | 111637 | 68227 | 40887 | 324636 | 324636 | 43393 | 79851 | 78054 |

Source: Bulutay et al., *Türkiye'nin Milli Geliri*

Table 2.5.: Crop Prices (Piastres/Kg) in Turkey, 1925-1939

| | Wheat | Barley | Rye | Maize | Broad beans | Chickpeas | Beans | Lentils |
|---|---|---|---|---|---|---|---|---|
| 1925 | 13.80 | 5.45 | 7.39 | 9.40 | 10.03 | 12.11 | 13.00 | 11.69 |
| 1926 | 12.10 | 5.00 | 6.31 | 6.60 | 9.83 | 12.15 | 13.30 | 12.62 |
| 1927 | 11.90 | 6.70 | 8.45 | 6.60 | 9.90 | 12.24 | 13.40 | 12.71 |
| 1928 | 13.60 | 7.80 | 9.84 | 7.20 | 12.78 | 15.80 | 17.30 | 16.41 |
| 1929 | 12.60 | 7.50 | 9.46 | 8.80 | 14.92 | 18.45 | 20.20 | 19.16 |
| 1930 | 7.30 | 3.70 | 4.67 | 5.30 | 10.64 | 13.15 | 14.40 | 13.66 |
| 1931 | 4.00 | 2.90 | 3.66 | 3.30 | 6.13 | 7.58 | 8.30 | 7.87 |
| 1932 | 4.20 | 2.60 | 3.28 | 2.70 | 4.43 | 5.48 | 6.00 | 5.69 |
| 1933 | 3.70 | 1.90 | 2.40 | 2.20 | 3.40 | 4.20 | 4.60 | 4.36 |
| 1934 | 3.60 | 2.00 | 2.52 | 2.80 | 4.21 | 5.21 | 5.70 | 5.41 |
| 1935 | 4.60 | 3.00 | 3.78 | 4.30 | 5.17 | 6.39 | 7.00 | 6.64 |
| 1936 | 4.70 | 3.00 | 3.78 | 4.40 | 5.39 | 6.67 | 7.30 | 6.93 |
| 1937 | 4.70 | 3.00 | 3.78 | 4.20 | 5.69 | 7.03 | 7.70 | 7.30 |
| 1938 | 4.30 | 3.00 | 3.78 | 3.90 | 5.76 | 7.12 | 7.80 | 7.40 |
| 1939 | 4.40 | 2.80 | 3.53 | 3.70 | 7.54 | 9.32 | 10.20 | 9.68 |

| | Vetch | Potatoes | Sugarcane | Cottonseed | Cotton | Onion | Sesame | Tobacco |
|---|---|---|---|---|---|---|---|---|
| 1925 | 8.58 | 7.05 | 1.60 | 2.49 | 62.90 | 6.92 | 24.88 | 71.23 |
| 1926 | 7.71 | 6.55 | 1.49 | 2.91 | 46.10 | 6.45 | 24.23 | 64.90 |
| 1927 | 7.76 | 6.73 | 1.59 | 5.03 | 63.40 | 6.73 | 23.76 | 73.10 |
| 1928 | 10.02 | 7.34 | 1.61 | 6.26 | 65.50 | 7.32 | 22.63 | 57.00 |
| 1929 | 11.70 | 6.94 | 1.66 | 3.11 | 62.30 | 4.57 | 20.82 | 72.70 |
| 1930 | 8.34 | 4.63 | 1.63 | 1.78 | 49.40 | 4.27 | 14.78 | 72.40 |
| 1931 | 4.81 | 4.67 | 1.42 | 1.94 | 31.70 | 5.80 | 11.50 | 36.11 |
| 1932 | 3.48 | 3.65 | 1.18 | 3.01 | 30.00 | 8.08 | 13.73 | 35.27 |
| 1933 | 2.67 | 1.77 | 1.23 | 2.08 | 30.70 | 6.66 | 8.71 | 30.60 |
| 1934 | 3.30 | 1.52 | 1.12 | 1.85 | 33.10 | 5.46 | 9.04 | 45.42 |
| 1935 | 4.06 | 4.10 | 0.98 | 2.26 | 38.00 | 8.49 | 11.63 | 54.33 |
| 1936 | 4.23 | 3.63 | 0.70 | 3.27 | 40.90 | 8.27 | 14.23 | 53.42 |
| 1937 | 4.46 | 4.32 | 0.74 | 2.87 | 37.90 | 4.47 | 14.32 | 48.40 |
| 1938 | 4.52 | 4.70 | 0.87 | 3.99 | 34.00 | 9.38 | 14.98 | 43.81 |
| 1939 | 5.91 | 4.81 | 0.99 | 3.79 | 37.80 | 11.04 | 13.01 | 46.99 |

Source: See the text.

Table 2.6.: Crop Yields (Tons/Hectares) in Turkey, 1925-1939

| | Wheat | Barley | Rye | Maize | Broad beans | Chickpeas | Beans | Lentils |
|---|---|---|---|---|---|---|---|---|
| 1925 | 0.34 | 1.45 | 0.83 | 1.10 | 0.52 | 0.65 | 0.37 | 0.39 |
| 1926 | 0.70 | 0.94 | 0.88 | 1.12 | 0.33 | 0.94 | 1.17 | 0.87 |
| 1927 | 0.55 | 0.62 | 0.58 | 0.74 | 0.92 | 0.44 | 0.42 | 0.44 |
| 1928 | 0.58 | 0.58 | 0.30 | 1.22 | 0.49 | 0.53 | 0.68 | 0.26 |
| 1929 | 0.98 | 1.23 | 1.49 | 1.34 | 0.67 | 0.98 | 1.50 | 0.66 |
| 1930 | 0.92 | 1.02 | 1.55 | 1.24 | 1.08 | 0.84 | 1.06 | 0.58 |
| 1931 | 1.03 | 1.22 | 1.86 | 1.34 | 0.94 | 0.94 | 1.10 | 1.64 |
| 1932 | 0.73 | 0.86 | 1.26 | 1.17 | 0.94 | 0.93 | 0.76 | 0.49 |
| 1933 | 0.99 | 1.16 | 0.77 | 1.23 | 0.99 | 0.77 | 0.35 | 0.64 |
| 1934 | 0.86 | 1.04 | 0.89 | 1.12 | 1.02 | 0.61 | 0.90 | 0.48 |
| 1935 | 0.74 | 0.80 | 0.71 | 1.11 | 1.56 | 0.55 | 0.76 | 0.54 |
| 1936 | 1.09 | 1.19 | 1.20 | 1.62 | 0.66 | 0.65 | 0.77 | 0.67 |
| 1937 | 1.12 | 1.25 | 1.07 | 1.18 | 1.05 | 0.84 | 0.88 | 0.86 |
| 1938 | 1.12 | 1.22 | 0.89 | 1.28 | 1.02 | 0.81 | 0.90 | 0.82 |
| 1939 | 1.06 | 1.15 | 0.96 | 1.36 | 0.94 | 1.00 | 0.88 | 0.80 |
| | Vetch | Potatoes | Sugarcane | Cottonseed | Cotton | Onion | Sesame | Tobacco |
| 1925 | 0.54 | 2.84 | 1.75 | 0.44 | 0.22 | 1.67 | 0.32 | 0.85 |
| 1926 | 0.81 | 2.87 | 1.51 | 1.13 | 0.56 | 2.17 | 0.29 | 0.78 |
| 1927 | 0.58 | 1.53 | 2.76 | 0.47 | 0.24 | 1.57 | 0.24 | 0.79 |
| 1928 | 0.44 | 1.87 | 7.37 | 0.30 | 0.15 | 3.49 | 0.60 | 0.65 |
| 1929 | 0.83 | 2.02 | 5.20 | 0.28 | 0.14 | 4.99 | 0.82 | 0.69 |
| 1930 | 0.79 | 3.64 | 10.27 | 0.27 | 0.14 | 2.77 | 0.39 | 0.67 |
| 1931 | 0.78 | 2.42 | 17.27 | 0.31 | 0.15 | 3.27 | 0.46 | 0.68 |
| 1932 | 0.73 | 2.46 | 8.72 | 0.38 | 0.19 | 2.25 | 0.38 | 0.65 |
| 1933 | 0.63 | 3.01 | 16.22 | 0.24 | 0.12 | 4.10 | 0.38 | 0.79 |
| 1934 | 0.66 | 3.27 | 7.50 | 0.26 | 0.13 | 3.45 | 0.39 | 0.67 |
| 1935 | 0.41 | 2.27 | 17.39 | 0.38 | 0.19 | 3.57 | 0.30 | 0.67 |
| 1936 | 0.68 | 3.38 | 15.79 | 0.40 | 0.20 | 2.65 | 0.55 | 0.89 |
| 1937 | 0.64 | 3.23 | 11.86 | 0.32 | 0.16 | 2.51 | 0.39 | 0.77 |
| 1938 | 0.75 | 3.26 | 12.66 | 0.44 | 0.22 | 2.84 | 0.45 | 0.70 |
| 1939 | 0.81 | 4.10 | 17.22 | 0.42 | 0.21 | 2.93 | 0.51 | 0.86 |

Source: See the text.

Table 2.7.: Costs of Agricultural Production (TL Million) in Turkey, 1925-1939

| | Seeding | Machinery maintenance and oil | Chemical fertilisers | Crop waste |
|---|---|---|---|---|
| 1925 | 102.4 | 12.72 | 0.01 | 8.9 |
| 1926 | 60.4 | 16.07 | 0.12 | 12.6 |
| 1927 | 77.2 | 10.21 | 0.07 | 7.8 |
| 1928 | 91.8 | 14.86 | 0.08 | 10.4 |
| 1929 | 81.2 | 14.31 | 0.09 | 16.5 |
| 1930 | 52.0 | 11.03 | 0.13 | 9.8 |
| 1931 | 27.3 | 9.75 | 0.20 | 6.7 |
| 1932 | 29.6 | 7.55 | 0.07 | 4.0 |
| 1933 | 28.2 | 7.09 | 0.13 | 4.8 |
| 1934 | 28.7 | 8.28 | 0.09 | 5.2 |
| 1935 | 42.6 | 9.72 | 0.07 | 6.5 |
| 1936 | 40.4 | 11.28 | 0.19 | 9.9 |
| 1937 | 46.4 | 11.67 | 0.55 | 9.3 |
| 1938 | 47.1 | 12.66 | 0.54 | 9.6 |
| 1939 | 53.2 | 13.22 | 0.21 | 10.4 |

Source: See the text.

Table 2.8.: Aggregate Agricultural Output in Turkey, 1913-1939

| | Crop Output | Fruit output | Total costs | Livestock output | Agricultural net output | Index of agricultural prices | Net output at 1927 prices | Rural labour force | Net output per labourer at 1927 prices | Acreage per labourer | Acreage per draft animal |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TL million | TL million | TL million | TL million | TL million | 1925=100 | TL | '000 | TL | ha/person | ha/animal |
| 1913 | | | | | 68.1 | 6.1 | 1057.8 | 6027 | 175.5 | | |
| 1925 | 296.3 | 83.1 | 124.0 | 499.4 | 754.8 | 100.0 | 720.4 | 5154 | 142.6 | 1.09 | 0.90 |
| 1926 | 420.0 | 99.4 | 89.2 | 367.7 | 798.0 | 86.6 | 879.5 | 5261 | 170.6 | 1.21 | 0.93 |
| 1927 | 260.3 | 96.2 | 95.3 | 450.8 | 712.0 | 95.4 | 712.0 | 5373 | 135.3 | 0.82 | 0.58 |
| 1928 | 347.7 | 101.6 | 117.1 | 415.2 | 747.3 | 104.9 | 679.8 | 5488 | 126.5 | 1.11 | 0.85 |
| 1929 | 549.9 | 64.2 | 112.1 | 382.9 | 884.9 | 105.4 | 801.6 | 5605 | 146.1 | 1.04 | 0.90 |
| 1930 | 326.3 | 73.1 | 73.0 | 338.2 | 664.7 | 66.0 | 961.6 | 5724 | 171.6 | 1.07 | 0.93 |
| 1931 | 224.2 | 57.8 | 44.0 | 366.6 | 604.6 | 41.2 | 1400.1 | 5846 | 244.6 | 1.06 | 0.92 |
| 1932 | 134.8 | 78.9 | 41.2 | 367.6 | 539.9 | 39.1 | 1318.7 | 5971 | 225.6 | 0.91 | 0.73 |
| 1933 | 160.0 | 49.8 | 40.2 | 262.9 | 432.6 | 32.0 | 1289.2 | 6098 | 215.9 | 0.97 | 0.84 |
| 1934 | 174.7 | 52.6 | 42.3 | 220.0 | 405.0 | 35.6 | 1085.1 | 6254 | 177.9 | 1.07 | 0.93 |
| 1935 | 217.4 | 60.0 | 59.0 | 223.0 | 441.4 | 47.9 | 880.1 | 6363 | 140.7 | 1.10 | 0.94 |
| 1936 | 331.6 | 70.3 | 61.9 | 295.3 | 635.3 | 48.7 | 1245.7 | 6474 | 195.8 | 1.15 | 0.77 |
| 1937 | 310.5 | 99.6 | 67.9 | 313.4 | 655.6 | 47.2 | 1327.0 | 6587 | 205.0 | 1.09 | 0.71 |
| 1938 | 319.4 | 77.8 | 69.9 | 351.4 | 678.7 | 45.5 | 1424.5 | 6780 | 216.3 | 1.20 | 0.76 |
| 1939 | 345.4 | 109.6 | 77.0 | 361.2 | 739.2 | 46.4 | 1519.7 | | 224.1 | 1.19 | 0.78 |

Notes: Net output (Column 5) is the sum of crops, fruit and livestock net of total costs. 1913 figure in column 5 is derived from Özel, Economy of Turkey(p.12). In column 6, the index of agricultural prices is a Laspeyres index of crop prices and the 1913 figure is derived from Özel, Economy of Turkey, p.11. Net output at 1927 prices (column 7) is column 5 deflated by column 6. Acreage per labourer (column 10) is the total crop acreage in Table 2.4 divided by the labour force in column 8. In column 11, draft animals is from Bulutay et al., *Türkiye'nin Milli Geliri*, Supplementary Tables 22, 23 and 27.

Table 2.9.: Regional Wheat Acreage Figures (Hectares) in Turkey, 1928-1939

| | Central | Aegean | Marmara | Mediterranean | Eastern | South-Eastern | Black Sea | Central Plateau | South Western |
|---|---|---|---|---|---|---|---|---|---|
| 1928 | 549000 | 359800 | 146200 | 438100 | 180800 | 168400 | 207200 | 326100 | 466900 |
| 1929 | 452700 | 419500 | 161800 | 414400 | 142420 | 211100 | 163500 | 422600 | 386400 |
| 1930 | 585600 | 374900 | 171200 | 333200 | 118500 | 243000 | 164500 | 464100 | 354300 |
| 1931 | 704800 | 355000 | 134100 | 322400 | 107300 | 207290 | 193200 | 520500 | 357700 |
| 1932 | 540800 | 314700 | 89300 | 416917 | 151700 | 288900 | 145050 | 381100 | 328000 |
| 1933 | 711093 | 381912 | 167698 | 318930 | 136228 | 181228 | 170011 | 282958 | 336444 |
| 1934 | 884613 | 341942 | 138849 | 500640 | 215914 | 249232 | 152738 | 320464 | 351369 |
| 1935 | 888611 | 366613 | 253316 | 335000 | 280870 | 305430 | 184835 | 407310 | 407419 |
| 1936 | 793890 | 411730 | 346759 | 309056 | 272903 | 285276 | 215139 | 319000 | 592632 |
| 1937 | 657954 | 412546 | 259506 | 274497 | 320900 | 234991 | 220187 | 357373 | 540176 |
| 1938 | 743270 | 416896 | 269435 | 311245 | 351042 | 263777 | 257682 | 377475 | 815388 |
| 1939 | 836618 | 437340 | 311007 | 318906 | 335959 | 283953 | 252419 | 423211 | 739601 |

Source and notes: Akarçay, Agricultural Growth. The regions consist of the following provinces. **Central:** Ankara, Bilecik, Bolu, Çankırı, Çorum, Eskişehir. **Aegean**: Aydın, Balıkesir, Burdur, Çanakkale, Denizli, İzmir, Isparta, Manisa, Muğla. **Marmara:** Bursa, Edirne, İstanbul, Kırklareli, Kocaeli, Tekirdağ. **Mediterranean:** Antalya, Antep, İçel, Adana. **Eastern:** Ağrı, Çoruh (Artvin), Erzincan, Erzurum, Kars. **South-eastern**: Bingöl, Diyarbakır, Mardin, Bitlis, Hakkari, Maraş, Siirt, Urfa, Van. **Black Sea:** Giresun, Gümüşhane, Kastamonu, Ordu, Rize, Samsun, Sinop, Trabzon, Zonguldak. **Central Plateau**: Amasya, Elazığ, Malatya, Sivas, Tunceli, Tokat. **South-western:** Afyon, Kayseri, Konya, Niğde.

Table 2.10.: Regional Wheat Yields in Turkey (Tons/Hectare), 1928-1939

| | Central | Aegean | Marmara | Mediterranean | Eastern | South Eastern | Black Sea | Central Plateau | South Western |
|---|---|---|---|---|---|---|---|---|---|
| 1928 | 0.63 | 0.77 | 0.68 | 0.52 | 0.55 | 0.46 | 0.74 | 0.70 | 0.30 |
| 1929 | 1.60 | 0.84 | 0.61 | 0.76 | 1.52 | 0.76 | 0.93 | 0.84 | 0.90 |
| 1930 | 1.15 | 0.77 | 0.97 | 0.60 | 0.87 | 0.86 | 1.21 | 0.70 | 1.19 |
| 1931 | 1.17 | 0.76 | 0.94 | 0.84 | 1.81 | 1.25 | 0.98 | 0.55 | 1.59 |
| 1932 | 0.76 | 0.82 | 1.38 | 0.40 | 1.18 | 0.57 | 0.90 | 0.66 | 0.76 |
| 1933 | 1.03 | 1.22 | 1.40 | 0.67 | 0.88 | 0.81 | 0.96 | 0.99 | 0.93 |
| 1934 | 0.72 | 1.05 | 0.85 | 0.66 | 0.71 | 0.79 | 1.07 | 1.14 | 1.11 |
| 1935 | 0.58 | 0.96 | 1.11 | 0.92 | 0.49 | 0.72 | 0.60 | 0.77 | 0.69 |
| 1936 | 1.02 | 1.15 | 1.03 | 0.85 | 1.04 | 0.80 | 0.97 | 1.34 | 1.17 |
| 1937 | 1.19 | 1.26 | 1.03 | 1.02 | 1.22 | 1.01 | 0.98 | 1.26 | 0.98 |
| 1938 | 1.08 | 1.34 | 1.25 | 1.08 | 1.12 | 1.03 | 1.06 | 1.31 | 0.96 |
| 1939 | 1.11 | 1.18 | 1.09 | 1.03 | 0.84 | 1.27 | 1.13 | 1.43 | 0.72 |

Source: Akarçay, Agricultural Growth.

Table 2.11.: Regional Average Rainfall in Turkey (Millimetres/Meter Square), 1929-1939

| | Central | Aegean | Marmara | Mediterranean | Eastern | South Eastern | Black Sea | Central Plateau | South Western |
|---|---|---|---|---|---|---|---|---|---|
| 1929 | 361 | 588 | 597 | 983 | 491 | 750 | 1134 | 387 | 437 |
| 1930 | 334 | 686 | 536 | 995 | 453 | 518 | 1132 | 357 | 430 |
| 1931 | 452 | 679 | 760 | 1124 | 579 | 646 | 1479 | 411 | 451 |
| 1932 | 315 | 378 | 458 | 590 | 358 | 477 | 1176 | 219 | 255 |
| 1933 | 482 | 647 | 762 | 849 | 544 | 557 | 1447 | 398 | 366 |
| 1934 | 344 | 435 | 438 | 878 | 498 | 571 | 1123 | 342 | 292 |
| 1935 | 401 | 697 | 668 | 1056 | 466 | 749 | 915 | 520 | 337 |
| 1936 | 496 | 652 | 708 | 1102 | 769 | 654 | 1220 | 625 | 366 |
| 1937 | 357 | 650 | 667 | 709 | 505 | 443 | 980 | 524 | 380 |
| 1938 | 481 | 614 | 541 | 948 | 527 | 612 | 1173 | 447 | 374 |
| 1939 | 464 | 816 | 716 | 825 | 590 | 529 | 1208 | 493 | 377 |

Source: Turkey, İstatistik Umum Müdürlüğü, *İstatistik Yıllığı*(various issues).

Table 2.12.: Estimates of Farm Income in Turkey, 1925-1939

| | Gross agricultural income | Rural taxes | Taxes/ Income | Net credit inflow | Credit inflow/Income |
|---|---|---|---|---|---|
| | TL million | TL million | % | TL million | % |
| 1925 | 754.8 | 25.32 | 3.4 | 17.98 | 2.4 |
| 1926 | 798.0 | 19.53 | 2.4 | 17.96 | 2.3 |
| 1927 | 712.0 | 19.95 | 2.8 | 17.27 | 2.4 |
| 1928 | 747.3 | 19.60 | 2.6 | 21.85 | 2.9 |
| 1929 | 884.9 | 24.05 | 2.7 | 20.06 | 2.3 |
| 1930 | 664.7 | 24.11 | 3.6 | 28.32 | 4.3 |
| 1931 | 604.6 | 22.51 | 3.7 | 30.79 | 5.1 |
| 1932 | 539.9 | 20.14 | 3.7 | 32.68 | 6.1 |
| 1933 | 432.6 | 19.12 | 4.4 | 33.76 | 7.8 |
| 1934 | 405.0 | 24.35 | 6.0 | 33.07 | 8.2 |
| 1935 | 441.4 | 29.90 | 6.8 | 39.58 | 9.0 |
| 1936 | 635.3 | 32.06 | 5.0 | 37.32 | 5.9 |
| 1937 | 655.6 | 35.03 | 5.3 | 41.13 | 6.3 |
| 1938 | 678.7 | 33.79 | 5.0 | 37.87 | 5.6 |
| 1939 | 739.2 | 35.30 | 4.8 | 41.23 | 5.6 |

| | Farm income | Farm income per capita | Wholesale price index (I) | Industrial price index (II) | Farm income per capita (1927 prices, deflated by (I)) | Farm income per capita (1927 prices, deflated by (II)) |
|---|---|---|---|---|---|---|
| | TL million | TL | 1948=100 | 1948=100 | TL | TL |
| 1925 | 747.5 | 75.3 | 32.5 | 43.7 | 77.37 | 69.99 |
| 1926 | 796.4 | 78.6 | 33.7 | 42.7 | 77.90 | 74.70 |
| 1927 | 709.3 | 68.6 | 33.4 | 40.6 | 68.58 | 68.58 |
| 1928 | 749.6 | 71.0 | 34.3 | 40.6 | 69.10 | 70.93 |
| 1929 | 880.9 | 81.7 | 34.8 | 42.1 | 78.37 | 78.80 |
| 1930 | 668.9 | 60.7 | 26.5 | 32.5 | 76.51 | 75.97 |
| 1931 | 612.9 | 54.5 | 22.7 | 27.3 | 80.14 | 81.11 |
| 1932 | 552.5 | 48.1 | 19.5 | 21.5 | 82.34 | 90.84 |
| 1933 | 447.2 | 38.1 | 17.2 | 20.2 | 73.98 | 76.55 |
| 1934 | 413.7 | 34.5 | 17.8 | 21.2 | 64.75 | 66.17 |
| 1935 | 451.1 | 36.5 | 19.5 | 23.3 | 62.53 | 63.74 |
| 1936 | 640.5 | 51.0 | 21.6 | 27.1 | 78.80 | 76.36 |
| 1937 | 661.7 | 51.7 | 22.5 | 27.9 | 76.81 | 75.23 |
| 1938 | 682.8 | 52.5 | 21.4 | 25.5 | 81.90 | 83.44 |
| 1939 | 745.1 | 55.6 | 21.7 | 26.0 | 85.62 | 86.82 |

Notes: Column 1 is the net agricultural output in Table 2.8. For taxes and credit inflow, see the text. Price indices (I and II) are from Bulutay et al., *Türkiye'nin Milli Geliri*.

# 3. Industrial Expansion in Interwar Turkey: New Estimates

## 3.1. Introduction

Given that the beginning of industrialisation in the 1930s has received much attention in Turkey's economic historiography, it is remarkable that the empirical evidence has remained so weak. The existing literature is mostly based on the estimates of industrial value added produced by Bulutay et al..[1] In addition, official industrial statistics began to be published in 1932, providing valuable information on the medium- and large-scale enterprises that benefited from the Law for Promotion of Industry.[2] Furthermore, there is a relatively large amount of data on the state-owned enterprises in certain sectors, such as sugar, mining and textiles. The downside of the existence of quantitative data of this kind is that it has led many scholars to limit their attention to the state sector and/or large-scale enterprises, which has therefore created a bias in the interpretation of the nature and extent of industrial growth in the 1930s.

Bulutay et al.'s estimation procedure consists of two stages. First, for 1932-1939, they extrapolate backwards the official value added figures of the 1940s, using the dataset on the enterprises that benefited from the Law for Promotion of Industry. Thus, for 1933-1939 their estimate has a significant selection bias, as it leaves out the handicraft and home production that constituted more than half of total value added in 1927.[3] The implicit assumption that

[1]Bulutay et al., *Türkiye'nin Milli Geliri*.

[2]Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Sanayi İstatistikleri 1932-1936*. 1938; Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Sanayi İstatistikleri 1936-1941*. 1945.

[3]It is hard to measure the precise value added share of handicrafts from the 1927 industrial census. By looking at the number of employees per enterprise in 1927, a reasonable guess would put it at more than half. However, the definition of handicraft is another problem: if having less than 10 employees is the criteria, then more than 95 percent of enterprises

factory and handicraft output grew to the same extent is tenuous at best, since during 1929-1939 rapid industrialisation largely came from the expansion of the former. As a result Bulutay et al. series is likely to overestimate industrial growth for 1932-1939. Second, for the period 1923-1932 their second stage of extrapolation is made by using transaction and income tax data. Yet it is far from obvious how the tax data represents the growth of manufacturing, because no sectoral breakdown of taxes is available.

The only correction to Bulutay et al.'s estimates was suggested by Zendisayek, who takes the Bulutay et al. indices as representative of factory output and combines it with a separate index for handicrafts, which is based on Eldem's estimates of handicraft value added.[4] However, this methodology is problematic in two ways. First, Eldem's estimates are no more than simple guesses. His short paper neither explains his methodology nor specifies his sources, which casts a huge doubt on its correctness. Our extensive research of the primary sources shows that it is nearly impossible to measure the handicraft output separately since it was almost totally undocumented. Second, the weighting procedure that Zendisayek uses inherently overestimates growth due to the fact that she applies the 1938 weights of the factory and handicrafts output to the whole period, including 1927, even though factory output – and consequently its share of value added – probably grew faster than handicrafts.[5] Even though it is not possible to precisely determine the rise in the share of large enterprises, the establishment of both stated-owned and private factories in certain sectors such as textiles, leather production and sugar refining after 1933 suggests that it should have increased to a significant degree. To illustrate the weakness of Zendisayek's method, if the share of factory output is reduced in favour of handicrafts for the 1920s, one comes up with smaller growth rates of around 3-4 percent per annum, rather than the 5.2 percent found by Zendisayek. In other words, due to 1938 weights being taken as constant for the whole period, the factory output is over-represented in her common index.

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satisfied this condition. What is clear yet is that the overwhelming proportion was small-scale, working with one person, family labour or 5-10 employees.

[4] B. Zendisayek, *A Reevaluation of Turkey's Industrialization Performance: Large and Small Firms During the Great Depression.* Master's thesis, Boğaziçi University, 1997; and Eldem, Türkiye'de Sanayileşme.

[5] She obtains 1938 weights from the official estimates in Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Türkiye Milli Geliri 1938, 1948-1951.* 1954.

Thus, there is much reason to suppose that neither of these earlier estimates provide a reliable measure of industrial growth. Furthermore, these available estimates do not provide any insight into the composition and structure of manufacturing growth. This chapter therefore attempts to fill the gap in the literature by providing a more reliable and consistent estimate of the sectoral and aggregate industrial output series. First, a brief note on the methodology is provided. Then we present how each sectoral series is constructed, which is followed by a discussion of the weighting procedure. Finally, we discuss the new output estimate in relation to these earlier attempts.

## 3.2. Estimation Methods: An Overview

Considering all the methodological problems of the existing data, as was briefly described above, here we prefer to move in a different direction. The main problem is to obtain a reliable measure of industrial growth in the absence of sufficient direct output data. This is carried out in two stages: first, we provide estimates of physical output growth in 15 different sectors, including construction, utilities and mining, as well as manufacturing; then we combine them in a single aggregate index.

Typically when the institutional capacity of economic data production is small, as was the case in interwar Turkey, the census type data are the primary sources for information on production, value added, employment or the level of technology. The first industrial census in Turkey was carried out in 1927, and the second one in 1950. The coverage of the 1927 census is large enough to rely on, because both small and large enterprises were covered, so it is extensively used here in the weighting procedure. On the other hand, the population censuses took place more often: 1927, 1935 and at every five-year period thereafter. Among them, the 1935 census is particularly useful, since it gives information about the employment composition within industry at the time, thus making it possible to compare the post-1929 situation with that previously, although the 1940 census unfortunately did not renew the industrial employment data. Furthermore, direct output data is usually available for the sectors where government exercised strict supervision/monopoly, such as tobacco, alcohol, salt, mining and utilities. Also for textiles and the food processing sectors, one finds some direct yet fragmentary regional or sectoral evidence, although its use requires care and caution.

Any attempt to estimate output growth based on such imperfect evidence must necessarily be imprecise and precarious. However, it does not make it impossible to obtain reasonably reliable estimates. The attempt to measure British industrial growth before the mid-nineteenth century is a good case in point. Hoffman's first-generation index provided the common ground for other scholars to refine the measurement of the extent of the British industrial revolution.[6] The second- and third-generation indexes presented by Deane and Cole, and later Crafts, Harley and Crafts and Harley all used similar or reconstructed versions of the basic sectoral series that Hoffman and later Deane and Cole used.[7] These series are based either on the relevant input indices, which best reflect output growth in the corresponding sectors, or reasonably relevant proxies. For instance, the cotton industry is represented by retained cotton imports, the wool industry by the sum of the estimated domestic clips and imports, clothing by a weighted average of textile output and the whole food and drink industries by a transformation of population growth with an index of milling and baking. This is necessary because, as Harley remarks, "the data for this period are imperfect and so any estimates of growth are controlled conjectures".[8]Similarly, Feinstein argues that in the absence of direct output data, using the underlying input sectoral data and – manipulating it whenever possible and necessary – is "not only legitimate but also inevitable".[9]

The problem of insufficient economic data has also faced those working on Italian industry post-unification. Gerchenkron's estimates of industrial growth before 1913 mostly used input data. The growth of the silk industry was measured by raw silk output, cotton by the net imports of cotton and flour milling by wheat consumption.[10] His series were later significantly improved

[6]W.G. Hoffman, *British Industry, 1700-1950*. Oxford, 1955.

[7]P. Deane and W.A. Cole, *British Economic Growth, 1688-1959*. Cambridge, 1962;N.F.R. Crafts, British Economic Growth, 1700-1831: a Review of Evidence. *Economic History Review*, 36 1983; C.K. Harley, British Industrialisation before 1841: Evidence of Slower Growth During the Industrial Revolution. *Journal of Economic History*, XLII 1982; and N.F.R. Crafts and Nick Harley, Output Growth and the British Industrial Revolution: a Restatement of the Crafts-Harley View. *Economic History Review*, 45(4) 1992, Nr. 4.

[8]Harley, British Industrialisation, p.272. Crafts and Harley's aforementioned papers make an improvement on the choice of weights rather than the basic series provided mostly by Deane and Cole. For a full list of the data sources, see Crafts, British Economic Growth, p.180.

[9]C.H. Feinstein, *National Income, Expenditure and Output of the United Kingdom, 1855-1965*. Cambridge University Press, 1972.

[10]A. Gerschenkron, Notes on the Rate of Industrial Growth in Italy, 1881-1913. In *Eco-*

by various scholars. In his comprehensive revision of Italian industrial growth before 1914, Stefano Fenoaltea masterfully uses a different technique: textile series are reconstructed by means of different stages of production, controlling for foreign trade and lags between transformations in each stage.[11] This procedure causes the output variation across time not only to be dependent on the underlying input data, but also on the changes in foreign trade of various intermediate goods. Thus, it is a technique that works well, as it captures the effects of foreign trade on output at different stages of production. For instance, the growth of cotton spinning and weaving should vary when weaving develops much faster than spinning due to imports of cotton yarn. More generally, if one country is specialised in a particular stage of a certain industry, then the raw material consumption is not going to reflect the growth of the whole industry. In this sense, Fenoaltea's method successfully makes this distinction.[12]

The methodology of the present work is in accordance with those cited above. The textile and to a lesser extent leather series are constructed following Fenoaltea, to the extent that the available data permits: the production process is vertically, and horizontally in a few cases, divided and the subsequent series for input and further intermediates are obtained. For other sectors, either direct output figures or proxies are used. For instance, the refined sugar output is very well documented, while wheat consumption represents the growth of flour milling. Lastly, the utilities, mining and construction output indices are obtained from Bulutay et al..[13] Table 3.1 summarises which proxy measures are used in each sector.

To test the validity of these proxies, they can be compared to the avail-

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*nomic Backwardness in Historical Perspective: A Book of Essays*. Harward University Press, 1962b.

[11] Stefano Fenoaltea, The Growth of Italy's Cotton Industry, 1861-1913: a Statistical Reconstruction. *Rivista di Storia Economica*, 17(2) 2001; Stefano Fenoaltea, The Growth of Italy's Silk Industry, 1861-1913: a Statistical Reconstruction. *Rivista di Storia Economica*, 5(3) 1988; Stefano Fenoaltea, The Growth of Italy's Wool Industry, 1861-1913: a Statistical Reconstruction. *Rivista di Storia Economica*, 16(2) 2000; Stefano Fenoaltea, Textile Production in Italy, 1861-1913. *Rivista di Storia Economica*, 18 2002. Also for an extensive historiographical survey, see Stefano Fenoaltea, Notes on the Rate of Industrial Growth in Italy, 1881-1913. *Journal of Economic History*, 63(3) 2003.

[12] On the other hand, Fenoaltea does not make significant changes to other manufacturing series: the wood processing output is measured by the finished lumber output, tobacco by the total weight of output, leather by the statistical interpolation of four data points in various years and so on.

[13] Bulutay et al., *Türkiye'nin Milli Geliri*.

Table 3.1.: Overview of Sectoral Output Measures for Turkey

| Sector | Proxy Measure |
|---|---|
| Cotton textiles | Yarn consumption |
| Silk textiles | ditto |
| Woollen Textiles | ditto |
| Hemp goods | ditto |
| Skins and hides | Consumption of processed leather |
| Milling | Wheat consumption |
| Olive oil | Direct output |
| Tobacco | Output of manufactured tobacco |
| Alcohol | Beer and wine output |
| Sugar | Refined sugar output |
| Wood working | Timber consumption |
| Utilities | Electricity and gas output |
| Mining | Output of major minerals |
| Construction | Consumption of building iron and cement |

able anecdotal evidence, in order to cross check the estimated growth rates. Furthermore, the estimated consumption of manufactures, together with relative prices, can be considered as a way of testing the consistency of the independent output estimates.

After obtaining all individual sectoral series, the problem is then to combine them into an aggregate output index, which requires a sound weighting system. In principle, if complete output price data are at hand, then it would be possible to get price-weighted quantity indices (Paasche or Laspeyres). However, in most cases, the output price data is lacking. The second-best alternative is to produce a constant-weighted index by using sectoral value-added shares. In the present work, these shares are derived from value-added and employment data based on the 1927 industrial census. However, taking constant weights for the whole interwar period can be unreliable in view of the significant changes in the composition of industrial output. Given that some sectors, particularly textiles, grew more than others during the 1930s, the 1927 weights will result in an underestimation of the aggregate output growth. Therefore, in order to adjust the weights, we produce another set of weights for the 1930s on the basis of the change in the volume of output and prices at sectoral level between 1927 and 1935.

In the end, by its nature, the present estimation procedure admittedly contains uncertainties, measurement errors and simplifications. First of all, our failure to take into consideration technical change over time constitutes the most serious problem. For instance, if the increasing mechanisation in spinning leads to more yarn being obtained per unit of raw cotton, we are unable to capture this effect. This bias might be significant in textiles in particular, since production became considerably more mechanised in the 1930s. One should therefore keep this in mind when interpreting the final indices.[14] Secondly, another limitation is that we cannot perfectly observe the inventory changes for every sector due to the absence of data. In many cases we consequently take the three-year moving averages as a second-best solution. This leads to a downward or upward bias in year-to-year fluctuations rather than in the general trends.

## 3.3. Sectoral Output Estimates

### 3.3.1. Textiles

The construction of textile output series, and partly leather processing, are to a large degree inspired and informed by Fenoaltea's works on the Italian textile industry, as described above. Following his technique, we make the vertical – and horizontal in the case of leather – disintegration of the production process to take into account foreign trade in intermediate goods, weight losses between successive stages, and inventories. The vertical disintegration means that we start from raw fibre consumption and then move on to the yarn and lastly arrive at fabric output. In each stage, the net imports and waste are taken into account, while technical coefficients are used to capture the weight losses, whenever necessary. The next section explains the reconstruction procedure and data sources for cotton and silk textiles, carpets and rugs, woollens and finally the goods made of hemp.

#### Cotton Textiles

The following simple equations summarise the estimation procedure for cotton textiles:

[14] Similarly, the interwar period witnessed notable technical industrial advances in the world, yet that was more of the case in American industry and less in Europe, so it is highly doubtful such developments reached Turkish industry at all. For a review of technical changes in the interwar period see Feinstein, Temin and Toniolo, *The World Economy Between the World Wars*, pp.14-15.

$$
\begin{aligned}
LY &= [RAW + ImRAW - \delta(INV)] * 0.9 \\
LFAB &= ma(LY + ImY) \\
FCO &= (LFAB + ImFAB)/Population
\end{aligned}
$$

where LY stands for the local yarn output, RAW local raw cotton output, ImRAW net imports of raw cotton, $\delta$(INV) raw cotton inventory change, LFAB local fabric output, ImY net yarn imports, FCO per capita fabric consumption and finally ImFAB net fabric imports.

The estimation procedure starts with raw cotton consumption. As demonstrated in Chapter 1, the two available raw cotton output series had serious flaws, so we needed to estimate a more consistent series based on the regional output figures. The yarn output is defined in the first equation above, where the net inventory change and net raw cotton imports are added to the local raw cotton output (see Table 3.2 for all relevant series).[15] Furthermore, a 10 percent waste of raw cotton is assumed, as suggested by various expert reports, in order to proceed from raw cotton consumption to yarn output.[16]

The year-end inventories of cotton are only available for the most important region, Çukurova, which produced more than half of the total output.[17] We expand these regional inventory figures by the ratio of total raw cotton output to Çukurova's output in each year in order to obtain an estimate of the aggregate year-to-year inventory changes. In this way, we find that the inventory change was almost negligible before 1931, but it reached significant levels in the depression years (1931 and 1933) and at the time when the total output increased significantly (1937 and 1938).

In the second equation, the yarn output is combined with net yarn imports, which leads to the total yarn consumption.[18] We are unable to observe

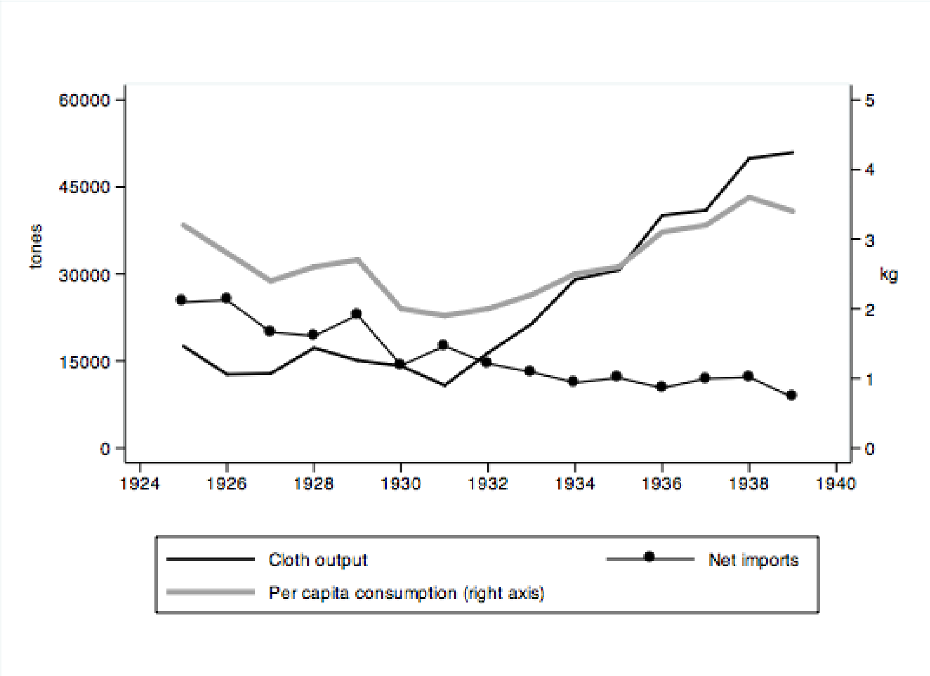
[15]The two categories, raw cotton and cotton wadding, which are grouped as raw cotton in the foreign trade data are aggregated.

[16]İstanbul, İstanbul Pamuklu Mensucat Sanayi Raporu. In *1930 Sanayi Kongresi Raporları*. Milli İktisat ve Tasarruf Cemiyeti, 1932.

[17]Adana Ticaret ve Zahire Borsası, Yıllık.

[18]Bleached, carded and dyed yarn are aggregated due to the absence of another unit of measure. Fenoaltea argues that length, rather than weight, can be considered as another and more relevant unit of measure, as one should take into account the possible quality improvement in textile production. He converts all series in weight into the series in

Figure 3.1.: Cotton Textiles in Turkey: Output, Imports and Consumption, 1925-1939




Source: Table 3.2

changes in yarn inventories, so we use the three-year moving average of yarn consumption to reflect it. This represents total fabric output, assuming that all of the yarn waste was recycled. Finally, in the last equation, the sum of net fabric imports and local fabric output divided by population provides per capita fabric consumption.[19] Note that although a proportion of the cotton yarn should be allocated to consumption in the silk industry, it is simply ignored because of its negligible size.[20]

As a result of this methodology, the variation in final fabric output over time is due to the underlying raw cotton output, the raw cotton stocks and foreign trade at each stage. Turkey was a net exporter of raw cotton and a net importer of yarn and fabric, so foreign trade carries a large weight in the final figures. The raw cotton exports followed a U-shape pattern, as the decline

length using a weight-length conversion method. Fenoaltea, Italy's Cotton Industry. What makes his point relevant in our case is that interwar Turkey witnessed increasing factory-based mechanisation in the textile sector. However, consistent length figures are not available and, moreover, Fenoaltea's conversion method does not seem to bring about a significant change in final growth rates.

[19]All fabric types are aggregated, excluding the finished cotton goods.

[20]Silk output figures were clearly not comparable in size to cotton output.

Table 3.2.: Cotton Output in Turkey (Tons), 1924-1940

| | Raw cotton | Raw cotton net imports | Raw cotton inventories | Net yarn imports | Yarn output | Fabric output | Fabric net imports | Fabric consumption per capita |
|---|---|---|---|---|---|---|---|---|
| 1924 | 39298 | -12395 | 42.8 | 3847 | 24174 | | | |
| 1925 | 26486 | -15876 | 34.8 | 4034 | 9556 | 17523 | 25134 | 3.2 |
| 1926 | 23813 | -16783 | 3.4 | 4604 | 6355 | 12689 | 25494 | 2.8 |
| 1927 | 26750 | -15871 | 36.7 | 3758 | 9761 | 12836 | 19984 | 2.4 |
| 1928 | 26060 | -14443 | 97.9 | 3628 | 10401 | 17239 | 19316 | 2.6 |
| 1929 | 38492 | -16380 | 6.7 | 4187 | 19983 | 15089 | 22891 | 2.7 |
| 1930 | 33673 | -28602 | 141.5 | 2626 | 4443 | 14127 | 14241 | 2.0 |
| 1931 | 30458 | -20162 | 1769.7 | 3341 | 7802 | 10794 | 17547 | 1.9 |
| 1932 | 19879 | -9135 | 635.4 | 3481 | 10690 | 16401 | 14548 | 2.0 |
| 1933 | 27791 | -3953 | 1595.4 | 3298 | 20590 | 21409 | 13056 | 2.2 |
| 1934 | 37762 | -13029 | 1955.2 | 4231 | 21936 | 29057 | 11256 | 2.5 |
| 1935 | 52228 | -15455 | 247.0 | 2484 | 34633 | 30668 | 12070 | 2.6 |
| 1936 | 51068 | -22781 | 24.8 | 3061 | 25658 | 40076 | 10338 | 3.1 |
| 1937 | 67185 | -11345 | 2485.8 | 6350 | 48041 | 40965 | 11941 | 3.2 |
| 1938 | 64731 | -25965 | 4087.2 | 6336 | 33448 | 49887 | 12185 | 3.6 |
| 1939 | 63950 | -9048 | 2047.7 | 4239 | 51247 | 50925 | 8748 | 3.4 |
| 1940 | 77115 | -11899 | 4000 | 567 | 56937 | | | |

Source: See the text.

in the early 1930s was reversed after the mid-1930s with increasing foreign demand due to the worldwide recovery from the Great Depression. Yarn imports continued to be significant throughout the period, whereas fabric imports gradually declined in accordance with the increase in local output. Figure 3.1 compares the estimated fabric output and the net fabric imports from 1925 to 1939, together with the implied per capita consumption. The local output was around 15,000 tons in the 1920s and almost tripled during the 1930s. Meanwhile, the imports halved gradually over the whole period, with the result that the per capita consumption exceeded the level of 1920s in the second half of the 1930s. The share of imports in total consumption was around 50-60 percent in the 1920s, then it was reduced to 15 percent by 1939, which clearly indicates the extent of import substitution.

How do these indirect estimates compare with the additional evidence? We have some direct output data derived from official sources for the post-1933 years. For the sake of comparison, the factory fabric output can be taken as the sum of the yarn produced by factories and net yarn imports.[21] As seen in Table 3.3, the factory fabric output seems to have increased from 12,000 tons to 27,000 during 1933-1939, while our aggregate figures rose from 21,000 to 50,000 tons. The gap can be explained by unobserved home consumption and the cotton consumed by handlooms. That the growth rates of aggregate and factory production are very much comparable suggests that the market expanded across both segments (factories and handlooms) to a similar degree between 1933 and 1939. By contrast, the separate fabric output series in Eldem and Tekeli and İlkin, presented in Table 3.3, claim to cover both factory and handicraft output, but there is little difference between their series and the factory output figures that we derive from official sources.[22] Their bias seems to have two origins: first, they underestimate factory output, and, second, both of them refer to Eldem's simple guess for the handloom output, which remains almost constant at around 9,000 tons over 1933-1939.

More fragmentary evidence also supports the estimates provided here. A number of market reports presented by textile experts to the Industrial Congress in 1930 indicate that already by 1930 the number of handlooms was

[21]The yarn production of 15 factories is provided in Turkey, Ticaret Vekaleti, *Konjonktür*.

[22]Eldem, Türkiye'de Sanayileşme; and İlhan Tekeli and Selim İlkin, Savaşmayan Ülkenin Savaş Ekonomisi: Üretimden Tüketime Pamuklu Dokuma. In İlhan Tekeli and Selim İlkin, editors, *Cumhuriyetin Harcı: Köktenci Modernitenin Ekonomik Politikasının Gelişimi*. Volume 2, Bilgi Üniversitesi, 2004.

Table 3.3.: Comparison with Existing Estimates of Cotton Textiles Output (Tons), Turkey

| | Factory output | Eldem (1947) | Tekeli and Ilkin (2004) | Own estimate |
|---|---|---|---|---|
| 1933 | 12418 | 12400 | 12423 | 21409 |
| 1934 | 16219 | 15000 | 15961 | 29057 |
| 1935 | 14292 | 15400 | 15154 | 30668 |
| 1936 | 18097 | 18000 | 18520 | 40076 |
| 1937 | 22444 | 22500 | 22401 | 40965 |
| 1938 | 26007 | 26000 | 24849 | 49887 |
| 1939 | 27061 | 27100 | 26414 | 50925 |

Source: The factory output is the sum of mechanically-spun yarn of factories and yarn imports. Turkey, Ticaret Vekaleti, Konjonktür(various issues).

around 30,000 all over the country and only 3,000-4,000 producing about 2,000 tons of fabrics were in and around Istanbul.[23] One third of all handlooms in the country were located in the remote villages, producing their own hand-spun yarn and fabrics for self-consumption and/or selling in the surrounding small local markets. It is impossible to get a reliable estimate from these fragmented figures but a liberal guess based on them implies that the total handicraft output should be 10-12 thousand tons by end of the 1920s, which is consistent with our estimates. Combined with the long-term trend in our series, non-factory output also seems to have decreased between 1929 and 1933 and revived afterwards in accordance with the total output, so that the growth in factory output in all likelihood outpaced that in non-factory output between 1929-1939.[24] Furthermore, the total raw cotton consumed by nine large factories in Turkey in 1934-1935 was estimated by the cotton commission of Turkofis to be 76,205 bales, equivalent to around 14,000 tons of cotton yarn, allowing for 10 percent waste.[25] Combined with yarn imports in 1934, the total yarn consumption by mainly factories was around 18,000-19,000 tons. By comparison, we estimate 1934 output at 30,000 tons, so the gap, 10,000-11,000 tons, reasonably stands for home and handloom consumption.

Although it is hard to directly measure the actual extent of the downturn

[23] Pamuklu Sanayi Encümeni, Rapor. In *1930 Sanayi Kongresi Raporları*. Milli İktisat ve Tasarruf Cemiyeti, 1932; A. Fazlı, Pamuklu Mensucat Sanayimiz. In *1930 Sanayi Kongresi Raporları*. 2nd edition. Ankara Sanayi Odası, 1932

[24] This fact is more clearly seen in the aggregate output indices presented at the end of this chapter.

[25] Adana Ticaret ve Zahire Borsası, Yıllık, 1938/39, p.210.

and the following revival of handlooms, it is therefore clear that there was a substantial amount of non-factory production that is not reflected in the estimates of Eldem and Tekeli and İlkin. In this respect, our indirect estimates are more consistent with both the official figures and anecdotal evidence.

### Silk Textiles

During the 19th century, the Mediterranean was one of the major raw silk suppliers, along with China and India.[26] Although sericulture in Turkey was not comparable in size to Italy or Japan, the income emanating from silkworm raising and later processing was particularly important for a specific region in the West, Bursa and its neighbourhood. Both the cocoon and raw silk production were largely concentrated there, while the reeling and weaving spread to the rest of the larger surrounding region. Cocoon output significantly expanded in the late nineteenth century and after a short-term setback due to diseases hitting silkworms, the onset of World War I saw the heyday of sericulture.[27] However, the worldwide decline of natural silk in the interwar years as a result of the expansion of the artificial substitutes adversely affected the local industry. Moreover, population exchanges immediately after World War I led to the emigration of the Christian population, who had long been engaged in the silk business. It took time for the remaining local residents to obtain the necessary skills to raise mulberry trees and improve their manufacturing capacity. Meanwhile, some of the mulberry fields were converted to tobacco and the other fields remained of poor quality.[28] The extent of the reversal can be strikingly seen in the number of reeling machines at work, which decreased from 1,441 in 1913 to 561 in 1940.[29]

The official statistical sources are quite limited on the state of the interwar silk industry, providing only fresh cocoon figures starting from 1933. In the very late Ottoman period, the whole industry was monitored by the Ottoman Public Debt Administration (Düyun-u Umumiye), so the number of families producing cocoons, cocoon output, raw silk produced and the number of looms are well documented for the years prior to 1920. We are also better

[26] Giovanni Federico, *The Economic History of Silk Industry, 1830-1930.* Cambridge University Press, 1997.

[27] Dalsar discusses the history of sericulture in Anatolia in detail. Fahri Dalsar, *Türk Ticaret ve Sanayi Tarihinde Bursa'da İpekçilik.* İstanbul Üniversitesi, 1960.

[28] Bedia Sükrü, *İpek Böceği ve İpek.* Coğrafya Enstitüsü, p.29.

[29] Aziz Duru, *İpekböcekçiliği.* Bursa Koza Satış Kooperatifleri Birliği, 1937.

informed of the state of mechanisation at the reeling and weaving stages: there were 561 hand reeling and 7,739 steam reeling machines in operation in 1913, showing a high degree of mechanisation.[30] As for weaving, Bursa had 348 power looms and 617 handlooms in 1920. These figures indicate that reeling was rather mechanised, whereas weaving to a large degree depended on traditional handlooms. The extent of mechanisation most likely remained unchanged in the interwar years.

The estimates of cocoon, raw silk and silk yarn output are linked with the following equation:

$$
\begin{aligned}
DRI &= [FRE + ImFRE] * 0.35 \\
RAW &= (DRI + ImDRI) * 0.3 \\
YARN &= ma(RAW + ImRAW) * 0.9 \\
CONS &= (YARN + ImYARN + ImFAB)/Population
\end{aligned}
$$

where DRI stands for dried cocoon output, FRE fresh cocoons, ImFRE imports of fresh cocoons, RAW raw silk, ImDRI imports of dried cocoon, YARN silk yarn, ImRAW imports of raw silk, ImYARN imports of both natural and artificial silk yarn, ImFAB imports of silk fabrics and finally CONS represents the per capita fabrics consumption. In this procedure, the production process is disaggregated into three stages: drying of fresh cocoons, reeling and yarn production.

The estimation begins with the fresh cocoon output, which is obtained from the official agricultural statistics for the years 1933-1939. For the earlier years except for 1927, the data is taken from a number of additional sources.[31] The missing value for 1927 is the simple interpolation, which is sensible because no source indicates an extraordinary output shock in 1927. Then by adding

[30] Reşat, İpekli Mensucat Sanayimiz. In *1930 Sanayi Kongresi Raporları*. 2nd edition. Ankara Sanayi Odası, 1932a.

[31] For 1924-1929: Bursa Ticaret ve Sanayi Odası, *İpekçiliğin Lüks Vergisi Karşısındaki Durumu*. 1943; 1930-32: İstanbul Ticaret ve Zahire Borsası, Yıllık, 1937, p.59. These numbers were cross-checked with the additional evidence in Sükrü, which gives the cocoon production in Bursa between 1924-32, Duru for 1932. Sükrü, *İpek Böceği ve İpek*; and Duru, *İpekböcekçiliği*. The following sources were also consulted: Turkey, Ziraat Vekaleti, *İpek Böcekçiliği*. 1938a; Süheyla Soner, *Bursa İpek Atölye Sanayi*. İÜ Coğrafya Fakültesi, 1947; Dalsar, *Bursa'da İpekçilik*; İstanbul Ticaret ve Zahire Borsası, Yıllık.

the net import of the fresh cocoons, we get the total domestic fresh cocoon consumption.

The next step is to get the dried cocoon in weight from the fresh cocoon series. It is well known that drying significantly reduces the weight of the fresh cocoon, and, based on the contemporary sources, we take the coefficient of 0.35 to reflect the weight loss. Subsequently, the net imports of dried cocoon are added to the domestic output. One should notice that since cocoons were mostly exported as dried, the deduction drives a wedge between the underlying fresh and dried cocoon series. At this stage, we need another technical coefficient reflecting the weight changes during the reeling, which generates raw silk from dried cocoons. It is taken to be 0.3 based on the relatively large amount of anecdotal evidence. Thus, assuming 10 percent waste in yarn production, yarn output is the sum of local raw silk and net imports. Assuming the inventories were held as raw silk, we take the three-year moving average of raw silk consumption. Consequently, the local yarn is added to the net imports of both natural and artificial silk yarn and then fabric imports, which leads to the total fabric consumption. All the waste in fabric production is assumed to be recycled.

The resulting fabric output is presented in Figure 3.2 in comparison with imports and per capita consumption. The output turns out to have increased four times from 1925 to 1939, with a short-term decline between 1932 and 1934. After 1929, the imports and local output were negatively correlated, and imports were negligible after 1936. Import expansion in 1934-35 was the result of the inflow of cheap Japanese goods, which came to a halt with tariff modifications in 1936, as will be discussed in the following chapter. On the other hand, the per capita consumption does not show a trend during the period under consideration. The gradual decline in the 1920s was slightly offset in the early 1930s, and then it returned to the level of the 1920s in the second half of the 1930s.

### Oriental Carpets and Rugs

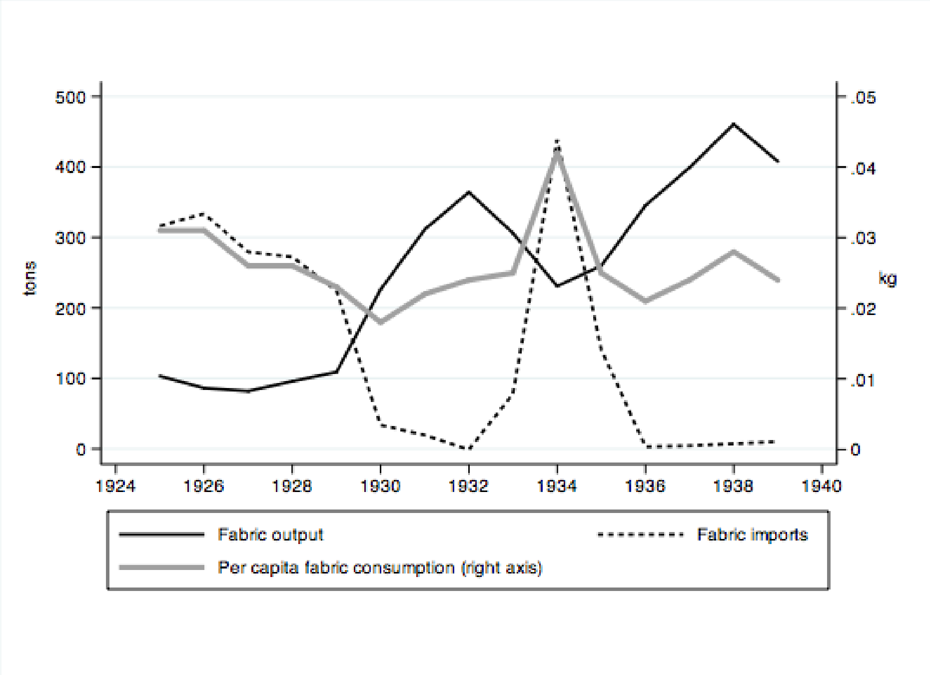
The production of oriental carpets and rugs in Turkey was a traditional export-oriented industry. The production was relatively more market oriented, and export production was geographically concentrated in western Anatolia and conducted by small- or medium-scale traditional workshops.

Table 3.4.: Silk Output in Turkey, 1924-1940 (Tons)

| | Cocoons | | | | Raw silk | | | Yarn | | | Fabrics | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fresh cocoons | Imported fresh cocoons | Dried cocoon output | Imported dried cocoons | Local output | Net imports | Consumption | Yarn output | Net yarn imports | Yarn consumption | Net fabric imports | Consumption per capita |
| 1924 | 839 | -5.7 | 296 | -64.5 | 69.4 | -27.6 | | | | | | |
| 1925 | 932 | -20.0 | 333 | -180.0 | 46.0 | -65.6 | 25.6 | 23.0 | 80.0 | 103.1 | 316.2 | 0.031 |
| 1926 | 1885 | -25.2 | 669 | -298.2 | 111.1 | -56.5 | 28.8 | 25.9 | 60.4 | 86.3 | 333.6 | 0.031 |
| 1927 | 1856 | -10.4 | 653 | -136.6 | 155.0 | -103.7 | 40.3 | 36.2 | 45.8 | 82.0 | 279.3 | 0.026 |
| 1928 | 1828 | -17.8 | 646 | -420.2 | 67.7 | -52.8 | 55.4 | 49.8 | 46.0 | 95.8 | 272.2 | 0.026 |
| 1929 | 2061 | -8.0 | 724 | -273.8 | 135.0 | -35.1 | 82.1 | 73.9 | 34.9 | 108.8 | 224.2 | 0.023 |
| 1930 | 1600 | -8.8 | 563 | -57.5 | 151.7 | -20.2 | 117.2 | 105.4 | 120.5 | 226.0 | 33.7 | 0.018 |
| 1931 | 1000 | -0.9 | 350 | 35.5 | 115.7 | 4.3 | 126.2 | 113.6 | 197.6 | 311.2 | 19.3 | 0.022 |
| 1932 | 1250 | 0.0 | 438 | -5.3 | 129.6 | -2.5 | 140.9 | 126.8 | 237.3 | 364.1 | -0.9 | 0.024 |
| 1933 | 1889 | 0.1 | 661 | -67.6 | 178.0 | -2.4 | 165.1 | 148.6 | 157.3 | 305.9 | 78.0 | 0.025 |
| 1934 | 1956 | 0.0 | 685 | -36.6 | 194.4 | -1.7 | 187.4 | 168.7 | 62.1 | 230.8 | 438.5 | 0.042 |
| 1935 | 2085 | 0.0 | 730 | -68.0 | 198.5 | -4.6 | 199.8 | 179.8 | 79.8 | 259.7 | 141.0 | 0.025 |
| 1936 | 2135 | 0.0 | 747 | -29.4 | 215.3 | -2.6 | 195.1 | 175.6 | 169.6 | 345.2 | 3.1 | 0.021 |
| 1937 | 1975 | 0.1 | 691 | -93.8 | 179.2 | -0.7 | 201.2 | 181.1 | 217.8 | 399.0 | 4.4 | 0.024 |
| 1938 | 2344 | 0.0 | 820 | -112.3 | 212.4 | 0.1 | 183.9 | 165.5 | 295.2 | 460.6 | 7.4 | 0.028 |
| 1939 | 2243 | -0.1 | 785 | -231.5 | 166.1 | -5.4 | 212.4 | 191.2 | 216.6 | 407.8 | 10.1 | 0.024 |
| 1940 | 3014 | 0.0 | 1055 | -152.0 | 270.9 | -6.8 | | | | | | |

Source: See the text.

Figure 3.2.: Silk Textiles in Turkey: Output, Imports and Consumption, 1925-39




Source: Table 3.4.

The output was highly sensitive to foreign demand and suffered from the negative demand shock in the 1930s, including when the United States, one of the principal buyers of the Turkish carpets, increased import duties.[32] Total exports were around 1,400 tons during 1925-29, but swiftly decreased to negligible levels in the following decade. Other than that, direct data on local consumption is quite scarce. The present output estimate therefore reconstructs local consumption based on cotton textiles consumption and the relative prices.

To begin, we need a benchmark estimate of local sales. The report presented to the 1930 Industrial Congress by the manager of a large textile factory estimates the total output at around 7-7.5 TL million in 1929 and 9-9.5 million in 1928.[33] The export values are also comparable to his figures: TL 5.4 and 6.5 million in 1929 and 1928, respectively. Eldem also predicts that 61 percent of the output volume was exported in 1929.[34] One should obviously expect

[32] Reşat, *Türkiye'de Mensucat Sanayi: Halihazırı ve İnkişafı*. İstanbul Ticaret Odası, 1932b.
[33] Reşat, *Türkiye'de Mensucat Sanayi*.
[34] Eldem, Türkiye'de Sanayileşme.

a higher share of exports in value than in volume because of higher export prices. Therefore, we prefer to take an intermediate position by assuming 0.3 as the share of local sales in volume in 1929. Thus, we find 580 tons of local sales based on the export figure of 1,352 tons.

Next we construct a demand index in order to extrapolate this benchmark estimate. The index formula is derived from the consumption equation of one commodity:

$$C_i = \left(\frac{P_i}{P}\right)^{\alpha} Y^{\beta}$$

where $C_i$ is the consumption of commodity i, $P_i$ its price, $P$ aggregate price, $Y$ real income and $\alpha$ and $\beta$ own price and income elasticities respectively. Here, the real consumption of a commodity is a function of its relative price with respect to the aggregate price level and real incomes. For simplicity, we assume the same elasticities for carpets and cotton cloth, so we estimate carpet consumption from cotton cloth consumption through their relative prices in the following way:

$$C_{car} = C_{cot}\left(\frac{P_{car}}{P_{cot}}\right)^{\alpha}$$

where $C_{car}$ and $C_{cot}$ denotes the indices of carpet and cotton consumption and $P_{car}$ and $P_{cot}$. $\alpha$ is the own-price elasticity, which for both goods is assumed to be -1.3, as Hansen accepted for cotton textiles.[35] The consumption of cotton textiles was estimated in the earlier section, including both local output and imports. For 1929-1939, the price series are the simple average of the available wholesale cotton cloth prices (both imported and locally-produced goods) and carpet prices on the Istanbul commodity exchange. For the earlier period, these series are taken back with the average import prices for cotton cloth and the export prices for carpets, as they best reflect the domestic prices.[36] Local sales in 1929 are then extrapolated with the demand index obtained above to get the local sales series. The latter is combined with exports to

[35] Hansen, Income and Consumption. We tried alternative elasticity figures, ranging from -1 and -1.5, yet the resulting output series remains relatively stable.

[36] Price data is obtained from İstanbul Ticaret ve Zahire Borsası, *Sicilli Ticaret Gazetesi ve Piyasa Cetveli*.

Table 3.5.: Carpet Output in Turkey, 1925-1939

| | Carpet exports | Cotton cloth consumption | Cotton cloth prices | Carpet prices | Local demand index | Local carpet sales | Total Carpet Output |
|---|---|---|---|---|---|---|---|
| | tons | 1929=100 | TL/roll | TL/m2 | | tons | tons |
| 1925 | 1326 | 112 | 13.1 | 17.2 | 78.5 | 705 | 2032 |
| 1926 | 1416 | 101 | 11.9 | 19.1 | 54.5 | 490 | 1906 |
| 1927 | 1436 | 86 | 11.1 | 18.6 | 44.1 | 396 | 1833 |
| 1928 | 1621 | 96 | 11.8 | 16.1 | 64.4 | 579 | 2200 |
| 1929 | 1352 | 100 | 11.4 | 16.0 | 64.5 | 580 | 1932 |
| 1930 | 963 | 75 | 10.1 | 16.4 | 39.7 | 357 | 1320 |
| 1931 | 791 | 75 | 8.4 | 13.4 | 40.8 | 367 | 1158 |
| 1932 | 409 | 81 | 7.7 | 11.3 | 49.0 | 440 | 850 |
| 1933 | 356 | 91 | 6.9 | 9.3 | 62.4 | 560 | 917 |
| 1934 | 301 | 106 | 7.9 | 7.9 | 106.2 | 955 | 1256 |
| 1935 | 209 | 113 | 8.4 | 7.8 | 123.8 | 1113 | 1322 |
| 1936 | 218 | 133 | 7.9 | 7.8 | 135.1 | 1214 | 1432 |
| 1937 | 111 | 139 | 7.7 | 8.4 | 124.7 | 1121 | 1232 |
| 1938 | 0 | 163 | 7.7 | 8.6 | 142.7 | 1283 | 1283 |
| 1939 | 0 | 157 | 7.2 | 8.5 | 125.5 | 1128 | 1129 |

Source: See the text.

arrive at the total local output. Note that since the cotton cloth series was already corrected for inventory changes and the export series represents annual figures, no further correction for inventories is needed in this case.

Table 3.5 presents all the component series. The estimated final output declined by more than half between 1928 and 1932 and remained at around two thirds of the 1925-1928 level despite the moderate recovery after 1933. The increase in local sales in the second half of the 1930s turns out to be slightly larger than cotton cloth consumption, since carpet prices fell more than textile prices. However, what after all determined the output pattern was the enormous and prolonged decline in exports as a result of external demand changes. The recovery in domestic demand fell short of making up for the external shock.

This result can be compared with the additional evidence on the mostly Aegean production. The data on the carpet output for the main export-oriented Aegean towns and a few interior cities implies a 70 percent decline from 1929 to 1936, which is higher than our own estimate (26 percent).[37] Yet, one should observe the huge regional dislocation. For instance, while the output of three famous towns, Uşak, Simav and Gördes, almost disappeared, the neighbour-

[37] İzmir Ticaret ve Sanayi Odası, Mecmua, 8(1-2), 1939, pp.23-24 and 1, 1939, pp.8-9.

ing cities (Isparta and Demirci) and one central Anatolian city, Kayseri, saw significant output rises during the same period. As Reşat reminded us, the Aegean production was largely geared toward foreign markets compared to the other producers. In this regard, the drastic fall in Aegean output was likely the result of the contraction of export markets.[38]

### Woollen Textiles

Wool was the second most widely consumed fibre in Turkey, due both to widespread sheep husbandry and a climate suitable for woollen fabrics as well as other conventional uses of the fibre (carpets, felts, hats). Local wool was mostly of the worsted type, so they were to a large extent used in the making of carpets, felts and covers.[39] This was more about the fineness of the imported wool types, while the domestic worsted suited the production of carpets, rugs and also non-fabric goods to a lesser degree. The production was carried out by a large number of small workshops and also in rural households for self-consumption throughout the country, while a small number of factories came to be built in the 1930s.[40] Therefore, the available figures on the industry are limited to the large factories as a result of the dispersed and small-scale nature of production.

The production process is here disaggregated into the three broad stages: The washing of greasy wool, yarn production from clean wool and finally the manufacturing of woollen cloth, hemps, covers and hats. The equations below describe the successive stages:

[38] Reşat, *Türkiye'de Mensucat Sanayi*, p.9.
[39] Reşat, *Türkiye'de Mensucat Sanayi*.
[40] For the development of the woollen industry over the 1930s and 1940s, see TOBB, *Türkiye'de Yün İpliği ve Yünlü Mensucat Sanayi*. Türkiye Ticaret Odaları, Sanayi odaları ve Ticaret Borsaları Birliği, 1959b, pp.28-34.

$$
\begin{aligned}
DoGRE &= SHEEP * 1.75 * 0.97 \\
GRE &= DoGRE + ImGRE + INV - CAR \\
CLE &= GRE * 0.58 \\
YARN &= (CLE + ImCLE) * 0.95 \\
FINAL &= YARN + ImYARN \\
CONS &= (FINAL + IMFINAL)/Population
\end{aligned}
$$

where SHEEP stands for the sheep flock size and DoGRE, GRE, ImGRE, INV and CAR the domestic output, total consumption, net imports and inventory change of greasy wool. The wool that is consumed in carpet production is also allocated at this early stage. CLE represents the domestic clean wool obtained after washing. And the rest is straightforward: local and imported clean wool (CLE and ImCLE) are added to imported yarn (ImYARN) to get the cloth output. Five percent waste is assumed at the spinning stage. Finally, local final good output (FINAL) is added to the net imports to obtain the total consumption (fabrics, felts, covers and hats).[41]

To begin, the sheep flock size is obtained from official statistics.[42] There are two available series: the sheep of all ages and those subject to animal tax, that is, those more than one year old. Since the clipping required a certain age, the second series is preferred. Then the greasy wool yield is taken as 1.75 kg per sheep, with 3 percent of the wool kept on farm. This yield estimate is a weighted average of wool yields of the existing sheep types in Turkey.[43] Then, the resulting domestic output of greasy wool is combined with net imports, or better to say net exports because a large part was usually exported. Once

[41] This section is greatly informed by Esmersoy, which is a detailed contemporary monograph on the woollen industry of Turkey. Sukru Esmersoy, *Yüncülük*. Yeni Basımevi, 1940.

[42] Turkey, İstatistik Umum Müdürlüğü, *İstatistik Yıllığı*.

[43] Esmersoy assumes a 1.5 kg average yield, but we make a correction in view of the different wool yields of different sheep types. Esmersoy, p.118. Among the local types, Akkaraman and Kızılkaraman gave higher yields than all others, which was 2 kg and they made up almost one half of the total sheep stock in 1935. Therefore, 1.75 is suggested here as a rough weighted average. For the number of sheep types, see Türkofis, *Türkofis Aylık Bülten*, 1937(3), p.27; and for the official greasy wool series in the years after 1937, see Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Zirai İstatistik Özetleri*.

Table 3.6.: Woollen Textiles Output in Turkey: Output, Imports and Consumption (Tons), 1925-1940

| | | Greasy wool | | | | | Clean wool | | Yarn | | Final goods | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sheep flock size | Domestic output | Net imports | Inventories | Domestic available | Used in carpet making | Local output | Net imports | Local output | Net imports | Local output | Net imports | Consumption per capita |
| 1925 | 11469 | 19469 | -2607 | | 15220 | 8795 | 3726 | -170 | 3378 | 285 | 3663 | 2859 | 0.28 |
| 1926 | 12872 | 21850 | -7935 | | 16951 | 8250 | 5047 | -145 | 4657 | 401 | 5057 | 3157 | 0.38 |
| 1927 | 13632 | 23140 | -3065 | | 16779 | 7933 | 5130 | -39 | 4837 | 103 | 4940 | 2402 | 0.36 |
| 1928 | 12079 | 20504 | -4158 | | 16601 | 9522 | 4106 | -213 | 3698 | -22 | 3676 | 2160 | 0.26 |
| 1929 | 10185 | 17288 | -3906 | | 14943 | 8363 | 3816 | -880 | 2789 | 360 | 3149 | 2353 | 0.22 |
| 1930 | 10498 | 17821 | -2723 | 447 | 14855 | 5716 | 5301 | -288 | 4762 | 457 | 5218 | 1526 | 0.36 |
| 1931 | 11762 | 19967 | -3883 | 500 | 16030 | 5014 | 6389 | 47 | 6114 | 628 | 6743 | 1102 | 0.45 |
| 1932 | 11759 | 19960 | -3026 | 617 | 16818 | 3679 | 7621 | 383 | 7603 | 835 | 8439 | 553 | 0.56 |
| 1933 | 11071 | 18793 | -4529 | 4333 | 10547 | 3969 | 3816 | 79 | 3700 | 868 | 4568 | 617 | 0.29 |
| 1934 | 10739 | 18230 | -5276 | 1143 | 16144 | 5438 | 6209 | -421 | 5499 | 880 | 6379 | 460 | 0.40 |
| 1935 | 12436 | 21109 | -3240 | 2693 | 16319 | 5723 | 6146 | -149 | 5697 | 812 | 6509 | 364 | 0.40 |
| 1936 | 14801 | 25124 | -8302 | 2400 | 17116 | 6198 | 6332 | -793 | 5262 | 1340 | 6602 | 441 | 0.40 |
| 1937 | 16447 | 27918 | -9765 | 3833 | 16720 | 5333 | 6604 | -434 | 5862 | 1487 | 7350 | 468 | 0.44 |
| 1938 | 17752 | 30134 | -5494 | 2775 | 25698 | 5554 | 11684 | -138 | 10968 | 999 | 11967 | 640 | 0.70 |
| 1939 | 18938 | 32147 | -5398 | 3000 | 26524 | 4885 | 12550 | -57 | 11869 | 706 | 12574 | 201 | 0.72 |

Source: See the text.

the domestic available wool is obtained, the inventories need to be deducted. The relevant data is limited to Istanbul for 1930-1939.[44] It is known that the marketed wool produced in central Anatolia, the eastern provinces and the Marmara region was exported through the Istanbul port, whereas the produce of the Aegean and Mediterranean regions were transferred through Izmir port in the west and Mersin port in the south.[45] Consequently, in order to estimate the aggregate stocks, we use the ratio of the wool output of the regions that were connected with the Istanbul market to the aggregate output. Their share was around 60 percent in 1935 and 1936, so it is taken to be constant for all other years and the stocks in Istanbul are inflated with this coefficient.[46] The aggregate figures we arrive at show a significant increase in inventories in 1933, which was the worst year of the depression. The net inventory change was -3,700 tons then out of 14,000 tons of available domestic greasy wool. Although the inventories remained large in the following years, the net change was much smaller, with the second peak in 1937. As for 1925-1930, we take the three-year moving average of the greasy wool net of exports to allow for the inventory change due to the lack of any consistent information.

Once the domestic consumption of the greasy wool, which is the output net of exports and the net inventory change, is calculated, we need to separate out the portion of the wool needed for carpet making, as it was the basic input of oriental carpets, as stated above.[47] To do so, we refer to the rough prediction made by Şevket Torgut, the director of one of the largest textile factories in Istanbul in 1930, about the total amount of the greasy wool produced in 1928 and its allocation between exports, carpet making, and home and factory consumption.[48]His figures are not only consistent with our own estimate of total greasy wool but also with another report on the state of Turkey's wool

[44]Istanbul figures are collected from the daily market report of the Istanbul Commodity Exchange, İstanbul Ticaret ve Zahire Borsası, Piyasa Cetveli.

[45]İstanbul Ticaret Odası, Mecmua, 1926(6).

[46]Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Tarım İstatistikleri 1934-1937*. 1939, p.23.

[47]Although cotton was also used in the production of certain types of carpets, its amount was negligible compared to the aggregate cotton output, so we do not need to deduct this sum from the raw cotton series. See İzmir Ticaret ve Sanayi Odası, 5(7-8), 1930, pp.23-24.

[48]Sevket Torgut, Yünlü Mensucat Raporu. In *1930 Sanayi Kongresi Raporları*. 2nd edition. Ankara Sanayi Odasi, 1932, p.56. Aggregate wool output: 16.2 million okka, of which 7.5 million okka (46 percent) were used for carpets, 4.7 million okka (28 percent) exported, with the rest equally divided between the factories and other home consumption (1 kg=1.23 okka).

industry.[49] This benchmark estimate of the share of carpet making in greasy wool consumption, 46 percent in 1928, is applied to our wool output estimate of 1928 and then the resulting figure (9,522 tons) is extrapolated with the carpet output index, which we estimated in the preceding section. This is a key step in the present estimation because a large part of local wool was used in the carpet industry, which experienced a serious downturn during the 1930s.

After allocating the greasy wool between carpet making and other goods we move on to the second stage of estimation: deriving the clean wool series from greasy wool. We obtain the clean wool series simply by multiplying the domestic greasy wool figures by a technical coefficient of 0.58, which is derived from a survey of "cleaning productivity" for different types of sheep in Turkey provided by Esmersoy.[50] Since that composition does not seem to have changed over time, which would have required a radical variation in the composition of sheep, the coefficient is taken to be constant.

Subsequently, the standard procedure when dealing with cotton and silk goods is followed to get the final production and consumption figures: five percent waste is assumed in spinning and the net imports of woollen yarn are added to local yarn, leading to the local output of fabrics, felts, hats and other goods.[51] It also yields total consumption with net imports. Note that the available anecdotal evidence suggests that the production of felt, covers and hats was larger than fabric output.[52]

The results can be compared with the direct output evidence. The total woollen yarn output of 14 large factories was around 2,500 tons in 1935, 2,800 in 1936, 3,200 in 1937, 4,500 in 1938 and 6,500 in 1939.[53] The pattern is largely consistent with our own estimate of wool yarn output. In both series,

[49] İzmir Ticaret ve Sanayi Odası, Mecmua, 5(7-8), 1930, pp.23-24. This report states that the total greasy wool output was 14,000-15,000 tons, of which 4,000-5,000 thousand tons were used for carpets. The corresponding figures in our series for 1930 are pretty close to these numbers: 17,800 and 5,700 tons.

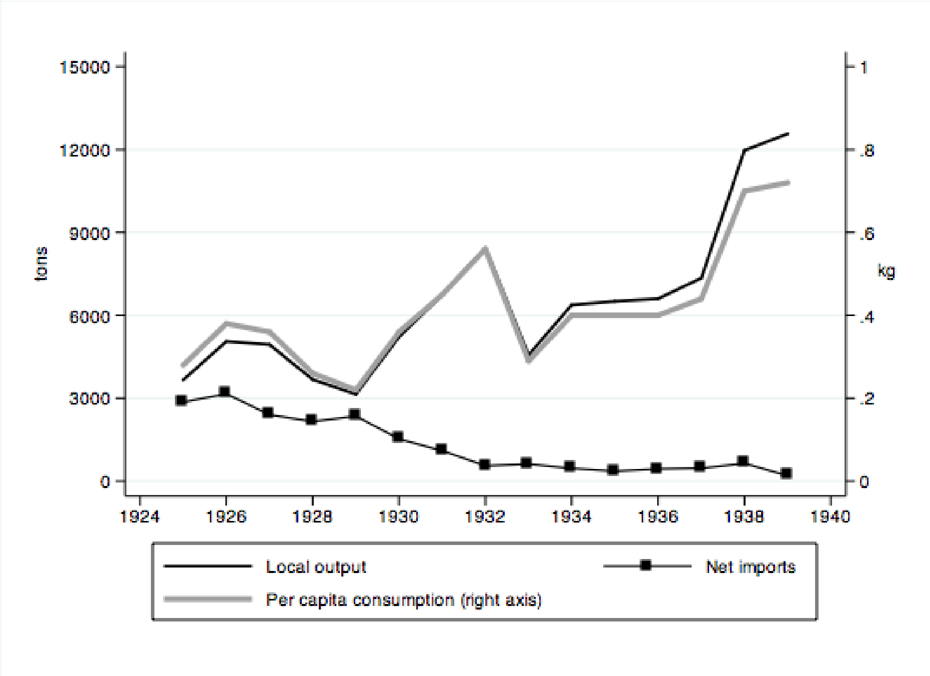
[50] Esmersoy, *Yüncülük*, p.24.

[51] Such a small waste rate reflects the rate in the Strayhgarn factories in the 1950s. TOBB, *Türkiye'de Yün İpliği*, pp.33-35.

[52] Torgut, Yünlü Mensucat; İzmir, Yün Mensucat Raporu. In *1930 Sanayi Kongresi Raporları*. 2nd edition. Ankara Sanayi Odası, 1932; and Türkofis, 1937(3). This can also be seen in the distribution of employment within the wool industry in 1927, according to which, while the total employment was 3,300, only 1,000 people were working in spinning and yarn, while the rest were employed in the hemp, covers and hat production.

[53] Turkey, Ticaret Vekaleti, Konjonktür, 1(7).

Figure 3.3.: Woollen Goods in Turkey: Output, Imports and Consumption, 1925-1939




Source: Table 3.6.

1938-1939 saw a sharp increase in yarn output and, taken together, the share of factory yarn output seems to be 45 percent in 1935 and increased to 55 percent in the following years.

The estimates of final output and per capita consumption are presented in Figure 3.3, where they are compared with net imports. The net imports declined by 70-80 percent throughout the period, while the local output replaced it to a large degree. Imports initially supplied around 40 percent of total consumption, whereas only a small amount of woollens (400-600 tons) continued to be imported as the local production rose to such a degree that it substituted all the second-quality woollens by the mid-1930s. Consumption per capita followed very closely local output, which was determined by various factors, such as the increasing trend of greasy wool production, foreign demand for local wool and import protection after 1929. One should also pay attention to the fact that per capita consumption was still not significantly higher in the 1930s than in the 1920s until 1938-1939. This was also the case for the consumption of cotton fabrics.

### Hemp Goods

Hemp was the third crop, next to cotton and silk, whose fibres were produced and marketed on a large scale in Turkey.[54] Its production was to a large extent concentrated in the North-western areas, such as Kocaeli, Kastamonu and Bursa, where irrigation was cheap. The crop of Kastamonu had the best quality and its yields were higher than elsewhere.[55] Although only one fourth of the total hemp acreage was in Kastamonu, almost half of the total output was produced there due to the higher yields, while the rest came from the neighbouring Black Sea towns. Hemp fibres were basically used in the manufacturing of bags and ropes for the domestic market, while some small amount, no more than 3-4 percent of the output, was exported. In return, a significant amount of rope and strings were imported, though the imports were reduced in the 1930s.

The present estimation procedure is based on Fenoaltea's paper, which provides the technical relationships between the successive transformations from combing to spinning and weaving to the manufacturing of ropes, strings and bags.[56] There is a question to be asked about how suitable it is to employ the relationships that Fenoaltea provides for the pre-World War I years. However, all anecdotal evidence points to the persistence of the traditional processing methods in Turkey, so it is unlikely that the manufacturing methods changed substantially during the interwar years.[57]

The official total acreage data covers 1933 and afterwards, while there are fibre output figures for only 1933-1935.[58] To estimate the acreage of the earlier

[54]Flax was also produced but the seeds instead of fibres were used as a source of the vegetable oil and the rest of the crop was usually wasted in most places. Tobler, *Memleketimiz Kendir ve Ketenciliği.* Birinci Köy ve Ziraat Kongresi Yayınları, 1938b; Turkey, İktisat Vekaleti, *Ketenlerimiz.* 1938a; and Tobler, *Kenevir, Keten, Jüt Mütehassısı Sıfatıyla 1937 Eylülünden Teşrinisanisine Kadar Yapılan Seyahate Ait Rapor.* TC Ziraat Vekaleti Neşriyatı, 1938a.

[55]The average yield was around 100-150 kg/ha in Kastamonu, while the country average was around 63 kg/ha. Turkey, Ziraat Vekaleti, *Kastamonu Kendirciliğinin Vaziyeti Umumisi.* Ziraat Vekaleti, 1938b; and Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Tarım İstatistikleri 1928-1936*.

[56]Fenoaltea, Textiles Production in Italy. The technical relationships are identified are as follows: 1. Combed fibre output=0.4*(0.9*Total fibre harvested+Net imports of the raw fibre) 2. Tow output=0.87*(0.1*Total fibre harvested)+0.53*(0.9*Total fibre harvested+Net imports of the raw fibre) 3. Total spun fibre=0.93*(Combed fibre output+Net imports of combed fibre)+0.84*(Tow output+Net tow imports) 4. Total output of cloth, ropes and strings=0.96*(Total spun fibre+net imports of fibre).

[57]Tobler, *Kenevir Keten Jüt*; and İstanbul Ticaret Odası, Mecmua, 1930(6-7).

[58]Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Tarım İstatistikleri 1928-1936*.

Table 3.7.: Hemp Goods Output in Turkey (Tons), 1925-1939

| | Acreage (ha) | Fibre output (3-year moving average) | Net fibre imports | Net yarn imports | Combed fibres | Tow | Spun fibre | Final good output | Net imports of final goods | Consumption per capita |
|---|---|---|---|---|---|---|---|---|---|---|
| 1925 | 7807 | 4932 | -161.6 | 23.6 | 1711 | 2696 | 3856 | 3724 | 1473 | 0.40 |
| 1926 | 8617 | 6248 | -91.0 | 28.4 | 2213 | 3475 | 4977 | 4805 | 1245 | 0.45 |
| 1927 | 13108 | 6878 | -40.8 | 22.2 | 2460 | 3858 | 5528 | 5328 | 1010 | 0.46 |
| 1928 | 10789 | 6957 | -92.0 | 33.3 | 2468 | 3875 | 5550 | 5360 | 1182 | 0.47 |
| 1929 | 8991 | 6356 | -167.2 | 37.9 | 2221 | 3496 | 5003 | 4839 | 1158 | 0.42 |
| 1930 | 10267 | 6037 | -76.1 | 17.3 | 2143 | 3364 | 4819 | 4643 | 514 | 0.35 |
| 1931 | 9278 | 6333 | -139.8 | 24.8 | 2224 | 3498 | 5007 | 4830 | 932 | 0.39 |
| 1932 | 10393 | 6225 | -57.2 | 18.0 | 2218 | 3480 | 4986 | 4804 | 698 | 0.36 |
| 1933 | 9753 | 6588 | -554.8 | 14.5 | 2150 | 3421 | 4873 | 4692 | 311 | 0.32 |
| 1934 | 10994 | 6672 | -532.3 | 31.8 | 2189 | 3481 | 4960 | 4792 | 254 | 0.32 |
| 1935 | 10794 | 7111 | -471.9 | 31.3 | 2371 | 3760 | 5364 | 5180 | 76 | 0.33 |
| 1936 | 11826 | 7540 | -440.0 | 44.5 | 2538 | 4019 | 5737 | 5550 | 18 | 0.34 |
| 1937 | 13022 | 8115 | -31.2 | 62.1 | 2909 | 4560 | 6536 | 6334 | 10 | 0.38 |
| 1938 | 13513 | 7820 | -179.4 | 34.3 | 2743 | 4315 | 6176 | 5962 | 28 | 0.35 |
| 1939 | 10429 | 7539 | -239.8 | 20.8 | 2618 | 4125 | 5900 | 5684 | 38 | 0.33 |

Source: See the text.

years, we extrapolate the figure of 1933 by the acreage of Kastamonu, since half of the output was accounted for by the regional output.[59] As said above, the direct output data is only available during 1933-1935, and the average yield of this period seems reasonably stable between 53 and 71 kg/ha, so the yield 63 kg/ha is used to generate the whole series of hemp fibre output.

The derivation of the output of raw fibre, combed fibre, tow, spun fibre and final goods can be traced in Table 3.7. It is nevertheless necessary to point out the limitations of the trade data. The foreign trade data does not make a distinction between the products made of hemp and linen except for 1939. So we can only have the breakdown of the net imports of items for that year, and thus have to project the breakdown to the earlier years. Therefore, following the 1939 data, first, one fourth of net imports of raw fibres is allocated to hemp. Second, all combed fibres are considered to be linen, and, third, bleached fibres are taken to be linen and unbleached fibres are considered hemp. The category of "wrapped-up" yarns are allocated equally between linen and hemp. The tow imports of both linen and hemp were quite negligible. It should be noted that the procedure is rather rudimentary, but it is unlikely to have a significant impact on the results, owing to the small share of foreign trade in the total output. Hence, the estimates indicate that the output was relatively stable until the mid-1930s and picked up later. However, this expansion was not translated into any improvement in consumption, which exhibits a long-term stagnation.

### 3.3.2. Leather Working

Leather working was one of the major well-established industries in Turkey. A large number of tanneries of different scales were spread all over the country processing raw skins and hides into leather, which was consumed by an equally large number of workshops for the production of all kinds of shoes, bags, gloves, belts and harnesses. The country mainly exported sheepskins and in return imported cattle and calf skins to satisfy domestic consumption. This particular trade pattern was due to the relative scarcity of locally produced cattle skins, which were small in size and only suitable to make box calf (vidala) and vaketa, which, together with sheep and goat skins, was used in shoe-making. The welt- and belt-making, by contrast, required the heavier

[59]Turkey, Ziraat Vekaleti, *Kastamonu Kendirciliği*.

imported skins.[60]

The present estimation method starts with the raw skin output and then moves on to the dried and processed leather. The subsequent series of raw and dried skins is reconstructed for sheep and cattle separately for the sake of compatibility with the foreign trade data. At the final stage, they are combined to get the aggregate output of processed leather, which measures the final leather goods output. More formally, it follows these equations:

$$
\begin{aligned}
RAWSHEE &= SHEEP * 5\\
RAWCATT &= CATTLE * 12\\
DRIEDSHE &= RAWSHE * 0.85 * 0.4\\
DRIEDCATT &= RAWCATT * 0.85 * 0.4\\
PRO &= ma(DRIEDSHE + DRIEDCATT) * 0.92\\
CONS &= (PRO + ImPRO)/Population
\end{aligned}
$$

where SHEEP and CATTLE stand for the number of sheep and goats and cattle, buffaloes and camels slaughtered in public abattoirs. RAWSHE and RAWCAT are the local raw skin output volume for the two categories and DRIEDSHE and DRIEDCAT the corresponding dried skin output. PRO is the total processed leather and CONS is the total consumption, the sum of local and imported processed leather.

The official data gives the number of raw skins produced for the post-1936 period, so we start from there. To be able to relate these figures to the foreign trade data, we need to convert numbers into weight figures. For instance, around 250,000 cattle and 1.5 million sheep skins are reported to have been produced in 1936, but we need a reference assumption to predict the weight figures. To do so, the assumed average weight of cattle, calves and sheep is derived from anecdotal evidence: 12 kg for cattle, buffaloes and camels of all ages and 5 kg for all sheep and goats.[61] These are very rough numbers, yet a

[60] For a brief description of the state of leather industry, see İstanbul Dericileri, Rapor. In *1930 Sanayi Kongresi Raporları*. 1932; Turkey, İktisat Vekaleti, *Yerli Ham Derilerimizin Vaziyeti Hakkında Rapor*. 1938b.

[61] Turkey, İktisat Vekaleti, *Yerli Ham Derilerimiz*; TOBB, *Türkiye'de Deri ve Kösele Sanayi*. Türkiye Ticaret Odaları, Sanayi odaları ve Ticaret Borsaları Birliği, 1959a; Tur-

lack of precise data forces us to make such an assumption. We also treat 15 percent of skins as non-marketed production; then we get a rough estimate of raw skin output for sheep and cattle separately during 1936-1938.

Subsequently, unlike the method employed for textiles above, a horizontal distinction between sheep and cattle skins appears necessary to make it compatible with the import and export data. In other words, the raw and dried skin estimates are done separately as described below and then they are combined. Based on various reports we assume that raw skins lose 60 percent of their weight during drying, which yields the dried skin output for 1936-1938.[62] In extrapolating the output between 1936 and 1938 to all other years, we use the numbers of sheep and cattle slaughtered in the public abattoirs, producing the full series of dried skins.[63]

The exports of sheepskins and import of cattle skins should be added to the output figures. The foreign trade categorisation is different before and after 1929: sheep and cattle in the pre-1929 years are grouped together, whereas they are separate in the later period. We apply the breakdown of imports and exports in the later period to the earlier period because there is not any reason to expect that the composition of the imports changed over time, as there was not any structural change in raw leather output. Thus, combining the dried sheep and cattle skin output with the net imports figures, we get the total consumption. And finally, 8 percent waste is assumed from the dried to processed leather series.[64] We also take the three-year moving average of the total processed leather output due to the lack of inventory data.

The anecdotal evidence corroborates our findings: For instance, the output of cattle skins is said to be at most 1,250 tons in 1929-1930, and our figure is 1,189 tons in 1929 and 1,173 in 1930.[65] Likewise, the share of exports of sheepskins is considered to be around 65 percent in 1938, and the corresponding figures in our series is 55 percent in 1937, 73 percent in 1938 and 60 percent in 1939.[66] Hence, it can be said that our estimates stand within a

key, Ziraat Vekaleti, *Türkiye'de Ziraat ve Deri Endüstrisi*. 1938c.

[62]İzmir Dericileri, Rapor. In *1930 Sanayi Kongresi Raporları*. Ankara Sanayi Odası, 1932; Turkey, İktisat Vekaleti, *Yerli Ham Derilerimiz*.

[63]Since the slaughtering data for 1924 is only available for Istanbul, we assume the aggregate figure moved with the Istanbul figure during 1924-25.

[64]İzmir Dericileri, Rapor.

[65]Hayrettin, Deri Sanayimiz. In *1930 Sanayi Kongresi Raporları*. 2nd edition. Ankara Sanayi Odası, 1932.

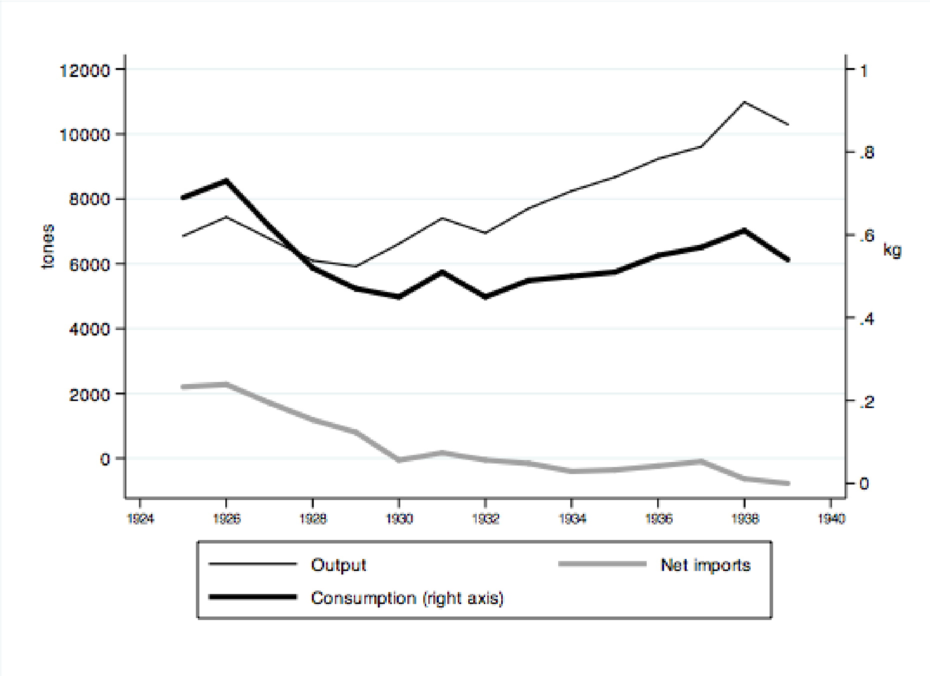
[66]Turkey, İktisat Vekaleti, *Yerli Ham Derilerimiz*.

Table 3.8.: Processed Leather Output in Turkey (Tons), 1924-1939

| | Sheep and goats | | | | Cattle and buffaloes | | | | | Processed leather | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Slaughtering in public abattoirs | Dried skin output | Net imports of dried skins | Consumption of dried skins | Slaughtering in public abattoirs | Net imports of dried skins | Dried skin output | Consumption of dried skins | Total dried leather output | Processed leather | Net imports | Total consumption | Consumption per capita |
| 1924 | 1655449 | 3377 | -1320 | 2057 | 284501 | 3045 | 1393 | 4438 | 6496 | | | | |
| 1925 | 1911263 | 3899 | -1560 | 2339 | 235135 | 4224 | 1151 | 5375 | 7713 | 6855 | 2206 | 9060 | 0.69 |
| 1926 | 2074468 | 4232 | -1694 | 2538 | 185961 | 4776 | 910 | 5687 | 8224 | 7440 | 2282 | 9722 | 0.73 |
| 1927 | 2658083 | 5422 | -1627 | 3795 | 199925 | 3637 | 979 | 4616 | 8411 | 6770 | 1711 | 8481 | 0.62 |
| 1928 | 2439061 | 4976 | -3264 | 1712 | 212502 | 2769 | 1040 | 3809 | 5521 | 6096 | 1193 | 7289 | 0.52 |
| 1929 | 2471033 | 5041 | -2768 | 2273 | 242829 | 2557 | 1189 | 3746 | 6018 | 5915 | 803 | 6718 | 0.47 |
| 1930 | 2581334 | 5266 | -2574 | 2692 | 239614 | 3952 | 1173 | 5126 | 7818 | 6619 | -54 | 6565 | 0.45 |
| 1931 | 2128136 | 4341 | -1904 | 2437 | 220211 | 4309 | 1078 | 5387 | 7825 | 7404 | 173 | 7577 | 0.51 |
| 1932 | 2495958 | 5092 | -1475 | 3617 | 251592 | 3742 | 1232 | 4973 | 8590 | 6945 | -51 | 6894 | 0.45 |
| 1933 | 2863780 | 5842 | -3454 | 2388 | 282973 | 2542 | 1385 | 3927 | 6315 | 7704 | -154 | 7549 | 0.49 |
| 1934 | 2682166 | 5471 | -2563 | 2908 | 323560 | 5814 | 1584 | 7399 | 10307 | 8245 | -399 | 7847 | 0.50 |
| 1935 | 2848537 | 5811 | -2678 | 3133 | 339608 | 5568 | 1663 | 7231 | 10363 | 8667 | -353 | 8315 | 0.51 |
| 1936 | 2998329 | 6116 | -5850 | 266 | 301709 | 5952 | 1477 | 7430 | 7695 | 9233 | -234 | 8999 | 0.55 |
| 1937 | 3065957 | 6254 | -3467 | 2787 | 301693 | 7525 | 1846 | 9371 | 12158 | 9606 | -96 | 9509 | 0.57 |
| 1938 | 3082258 | 6103 | -4444 | 1659 | 335057 | 8024 | 1900 | 9924 | 11583 | 10981 | -626 | 10355 | 0.61 |
| 1939 | 3460929 | 6853 | -4156 | 2697 | 367677 | 7415 | 2085 | 9500 | 12197 | 10294 | -771 | 9523 | 0.54 |
| 1940 | 3515999 | 6962 | -2640 | 4322 | 456793 | 2506 | 2590 | 5096 | 9418 | | | | |

Source: See the text.

Figure 3.4.: Processed Leather in Turkey: Output, Imports and Consumption, 1925-1939




Source: 3.8

reasonable range.

As seen in Figure 3.4, while around one fourth of the total consumption of processed leather came from imports, net imports started to decrease in the second half of the 1920s and Turkey became a net exporter during the 1930s. Meanwhile, output was relatively stable in the 1920s and progressively increased in the 1930s. The rise in output was both due to the improving local sheep skin output and imports of raw cattle hides. Finally, the per capita consumption pattern seems consistent with textiles, particularly cotton textiles: there was not a significant trend in the long term and in the short term the gradual decline from the mid-1920s to 1932/33 – from 0.7 to 0.5 kg per person – was to a large extent reversed by the recovery in the rest of the 1930s.

### 3.3.3. Food Processing

Although the whole food processing sector constituted almost 40 percent of total industrial value added in 1927, as is typical in a traditional economy, it was one of the most poorly documented industries. This is because the small, traditional and family-based enterprises involved in the sector were diffused throughout the country, except the ones requiring large-scale capital investments like tobacco and alcohol processing. Therefore, the output of the food processing sector is represented by five distinct series in the present estimates: milling, sugar, olive oil, tobacco and alcohol.[67] The milling output is proxied by wheat consumption, which is a rather conventional assumption, while there is direct output data for others.

### Milling

Milling and bakery products are measured by wheat consumption. Another approach might be to use wheat flour consumption as a proxy, rather than wheat, since most of the value added is produced in baking rather than milling, however this does not change much the estimated growth of the industry due to the small amount of net imports of flour compared to local production.

Aggregate wheat consumption is equivalent to wheat output net of the proportion of output kept as seed, net wheat imports and inventory change. The amount of seed is calculated as the wheat acreage of the following year times 180 kg wheat seed per hectare, which is based on Bulutay et al..[68] It is also assumed that there was 10 percent waste during processing and transportation. The inventory figures are derived from the extrapolation of the official aggregate figures for 1936-1940 with the Istanbul stock data back to 1929. For the years prior to 1929, a simple ratio of the inventories to the wheat output net of seeds and net imports is taken. The latter varies between 10 and 30 percent, with the average 20.7 percent.[69]Thus, the resulting wheat consumption series show a consistent and strong upward trend, except in the years 1931-35 (Table 3.13).

### Olive Oil

Olive production was concentrated along the western coastal areas from north to south in Turkey, with the southern Marmara and the Aegean regions the

[67] Here we draw on the original classification of the 1927 Industrial Census, which is why tobacco is regarded as part of the food processing sector.

[68] Bulutay et al., *Türkiye'nin Milli Geliri*.

[69] For total inventories, see Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Zirai İstatistik Özetleri*. Istanbul figures from İstanbul Ticaret ve Zahire Borsası, Piyasa Cetveli. Istanbul wheat stock in 1929 from İstanbul Ticaret Odası, Mecmua, 1929, 3, p.184. All are year-end stocks.

major localities. Olives provided the principal source of vegetable oil consumed in the domestic market for eating and soap production.[70] Poppy, sesame, cotton and flax seeds were the other vegetable oil sources, but their total production was only around 3,000 tons in 1936, that is, much smaller than the 28,500 tons of olive oil.[71] The total consumption was also around 27,000-28,000 tons, considering inventories and exports. Therefore, it is clear that olive output is representative of vegetable oil production. That said, we do not ignore other oil types in estimating consumption.

The statistical yearbooks provide a direct estimate of, first, Aegean olive oil production during 1924-1939, which constituted between 40 and 70 percent of the total output, and, second, the total production of Turkey for 1935-1939.[72] Therefore, the problem is to estimate oil output for the pre-1935 period. There are two choices: one is to extrapolate the aggregate output in 1935 with the Aegean series; the other is to estimate oil output based on olive output, which is provided by Bulutay et al..[73] The latter is a legitimate method because olives were predominantly used in oil production.[74] The average oil yield during 1935-1939 was 17.6 percent in weight (the share of oil per kg of olive) and it had a small range of 15.3-19.1 percent during 1935-1939. The average yield is also taken as 20 percent in some sources.[75] Therefore, we estimate oil output using both methods and compare the results. It turns out that the two independent estimates are highly correlated with a 0.99 percent correlation coefficient, although we prefer the second method as the final output series. Furthermore, since the estimated output is basically direct output data or derived from direct olive output data, we do not need to correct it for inventories. Finally, the net imports of all kinds of vegetable oils are added to the local production to get the consumption. Since the inventories are unknown, the three-year moving average of aggregate consumption is used (Table 3.14).

[70] H. Yahya, Zeytinyağı, Nebati Yağ ve Pirine Yağı Sanayi. In *1930 Sanayi Kongresi Raporları*. 2nd edition. Ankara Sanayi Odası, 1932.

[71] Türkofis, Türkofis Aylık Bülten, 1937(7). Nizamettin Turgay, *Zeytinyağ ve Elaiotekni*. İktisat Vekaleti, 1938 similarly estimates that between 19,000 and 24,000 tons of olive oil were consumed in the domestic market. Turgay, *Zeytinyağ ve Elaiotekni*, p.8.

[72] Turkey, İstatistik Umum Müdürlüğü, *İstatistik Yıllığı*, 1938/39 and 1940/41.

[73] Bulutay et al., *Türkiye'nin Milli Geliri*.

[74] Turgay, *Zeytinyağ ve Elaiotekni*, p.8.

[75] Recai, *Zeytin ve Zeytinyağcılık Hakkında Tetkikat*. İktisat Vekaleti, 1930; and Türkofis, Türkofis Aylık Bülten, 1937(7), pp.21-49.

### Tobacco, Alcohol and Sugar

Cigarette making and alcohol production was under close state supervision, so the related data on production, sales and costs are fairly abundant.[76] At the time Turkey was a large tobacco producer and exporter, especially of the oriental type, and the share of the sector in total industrial value added and industrial employment was quite high, as will be discussed shortly. Our output series includes the processed tobacco output for 1925-1939 (Table 3.15). It is also one of the few sectors for which we have sales data and they seem to have been very much in line with output.

In the case of alcohol, we include the output of the principal drinks (rakı, wine and cognac) between 1928 and 1939, based on the official data. The output during 1925-1927 is the extrapolation of the 1928 figure by tobacco sales, which is based on the assumption that the consumption of alcohol and tobacco moved in tandem.[77] Alcohol consumption in 1928 is the sum of local output and net imports and is taken as equivalent to the local production due to the negligible amount of imports afterwards.

The republican governments conceived of sugar as one of the main pillars of the regime's industrial performance, along with cotton textiles and wheat flour (the so-called "three whites"). Since the Lausanne Treaty did not allow Turkey to revise import duties until 1929, sugar imports came to be monopolised by the government in 1925, while the government also founded the first sugar factories in Alpullu and Usak, which were followed by the Eskisehir and Turhal factories in 1933-1934. All the related economic data is readily available.[78] The output and the acreage under sugarcane expanded around ten times between 1926 and 1939 and the sugar imports declined from around 12,000 to a few tons during the same period.

### Output and Consumption

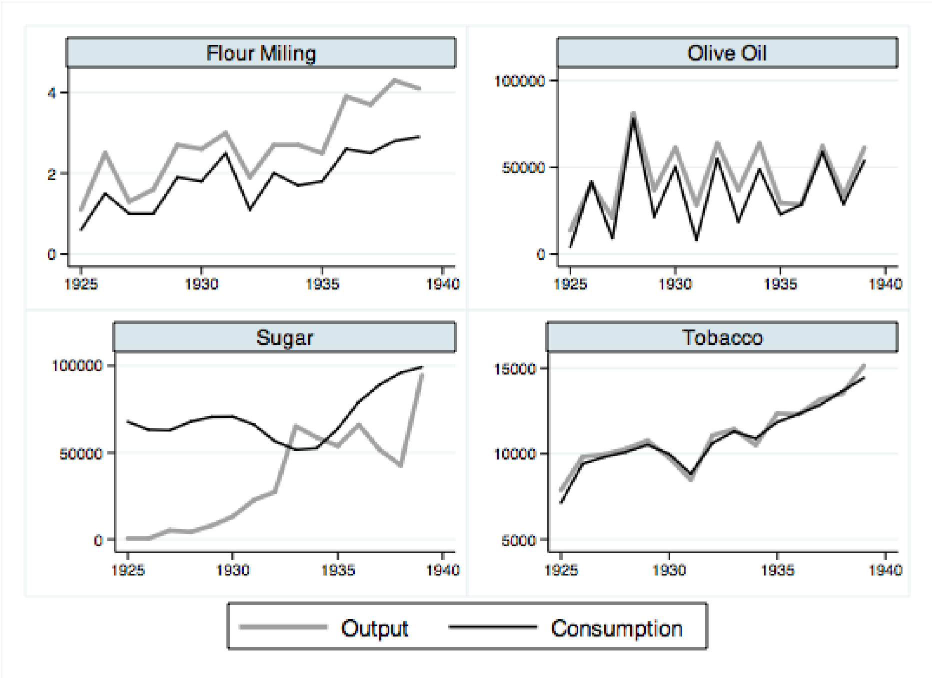
At this point it is worth pausing for a moment to bring together the reconstruction of the output and consumption growth rates. Figure 3.5 combines the change of output and per capita consumption in four main food-related sectors. Sugar output grew to an unprecedented degree, whereas consumption

[76] Turkey, İstatistik Umum Müdürlüğü, *İstatistik Yıllığı*

[77] The correlation coefficient between the tobacco and alcohol consumption between 1928-1939 is sufficiently high (0.88) to support this assumption.

[78] Turkey, İstatistik Umum Müdürlüğü, *İstatistik Yıllığı*.

Figure 3.5.: Food Processing in Turkey: Output and Consumption (Tons), 1925-1939




Note: Unit of milling output is million tons. See Data Appendix.

declined after 1930, but then recovered afterwards. Import substitution had been almost completed by 1934 and the growth of sector was subsequently driven by changes in domestic demand and relative prices. Olive oil is the opposite case, as output on average remained stagnant due to the fact that the olive production was geographically restricted to a certain area and year-on-year volatility was inevitable. The consumption pattern is similar to sugar, which also reflects the imports of vegetable oils. Finally, milling and tobacco represent intermediate cases. Milling output was to a large extent determined by increasing wheat output, which rose by around three times from 1925 to 1939. Contrary to other sectors, the rise in output meant an increase in consumption, although it was of a smaller scale. As for tobacco, output expanded to a modest degree, as it increased one half over the period and the rise in consumption was quite negligible.

Table 3.9 also compares the trend growth rates of output and per capita consumption for the textile and food processing sectors. Two main points stand out from the comparison. First, output expansion was more than 5 percent per year in all sectors, except in leather working and tobacco. But

Table 3.9.: Annual Trend Growth Rates of Output and Consumption in Turkey (%), 1925-1939

| | Output | Consumption |
|---|---|---|
| Cotton textiles | 10.3 | 1.6 |
| Silk textiles | 12.6 | -0.5 |
| Woollen textiles | 7.2 | 5.2 |
| Leather working | 3.6 | -0.9 |
| Milling | 9.8 | 6.1 |
| Olive oil | 5.6 | -0.1 |
| Tobacco | 3.3 | 1.5 |
| Sugar | 33.5 | 0.2 |

the case of olive oil is a bit misleading, since most of the growth (5.6 percent per year) had already been realised by the end of the 1920s, so if one only considers the 1930s, it should also be put in the same modest-growth category as tobacco and leather working. What distinguishes them from other rapidly growing sectors? The answer clearly lies in the fact that the import penetration in these branches was already limited and there was already an established capacity by the 1920s, meaning that most of the domestic market was satisfied by local production and that further capacity expansion was costly. In other words, the initial level of sectoral development in the 1920s was a crucial factor determining the growth rate in the 1930s. The prospects of import substitution were limited, export markets were not promising and local incomes were falling, at least in the early 1930s. Even though demand began to recover in the mid-1930s, it was not enough to stimulate a strong growth in tobacco, olive oil and leather working. On the other hand, both major supply and demand changes were behind very impressive growth rates in the rest of manufacturing. As already mentioned, sugar production received a stimulus from state policies, which induced investment and import protection. Import protection also greatly stimulated textile output, and lastly, milling output was to a large extent determined by increasing agricultural production.

In sharp contrast, per capita consumption remained largely stagnant for most sectors. Although it is true that the consumption levels reached, or even exceeded in most goods, their 1929 levels by 1938-1939, this was due to the short-term rise in domestic incomes and statistically significant trends over 1925-1939 existed only in the consumption of woollen textiles (5.2 percent) and milling (6.1 percent). On the supply side, the drastic decline in the exports of carpets and rugs in the 1930s, which used up more than half of the total wool before 1929, was one factor that resulted in more wool being available on the domestic market. The same partly holds for milling, since, as already mentioned, the wheat supply was progressively rising. On the demand side, when one looks at the price movements, woollens and wheat seem real exceptions. Hence, the aggregate industrial price index declined by 36 percent from 1926-1929 to 1935-1939, whereas wheat prices decreased by 63 percent. The corresponding figure is 40 and 33 percent for woollen and cotton textiles, respectively.[79] Therefore, it seems that woollens and wheat became cheaper than an average basket of manufactures, which could possibly explain the higher consumption rates. There is no doubt that the price elasticity of demand varies from one good to another, so price movements cannot perfectly predict consumption patterns, but they can be used as supporting evidence.

### 3.3.4. Other Sectors

The wood working sector covers both timber production and further processing, that is, manufacturing of all kinds of furniture and wooden pieces in workshops. The volume of timber output of all kinds, which is provided in the official yearbooks, is here regarded as the best representative proxy (Table 3.16).[80] Correction for foreign trade does not make much sense because the size of the net timber imports did not exceed 2-3 percent of the aggregate output level.

The utilities index is based on revenue and price data, which is limited to three big cities (Istanbul, Ankara and Izmir). The only correction that can be made is by paying attention to the relative urbanisation rate in the three big cities and the rest of the country. But it seems that the share of three big cities within the total urban population slightly decreased, from 32 to 30 percent, over the whole period, so it can be assumed that the utilities output in Istanbul, Ankara and Izmir can be taken as representative of the growth of the whole sector in the country.

The price and revenue data that Bulutay et al. presents is originally divided

[79]See the preceding chapter for wheat prices and wool. The cotton cloth prices represent the average wholesale prices of all types of fabric. And the industrial price index is derived from Bulutay et al., *Türkiye'nin Milli Geliri*.

[80]Turkey, İstatistik Umum Müdürlüğü, *İstatistik Yıllığı*, 1939/40. A large part of the total volume was constituted by pine timbers.

into two parts: gas/electricity and water.[81] They present the total revenue for 1930-1948 and average unit prices for 1925-1948. For the post-1930 years, we divide revenues by unit prices to obtain the quantity figures. And for the earlier years, the revenue collected in 1930 is taken back using the electricity and water revenue collected in Istanbul.[82] Since more than half of the utilities revenue was collected in Istanbul, using it as a proxy seems a safe assumption. Thus, we have quantities and prices for electricity and water. Then we calculate a Paasche quantity index based on these quantity and price series.

For the remaining two sectors, mining and construction, we rely on Bulutay et al.. There is a great deal of data on the mining sector because it was subject to government supervision. The extraction of all minerals is well known from the early 1920s, with coal, salt and chrome being the major one. Iron production did not start until as late as 1938 in Turkey. Until then the iron-related industries, whose value added was quite small, were dependent on imports. Bulutay et al. calculate a weighted average quantity index of coal, salt, chrome, lignite, copper, borate, sulphur, emery and zinc. The weights they use are derived from the share of each mineral in the total production value in 1936, with coal, salt and chrome representing 64, 24 and 7 percent of the aggregate value respectively.[83] Finally, the construction sector is represented by the weighted average of the building iron and cement series provided by Bulutay et al. (Table 3.16).

## 3.4. Weighting and Resultant Aggregate Index

The reconstruction of all the individual output series has been set out up to this point. Now they need to be combined into a single representative output index by means of an appropriate weighting system. It is impossible to produce price-weighted quantity indices due to the absence of annual output and input prices, as well as input-output tables, so our aggregate index is produced by combining the quantity relatives with respect to the base year 1927 with the constant weights derived from the 1927 industrial census. Also, we adjust these weights for the 1930s by utilising the change of output and

[81] Bulutay et al., *Türkiye'nin Milli Geliri*.
[82] Turkey, İstatistik Umum Müdürlüğü, *İstatistik Yıllığı*, 1932/33.
[83] Although they call it "value added index", it is more precisely a quantity index with constant weights.

prices in each sector.

The industrial census of 1927 recorded the total output value, raw material costs, the number of enterprises, employment size and horsepower for the ten broadly defined sectors: mining, processing of agricultural and animal goods (including leather and tobacco), textiles, wood working, paper, metal processing and machinery, construction, chemicals, mixed (those engaged in more than one type of goods) and finally electricity and others.[84] These broad sectors were further divided into a large number of sub-sectors (95 in total). However, only the number of enterprises, employment and horse power were reported at this level. The census also covered industrial establishments of all sizes, regardless of the number of employees. Only home production was excluded from the enumeration.

In order to work out the weight of each sector, we define value added as the output value net of all raw material costs. The expenses of raw materials are already reported in the census (Table 3.10). Table 3.10 thus presents an overview of industry in 1927. As it appears, the processing of agricultural and animal products (food processing hereafter) clearly had the highest share in both the number of employees (43 percent) and value added (64 percent) and it was followed by textiles. The outlook largely fits that of a traditional industrial structure, as the local production failed to compete against the cheap imports of textiles, machinery, metals, chemicals and the like.

At the second stage, we need to further disaggregate the value added of food processing and textiles into their sub-sectors that are compatible with our output series.[85] The food processing weight should be divided between milling, sugar, vegetable oils, tobacco, leather and alcohol. Similarly, the textiles value added need to be allocated between cotton, wool, silk, carpets, hemp and clothing. The allocation can be done using the number of employees as a proxy, which is the only relevant available data for 1927.[86] However, per worker value-added varied from sector to sector, so to correct for this factor, we rely on the official dataset on the medium- and large-scale enterprises that benefited from Law for Encouragement of Industry between 1932 and 1934. The following equations describe the method of estimation:

[84] Turkey, Devlet İstatistik Enstitüsü, *1927 Sanayi Sayımı*. 1969.

[85] The last category "electricity and others" is considered as utilities in the present index.

[86] Horsepower cannot be a proxy, because most of the sectors were labour-intensive and motor power is not indicative of the value added.

Table 3.10.: Turkey's 1927 Industrial Census: A Summary

| | Number of establish-ments | Number of employees | Raw material costs | Output value | Value added | Value added share |
|---|---|---|---|---|---|---|
| | | | TL million | TL million | TL million | % |
| Mining | 556 | 18,932 | 5.45 | 12.38 | 6.93 | 3.5 |
| Agriculture and fishery | 28,439 | 110,480 | 153.73 | 281.61 | 127.88 | 63.9 |
| Textiles | 9,353 | 48,025 | 39.79 | 76.37 | 36.57 | 18.3 |
| Forestry products | 7,896 | 24,264 | 8.19 | 15.16 | 6.97 | 3.5 |
| Paper | 348 | 2,792 | 1.63 | 4.24 | 2.60 | 1.3 |
| Metal/mineral processing | 14,752 | 33,866 | 6.46 | 14.44 | 7.98 | 4.0 |
| Construction | 2,877 | 12,345 | 1.80 | 3.82 | 2.02 | 1.0 |
| Chemicals | 697 | 3,107 | 9.95 | 17.24 | 7.29 | 3.6 |
| Mixed | 16 | 455 | 0.06 | 0.12 | 0.06 | 0.0 |
| Others (Electricity etc.) | 311 | 2,589 | 5.60 | 7.36 | 1.76 | 0.9 |
| TOTAL | 65,245 | 256,855 | 232.66 | 432.74 | 200.08 | 100 |

Source: Turkey, Devlet İstatistik Enstitüsü, *1927 Sanayi Sayımı*. Value added is equal to the output value net of raw material costs. All figures are rounded.

$$VA_i = \frac{Output_i - Costs_i}{Employees_i}$$
$$VAC_i = \frac{VA_i}{VA_{ref}}$$
$$W_i = \frac{N_i * VAC_i}{\sum_i N_i * VAC_i}$$

where $VA_i$ stands for the value added per worker for sector i defined as usual, $VAC_i$ the value added coefficient of sector i with respect to the reference sector ($VA_{ref}$), milling for food processing and cotton fabrics for textiles, and finally the sectoral weight ($W_i$) is the share of the value added coefficient of sector i in the total coefficients. One example may illustrate the process more clearly: First, the value added in sugar processing is calculated as output net of raw material costs divided by the number of workers, then it is divided by the value added in milling, so that all value added figures are normalised with respect to milling (see Table 3.11). In this way, we get a measure of the relative value added within food processing. Finally, the number of employees in sugar processing in 1927 is multiplied by the value added coefficient of sugar, which is then divided by the total value added produced in food processing. The latter gives us the share of sugar within food processing in 1927.[87] Besides, we assume that the relative value added within the textiles and food processing remained the same from 1927 to the mid-1930s.[88]

The weights worked out above are the within shares. There are also unobserved sectors both within textiles and food processing and at the aggregate level (chemicals, paper, mineral/metal processing and mixed industries). The conventional way to tackle the issue is to assume that the growth of the undocumented sectors is the same as the documented ones. Alternatively, Fenoaltea

[87] For food processing, the value added coefficients are based on the 1934 data, and for textiles, the average of 1935 and 1936 data. Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Sanayi İstatistikleri 1936-1941*.

[88] A number of corrections are made to the raw data. First, the number of employees in leather processing and tobacco seem quite high in the 1927 data, which probably includes some agricultural producers in the case of tobacco and repairer shops in the case of leather. The employment figure for leather is therefore corrected by extrapolating the figure in the 1935 population census by the output change between 1927 and 1935. For tobacco, the figure in the 1932 industrial statistics is projected backwards in the same way.

Table 3.11.: Turkey's Relative Value Added Coefficients

| Textiles | $VAC_i$ | Food-connected | $VAC_i$ |
|---|---|---|---|
| Cotton fabrics | 1.0 | Milling | 1.0 |
| Cotton yarn | 1.2 | Sugar | 1.4 |
| Silk fabrics | 0.7 | Olive oil | 0.2 |
| Silk yarn | 0.5 | Alcohol | 6.0 |
| Woollen textiles | 1.5 | Tobacco | 6.5 |
| Carpet making | 0.2 | Leather processing | 0.8 |
| Hemp goods | 0.8 | | |
| Clothing | 0.6 | | |

Note: The reference sectors are cotton weaving for textiles and cereal milling for food processing.

suggests making reasonable assumptions about the undocumented industries due to the problem of "double inflation".[89] Accordingly, if the unobserved series are assumed to move with the observed series and one series is poorly observed, then that poor series will represent even more than it should. To avoid this, he suggests to make crude but useful assumptions for the growth unobserved sectors. Instead, we follow a middle way by tackling the issue in two stages. First, at the aggregate level, the observed sectors represent the unobserved part (8 percent of value added in total) in proportion to their share in the observed part. For instance, the share of mining (2 percent) is inflated to 2.2 percent and the share of food processing is inflated from 15.1 percent to 16.4 percent. Second, each observed sector in food processing represents the unobserved part (15 percent in total) in proportion to its share in the observed part of food processing. Therefore for instance, the within-share of milling is 33.8 but its share in total value added declines to 26 percent.[90]

Therefore, the estimated value-added weights of each industry in 1927 are presented in Table 3.12. The milling accounts for almost one fourth of the total, which was followed by tobacco, leather processing and alcohol. These figures are not surprising as cereals indeed had a large share in food consumption and both the tobacco and leather industries had already been relatively more established by the 1920s. The high ranking of alcohol production is due to the fact that its value added was much larger than the other sectors.

[89] Stefano Fenoaltea, *Reinterpreting of Italian Economic History*. Cambridge University Press, 2011, p.53.

[90] The existing eight textile series do not leave any unobserved part within textiles, according to the sectoral classification of 1927.

Table 3.12.: Value Added Weights (%), Turkey

| Sector | Sub-sector | 1927 | 1935 |
|---|---|---|---|
| Mining | | 3.8 | 4.6 |
| Food processing | Milling | 25.5 | 18.9 |
| | Sugar | 0.9 | 3.7 |
| | Vegetable oil | 4.5 | 3.3 |
| | Alcohol | 10.0 | 9.5 |
| | Tobacco | 17.5 | 15.9 |
| Leather working | | 11.9 | 7.5 |
| Textiles | Cotton spinning | 4.7 | 13.3 |
| | Cotton weaving | 2.7 | 4.9 |
| | Silk spinning | 0.5 | 0.5 |
| | Silk weaving | 0.5 | 1.2 |
| | Woollens | 3.4 | 2.5 |
| | Clothing | 6.5 | 6.4 |
| | Carpet making | 1.1 | 0.3 |
| | Hemp goods | 0.5 | 0.3 |
| Wood working | | 3.8 | 4.9 |
| Construction | | 1.1 | 1.0 |
| Utilities | | 1.0 | 0.8 |
| TOTAL | | 100 | 100 |

Source: See the text.

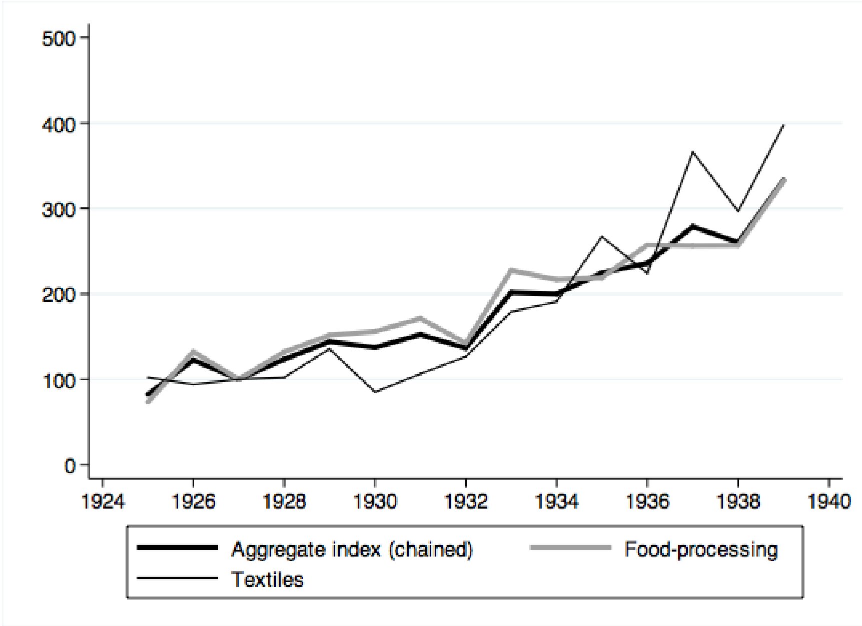
As stated above, the weights of 1927 should be adjusted for the 1930s due to the significant variation among the sectoral growth rates. For instance, the growth in textiles output on average outpaced food processing, which should have an impact on the composition of industrial output. Thus, using 1927 weights will underestimate the growth of aggregate output for the 1930s. In the absence of reliable data on employment at the present sectoral disaggregation, we use the movement of sectoral output and prices to track down the change in relative value added in each sector.[91] To do so, the value added in each sector in 1927 is calculated based on total value added in 1927 and the weights calculated so far. Then these value added figures are multiplied by the rate of change of output value (output times the average representative output prices) between 1927 and 1935, which is chosen as the reference point for the 1930s. The sectoral output measures are the output estimates made above. As for the price data, we identify representative final goods for all sectors and obtain their prices in 1927 and 1935 from various sources.[92] Thus the new weights in 1935 represent the sectoral value added shares.

Table 3.12 compares the weights in 1927 and 1935 and clearly indicates some realignment between 1927 and 1935. Milling still remains the most important sector, yet its share declines from 25.5 to 18.9 percent and it is still followed by tobacco, whose share decreased slightly. The relative decline of food processing took place in favour of textiles all together, whose share increased from 20.1 to 29.5 percent. Within textiles, cotton spinning and weaving saw the sharpest rise from 7.4 to 18.2 percent of the value added. That said, the value-added ranking did not change drastically, as the Spearman correlation coefficient is 0.88, showing a high correlation between the value added composition in 1927 and 1935. Thus, it appears that the change of composition throughout the period cannot be ignored, so the aggregate output index draws on the 1927 weights for the period 1925-1932 and the 1935 weights for the later period. The cut-off point is chosen as 1933 since the output growth star-

[91]Harley, for instance, offers a different weighting to measure the increase of British industrial output during the industrial revolution using a very similar method.

[92]For the wholesale wheat and tobacco prices see Chapter 2. For the wholesale prices of sugar, olive oil, sheepskins, carpets, cotton yarn and cotton fabrics in Istanbul, see İstanbul Ticaret ve Zahire Borsası, Piyasa Cetveli. The prices of raw silk and hemp seeds measure the price change for silk spinning/weaving and hemp processing (İstanbul Ticaret ve Zahire Borsası, Yıllık, 1934-35, p.71). The average mining, timber, construction, electricity and wool prices are obtained from Bulutay et al.. Alcohol prices are assumed to follow the aggregate price index.

Figure 3.6.: Resultant Output Indices for Turkey (1927=100), 1925-1939




Source: See the text.

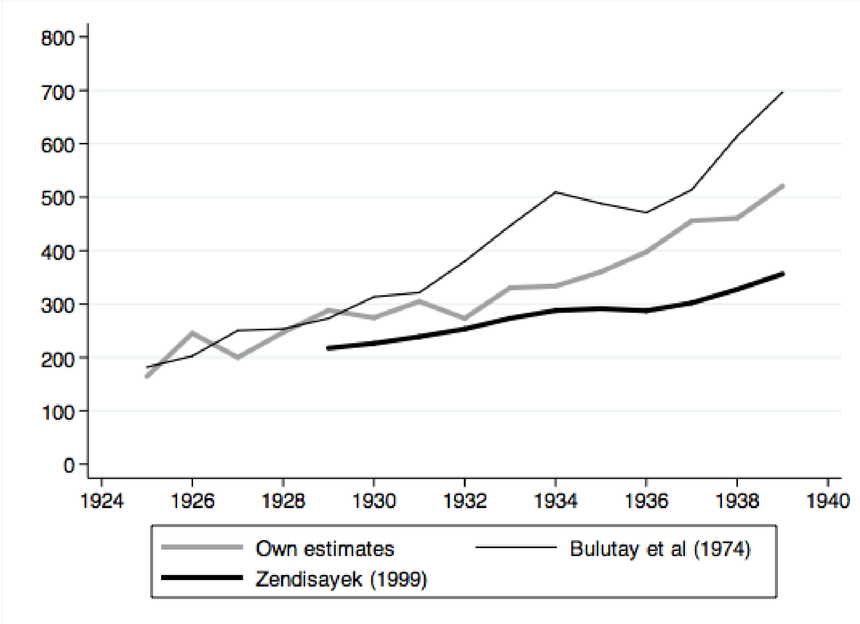
ted or accelerated after 1933 as a result of both intensified import protection and early signs of economic recovery.

The final output indices with chained constant weights are shown in Figure 3.6. First of all, it appears that the aggregate index increased between 1925 and 1932 to a moderate extent, yet the post-1932 years saw a sharp upward trend. The trend growth rate was 8.7 percent over 1925-1939. The textiles index grew faster with 10.8 percent per year and the food processing index rose by 8.5 percent per year.[93] Furthermore, the growth pattern of food processing and textiles also differed. While growth was smoother in the case of food processing, the textiles output seems to have accelerated after 1930. This suggests that the import protection probably played a larger role in the growth of textile industries.

Finally, in order to compare our findings with the existing value added estimates, the present output series are used to produce the industrial value added. As said above, the absence of the detailed annual price data for the intermediate and final goods makes it impossible to calculate the value added properly. Instead, given the data limitations, Fenoaltea suggests making the

[93] The indices of textiles and food processing are the weighted average of the component indices.

Figure 3.7.: New Industrial Value Added Estimates for Turkey (1927 Prices, TL million)




Source: See the text for own estimates.

value-added estimate for a benchmark year to begin with, and then extrapolate this figure using the output index, which yields the estimated value added for each year based on the prices of the benchmark year.[94] Therefore, 1927 value added figures for each sector are here extrapolated with the output indices, leading to the total value added at 1927 prices. As seen in Figure 3.7, in 1927 prices, the value added rose from around TL 164 million during 1925-1929 to TL 520 million at the end of the 1930s.

The present estimates however stand in clear contrast to the value added figures provided by Bulutay et al. and Zendisayek. While we find that the value added grew by 6.8 percent per year over 1925-1939, Bulutay et al. and Zendisayek estimate it at 8.9 percent and 4.5 percent, respectively.[95] The cause of the overestimation in Bulutay et al. was explained earlier. For 1932-1939, they rely on the official industrial statistics, which do not cover small establishments, and for the earlier years on the tax data, which poorly measure industrial growth. Meanwhile, Zendisayek's correction of Bulutay et al.'s

[94] Fenoaltea, Notes on the Rate of Industrial Growth.

[95] The value added figures of manufacturing, construction and mining at current prices in Bulutay et al. and Zendisayek are deflated with the industrial price index with the base year 1927. Bulutay et al., *Türkiye'nin Milli Geliri*; and Zendisayek, Reevaluation.

estimates is flawed because she took the share of handicrafts and factory production as constant. If she could have observed the change in the share of factory production, she would have come up with higher growth rates.

## 3.5. Conclusion

This chapter has provided a comprehensive reconstruction of industrial growth in interwar Turkey. Sectoral output indices have been carefully constructed for all major sectors, which then yielded the aggregate output index with constant weights and value added estimates at constant prices. The motivation for this exercise was twofold. First, the received wisdom on industrialisation in interwar Turkey, including those made in international comparisons, draws heavily on the value added estimates by Bulutay et al., which have an upward bias. Second, until now we have been unable to observe how sectoral developments were similar or dissimilar, which required consistent and comparable data at a sectoral level. Thus, the present chapter fills this empirical gap by serving both purposes. The method of estimation follows the best practices in economic history, and in particular benefited from the methods employed to measure British and Italian industrial growth in the nineteenth century. There is no wonder that the precision of the estimates, just like any other work of the same sort, is bound up with the data availability and quality. Overcoming such difficulties has required the combination of the best possible methods with intuition and reasonable guesses. Furthermore, in order to minimise errors and omissions, the results have been crosschecked with the anecdotal evidence as much as possible.

By way of conclusion, a couple of major results should be underlined. To begin with, the estimated trend growth rate of the total industrial value added is 6.8 percent per year, which stands between the 8.9 percent and 4.5 percent, suggested by Bulutay et al. and Zendisayek respectively. This implies that handicrafts as a whole probably grew less than factory production during the 1930s. And growth came to be more and more oriented towards consumption goods, with the result that by the end of decade domestic production was able to satisfy most of the consumption of many light consumer goods, especially textiles and processed food, by the onset of World War II. The capital intensive sectors like iron and steel and chemicals did not see notable growth until the post-war period. Looking at the sectoral growth rates, the expansion seems considerably balanced in the sense that apart from carpet production, which faced the negative foreign demand shock, all sectors had substantial development. Yet textiles stand out among them, as its importance increased markedly. Additionally, the increasing food output, as observed in wheat and olives, which was discussed in the earlier chapter, led to a significant expansion in the food related sectors. It should also be noted that although industrial production grew less than hitherto thought, it still grew rather fast relative to the rest of the world, as Turkey was among the countries that witnessed the most rapid industrialisation during the 1930s.

Another important result is that the rapid growth was accompanied by only moderate improvement in the consumption of manufactures. By the end of the 1930s, only the per capita consumption of wheat flour, cotton and woollen textiles undisputedly exceeded the 1929 level. For other goods, the per capita consumption was either stagnant or declined slightly. This is, however, consistent with the income per capita level, which sharply declined after 1930 but fully recovered by the end of 1930s. Although this chapter has not concerned itself with attempting to explain the industrial growth, the fact that textiles had a higher import penetration during the 1920s and saw higher growth rates in the 1930s implies that import substitution was a major cause of growth. But this does not explain how the other sectors also expanded to a significant extent. The following chapter takes up the subject in a systematic manner.

# 3.6. Data Appendix

Table 3.13.: Milling Output in Turkey, 1925-1939

| | Wheat output | Wheat acreage | Seeds requirement | Net wheat imports | Inventories (end-year) | Wheat consumption per capita |
|---|---|---|---|---|---|---|
| | Million tons | 1000 hectares | Million tons | Million tons | Million tons | kg |
| 1925 | 1.1 | | 0.64 | 0.17 | 0.082 | 43 |
| 1926 | 2.5 | 3542 | 0.44 | 0.01 | 0.378 | 115 |
| 1927 | 1.3 | 2440 | 0.51 | -0.01 | 0.153 | 70 |
| 1928 | 1.6 | 2843 | 0.50 | 0.04 | 0.213 | 72 |
| 1929 | 2.7 | 2774 | 0.51 | 0.12 | 0.383 | 137 |
| 1930 | 2.6 | 2809 | 0.52 | -0.01 | 0.432 | 124 |
| 1931 | 3.0 | 2902 | 0.48 | -0.02 | 0.159 | 170 |
| 1932 | 1.9 | 2656 | 0.48 | -0.03 | 0.333 | 73 |
| 1933 | 2.7 | 2687 | 0.57 | -0.03 | 0.231 | 127 |
| 1934 | 2.7 | 3156 | 0.62 | -0.09 | 0.369 | 105 |
| 1935 | 2.5 | 3429 | 0.64 | -0.06 | 0.154 | 114 |
| 1936 | 3.9 | 3546 | 0.59 | -0.03 | 0.450 | 160 |
| 1937 | 3.7 | 3278 | 0.69 | -0.11 | 0.550 | 148 |
| 1938 | 4.3 | 3806 | 0.71 | -0.10 | 0.800 | 167 |
| 1939 | 4.1 | 3939 | 0.79 | -0.02 | 0.900 | 163 |
| 1940 | | 4397 | | | | |

Source: See the text.

Table 3.14.: Olive Oil Output in Turkey (Tons), 1924-40

| | Olive oil output in Aegean | Total olive oil output | Olives output | Estimated oil output I | Estimated oil output II | Net import of olive oil | Consumption per capita (kg) |
|---|---|---|---|---|---|---|---|
| 1924 | 25000 | | 313346 | 61346 | 54121 | 58769 | |
| 1925 | 5500 | | 68936 | 13496 | 11907 | 4101 | 2.66 |
| 1926 | 16500 | | 206808 | 40488 | 35720 | 41821 | 1.37 |
| 1927 | 8500 | | 68996 | 20858 | 11917 | 9147 | 3.14 |
| 1928 | 33000 | | 413616 | 80977 | 71439 | 77522 | 2.59 |
| 1929 | 15000 | | 186007 | 36808 | 32127 | 21504 | 3.49 |
| 1930 | 25000 | | 313346 | 61346 | 54121 | 50241 | 1.83 |
| 1931 | 11500 | | 144139 | 28219 | 24895 | 8126 | 2.54 |
| 1932 | 26000 | | 325887 | 63800 | 56287 | 54825 | 1.79 |
| 1933 | 15000 | | 188007 | 36808 | 32472 | 18575 | 2.63 |
| 1934 | 26000 | 29446 | 325880 | 63800 | 56285 | 48795 | 1.90 |
| 1935 | 12000 | 28564 | 150406 | 29446 | 29446 | 22874 | 2.06 |
| 1936 | 20000 | 62051 | 142146 | 28564 | 28564 | 28384 | 2.23 |
| 1937 | 30000 | 33579 | 386027 | 62051 | 62051 | 58627 | 2.31 |
| 1938 | 20000 | 61233 | 180778 | 33759 | 33759 | 28736 | 2.77 |
| 1940 | 31000 | 55149 | 291268 | 55149 | 55149 | 38913 | 2.31 |

Source: See the text.

Table 3.15.: Tobacco, Alcohol and Sugar Output in Turkey (Tons), 1925-1939

| | Processed tobacco | | | Alcohol | Sugar | | |
|---|---|---|---|---|---|---|---|
| | Output | Sales | Consumption per capita (kg) | Consolidated output | Output | Net imports | Consumption per capita |
| 1925 | 7874 | 7138 | 0.54 | 5254 | 572 | 67657 | 5.17 |
| 1926 | 9821 | 9408 | 0.70 | 6961 | 572 | 62912 | 4.71 |
| 1927 | 9954 | 9801 | 0.72 | 8916 | 5162 | 61504 | 4.59 |
| 1928 | 10281 | 10098 | 0.72 | 8362 | 4280 | 63450 | 4.87 |
| 1929 | 10765 | 10528 | 0.74 | 10297 | 7944 | 68532 | 4.96 |
| 1930 | 9763 | 9978 | 0.69 | 8764 | 13074 | 63290 | 4.86 |
| 1931 | 8484 | 8829 | 0.59 | 10310 | 22649 | 44342 | 4.45 |
| 1932 | 11053 | 10614 | 0.70 | 11604 | 27306 | 29336 | 3.73 |
| 1933 | 11426 | 11298 | 0.73 | 11404 | 65086 | 17756 | 3.34 |
| 1934 | 10501 | 10885 | 0.69 | 10152 | 58662 | 3718 | 3.32 |
| 1935 | 12346 | 11848 | 0.73 | 14981 | 53827 | 2186 | 3.94 |
| 1936 | 12301 | 12319 | 0.75 | 13172 | 65886 | 22401 | 4.82 |
| 1937 | 13169 | 12851 | 0.77 | 14756 | 51575 | 11991 | 5.33 |
| 1938 | 13508 | 13653 | 0.80 | 19616 | 42527 | 62097 | 5.64 |
| 1939 | 15132 | 14416 | 0.82 | 17057 | 94508 | 27388 | 5.67 |

Source: See the text.

Table 3.16.: Timber, Mining, Utilities and Construction Output in Turkey, 1925-1939

| | Timber output | Utilities | | | | | | | Mining index | Construction index |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Water revenues | Gas and electricity revenues | Water unit prices | Electricity unit prices | Water output | Gas and electricity output | Paasche quantity index | | |
| | 1000 m3 | 1000 TL | 1000 TL | Piastres/m3 | Piastres/kWh | Million m3 | Million kWh | 1927=100 | 1948=100 | 1948=100 |
| 1925 | 595.0 | 1085.7 | 4719.8 | 12.5 | 6.3 | 86.9 | 751.6 | 0.86 | 28.71 | 13.6 |
| 1926 | 532.0 | 1247.6 | 5423.5 | 12.5 | 6.7 | 99.8 | 803.7 | 0.93 | 39.61 | 15.4 |
| 1927 | 382.8 | 1425.5 | 6196.9 | 13.3 | 7.2 | 107.6 | 858.8 | 1.00 | 42.53 | 15.8 |
| 1928 | 384.0 | 1526.2 | 6634.8 | 14.5 | 6.9 | 105.3 | 958.3 | 1.09 | 46.57 | 16.3 |
| 1929 | 434.6 | 1593.3 | 6926.2 | 15.0 | 6.6 | 106.2 | 1046.1 | 1.17 | 40.18 | 19.1 |
| 1930 | 437.2 | 1711.0 | 7438.0 | 15.0 | 6.5 | 114.1 | 1148.7 | 1.28 | 41.26 | 19.1 |
| 1931 | 429.5 | 1711.0 | 7990.0 | 15.0 | 6.3 | 114.1 | 1260.3 | 1.37 | 43.9 | 17.5 |
| 1932 | 414.9 | 1775.0 | 8294.0 | 15.0 | 6.1 | 118.3 | 1367.5 | 1.48 | 48.42 | 17.9 |
| 1933 | 544.8 | 1954.0 | 8570.0 | 15.0 | 5.8 | 130.3 | 1486.6 | 1.60 | 48.06 | 18.7 |
| 1934 | 498.1 | 2152.0 | 8522.0 | 15.0 | 5.3 | 143.5 | 1620.2 | 1.74 | 59.79 | 22.2 |
| 1935 | 514.9 | 2303.0 | 8173.0 | 15.0 | 5.3 | 153.5 | 1529.1 | 1.69 | 63.63 | 23.1 |
| 1936 | 626.3 | 2276.0 | 8160.0 | 15.0 | 4.9 | 151.7 | 1653.5 | 1.78 | 62.68 | 23.4 |
| 1937 | 678.4 | 2270.0 | 8013.0 | 15.0 | 4.3 | 151.3 | 1878.8 | 1.95 | 68.63 | 26.9 |
| 1938 | 698.9 | 2680.0 | 8739.0 | 15.0 | 4.3 | 178.7 | 2056.2 | 2.17 | 75.1 | 31.7 |
| 1939 | 579.3 | 2900.0 | 9629.0 | 15.0 | 4.2 | 193.3 | 2320.2 | 2.42 | 76.22 | 31.6 |

Source: See the text.

Table 3.17.: Aggregate Industrial Output Indices for Turkey (1927=100), 1925-1939

| | Food processing | Textiles | Aggregate |
|---|---|---|---|
| 1925 | 73.3 | 102.2 | 82.3 |
| 1926 | 132.2 | 94.0 | 122.5 |
| 1927 | 100.0 | 100.0 | 100.0 |
| 1928 | 132.0 | 102.1 | 123.4 |
| 1929 | 151.5 | 135.6 | 144.0 |
| 1930 | 155.9 | 85.1 | 137.2 |
| 1931 | 171.2 | 106.4 | 152.3 |
| 1932 | 142.4 | 126.5 | 136.5 |
| 1933 | 227.4 | 179.0 | 201.8 |
| 1934 | 216.7 | 191.0 | 200.1 |
| 1935 | 218.9 | 266.8 | 224.4 |
| 1936 | 257.1 | 224.0 | 235.7 |
| 1937 | 256.3 | 365.9 | 278.7 |
| 1938 | 256.5 | 296.7 | 260.0 |
| 1939 | 332.2 | 397.3 | 333.1 |

Note: All are chained indices, where the sectoral indices are combined with 1927 weights for 1925-32 and with 1935 indices for 1933-1939. See the text for details.

Table 3.18.: Value-Added Estimates at 1927 Prices for Turkey (TL Million), 1925-1939

| | Own estimates | Bulutay et al (1974) | Zendisayek (1997) |
|---|---|---|---|
| 1925 | 164.6 | 182.0 | |
| 1926 | 245.1 | 202.7 | |
| 1927 | 200.1 | 250.4 | |
| 1928 | 246.8 | 253.4 | |
| 1929 | 288.1 | 273.1 | 217.3 |
| 1930 | 274.4 | 313.5 | 226.3 |
| 1931 | 304.8 | 321.5 | 238.7 |
| 1932 | 273.2 | 379.8 | 253.2 |
| 1933 | 330.4 | 446.7 | 273.3 |
| 1934 | 333.7 | 509.3 | 287.8 |
| 1935 | 360.1 | 488.3 | 291.4 |
| 1936 | 397.4 | 471.3 | 287.4 |
| 1937 | 455.8 | 513.8 | 302.1 |
| 1938 | 460.6 | 614.4 | 327.4 |
| 1939 | 520.6 | 696.6 | 356.3 |

Source: See the text for own estimates. Current-price value added estimates of Bulutay et al and Zendisayek are deflated with the industrial price index.

# 4. Industrial Growth and Protectionism in Turkey: The Case of Textiles

The preceding chapter showed that an impressive industrial expansion took place in interwar Turkey, but its origins remain to be examined. There exist a couple of tentative suggestions in the literature with regard to the source of output growth, such as import substitution, state-led industrialisation and the favourable domestic terms of trade.[1] All these arguments have been supported with different types of evidence, such as a decline in imports and an increase in the relative prices of manufactures, yet no one has attempted to provide a coherent and consistent assessment. This chapter aims to fill this analytical gap by exploring the sources of industrial growth. The linkage between tariff protection and industrialisation lies at the centre of the analysis, but the impact of income growth and relative prices are also considered.

The ways in which tariff protection affects the domestic economy is one of the most controversial issues in trade history for the very reason that economic theory has not suggested a fully satisfactory method for answering the question.[2] The difficulty mainly lies in the effects of trade policy on domestic and foreign prices, as well as domestic output, through income and substitution effects, most of which are hard to observe due to the shortage of historical data. Also, its static and dynamic effects may vary from one country to another. However, despite these difficulties, it is possible to suggest a more comprehensive analysis instead of the anecdotal evidence and unfounded generalisations that abound in the literature. This chapter first provides a brief

[1] Boratav, *Türkiye İktisat Tarihi*; Tezel, *Cumhuriyet Dönemi*; Kazgan, Türkiye Ekonomisinde Depresyon.

[2] Giovanni Federico and Antonio Tena, Was Italy a Protectionist Country? *European Review of Economic History*, 2 1998, p.74.

discussion of Turkey's trade policy in the interwar period, then suggests an empirical model to account for the factors behind output growth. The model is then applied to the case of textiles. This choice is not arbitrary. As shown in the preceding chapter, textile output grew the most within manufacturing. Its trend growth rate was 10.9 percent per year over 1925-1939, while the aggregate output index increased by 8.6 percent. Moreover, the effect of import protection should best be seen in textiles since import penetration had been greatest in textiles in the 1920s. If manufacturing is taken as a whole, it is likely that the degree of import substitution would be smaller than for textiles, which competed against imports more than any other sector.

## 4.1. Turkey's Trade Policy Choices in the Interwar Period

In the interwar years, Turkey's trade policy followed worldwide trends to a considerable degree, while still having its own characteristics. During the 1920s import protection was based on the specific duties introduced as part of the tariff scheme adopted by the Ottoman administration in 1916.[3] The specific duties adopted in 1916 had been designed to provide an average 20 percent protection rate. However, because of the price changes, the ratio of total duties to import values substantially decreased by the early 1920s, so the government decided to increase the 1916 rates fivefold for all goods in 1920 and then twelvefold in 1923 for certain goods.[4] In the same year the Lausanne Treaty was ratified, fixing the import duties for the parties to the treaty for 27 goods at nine times the 1916 level for five years, that is, until 1929.[5] Subsequently, two major amendments to the duties were made during the 1920s. First, in late 1925 all the duties that had been revised by Law 8 were increased to 8 times the 1916 level and then in 1927 the coefficient

[3]For an evaluation of the tariffs in the 1920s see Orhan Kurmuş, 1916 ve 1929 Gümrük Tarifeleri Üzerine Bazı Gözlemler. *Türkiye İktisat Tarihi Üzerine Araştırmalar*, 1978

[4]Law 8, July 1920 (Resmi Gazete, 14/2/1337) and Law 295, January 1923.

[5]Law 342, July 1923. The parties to the treaty were Turkey, the British Empire, France, Italy, Bulgaria, Japan, Romania, Yugoslavia and Greece. Actually there was a clause in the treaty allowing Turkey to adjust the tariff rates in the case of a more than 30 percent depreciation in the value of TL against the British pound to protect the nominal rates in the face of possible deflation. However, the rates were never revised. See Tezel, *Cumhuriyet Dönemi*, p.146.

introduced by Law 295 was increased from 12 to 15.[6] However, none of the latter changes were applied to the parties of the Lausanne Treaty or to any other countries that had signed a trade agreement with Turkey before the amendments. In fact, increasingly more and more countries came to sign trade agreements or *modus vivendi* with Turkey guaranteeing them the most favoured nation clause over the 1920s. The duality in the import regime due to the discriminatory treatment given to the parties of the Lausanne Treaty thus became less and less effective towards 1929.[7] Therefore, as a result of these legal revisions, before 1929 the specific duties were basically applied at the 1916 duties times the coefficients 5, 8, 9 and 12 for various sets of goods and countries.[8]

At the aggregate level, all these changes resulted in Turkey having a nominal tariff rate, measured as import taxes divided by imports, of 16 percent of imports in the second half of the 1920s, which was below the world average and also the below the level of many European countries (Figure 4.1). In continental Europe, excluding the USSR, the average tariff rate on agricultural products was 26 percent in both 1913 and 1926, while the manufacturing tariffs were 18 percent in 1913 and 25 percent in 1926. The former increased up to 65 and the latter to 30 percent by 1931.[9]

When the sanctions of the Lausanne Treaty came to an end in 1929, the Turkish government decided to make a long-awaited radical tariff revision. The preliminary tariff schedules prepared by the Istanbul Chamber of Commerce and Ali İktisat Meclisi (the economic advisory body consisting of experts and government representatives) proposed substantial increases in tariffs, but the final scheme that the government put in place went even further.[10] The new scheme was much more detailed and comprehensive. It increased specific rates significantly and led to higher protection for intermediate and finished goods: the average nominal tariff rate increased from 15 to around 35 percent in a year. Industrial raw materials and goods that were not locally produced, such as agricultural machinery, were exempted from the higher

[6] Laws 691 and 1005.

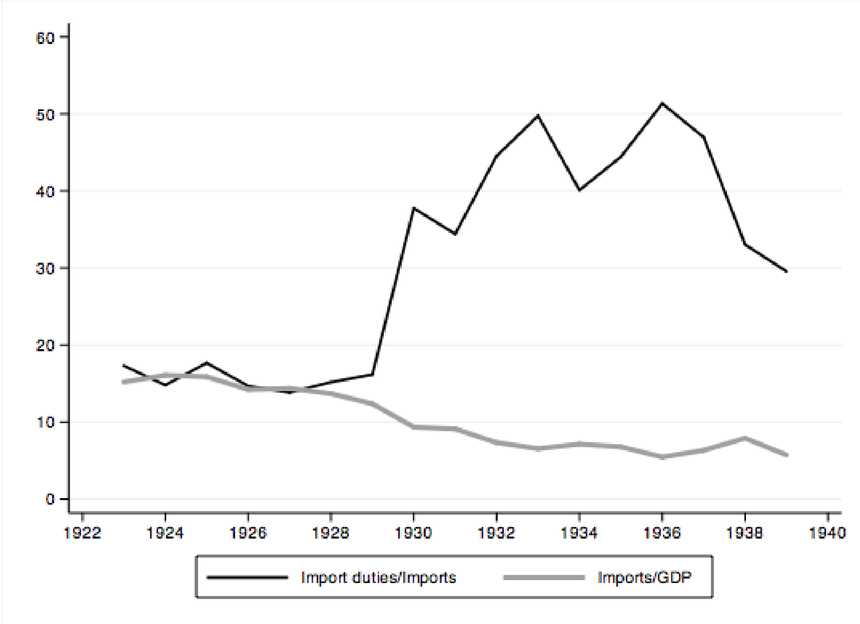
[7] Almost all major trade partners of Turkey enjoyed the same treatment by 1929. For the full list, see Mustafa Nuri, *Türkiye'de Ahdi Tarifeler*. Cumhuriyet Matbaası, 1929.

[8] There were also special duty concessions to the various government enterprises and the companies benefiting from government subsidies.

[9] Lewis, *Economic Survey*, p.151.

[10] Law 1499. For a comparison of the views of merchants, experts and policy makers on tariff reform, see Kurmuş, 1916-1929 Gümrük Tarifeleri.

Figure 4.1.: Turkey's Aggregate Nominal Protection and Import/GDP Rates (%), 1923-1939




Source: Turkey, İstatistik Umum Müdürlüğü, *İstatistik Yıllığı*; Turkey, İstatistik Umum Müdürlüğü, *Dış Ticaret İstatistikleri*; Bulutay et al., *Türkiye'nin Milli Geliri*.

duties. On the other hand, many consumer goods, particularly textiles, foodstuff, leather and wood products, and other goods in high local demand, such as cement, came to be highly protected.[11] One should also note that the new duties were introduced prior to the worldwide deflation in commodity prices, so the new scheme indicates the protectionist ambitions and economic mentality of the policy makers.

This initial tariff structure underwent two important revisions during the 1930s. A comprehensive upward revision and refinement was carried out in 1933, and a number of limited amendments were made between 1936 and 1939, adjusting specific duties both upwards and downwards. In principle, consumption goods became more heavily protected, whereas rates on intermediate goods were decreased. What caused the revisions in and after 1936 was the recovery in domestic demand. For instance, a shortage of cotton yarn and cement began in 1936, which led the government to make a reduction in the duties on cotton yarn by 20-90 percent and on cement by 90 percent.[12]

[11]Tezel, *Cumhuriyet Dönemi*, pp.145-46.
[12]Laws 2225 and 2256 in 1933 and various government decrees in 1936-1937: 2/5570 in November 1936, 2/5790 in December 1936, 2/5827 in February 1937 and 2/7005 in July 1937.

Besides the new and upward-revised tariffs, the import regime after 1932 took a different shape, as tariffs were supplemented by import quotas and exchange controls following international trends.[13] Import quotas were first introduced in November 1931,[14] when the imports of certain foodstuff, alcoholic beverages, and cloths were temporarily forbidden, while those of many consumption goods and intermediate goods were restricted. The quota lists were then announced every month and then every three and six months. They were first allocated on a first-come first-served basis, but then new measures were adopted to increase the number of quota holders.[15]

After the initial experiments, quotas were transformed into bilateral quotas, in which each trade partner was given a certain share of a quota arranged in the bilateral agreements.[16] Around the same time in 1933, clearing arrangements came to be prioritised, as can be seen by the fact that by the end of the decade more than half of the trade was conducted on clearing arrangements, as was typical of many other Central and Eastern European countries that were entering the German trading network. In this way, quotas became a substantial part of commercial bargaining until 1937, when quantitative restrictions with the countries with which Turkey had more than a 20 percent trade surplus were abolished.[17] Considering the large spectrum of such countries, it is possible to argue that quantitative restrictions had become largely futile by 1937.

To the tariffs and quotas should be added the exchange controls as a way of regulating the foreign trade in the 1930s. This was an institutional novelty because the government in the 1920s did not have any means of controlling exchange rates, that is, neither a central bank nor a reserve of foreign currencies. Consequently, the value of the TL had been determined on the open market. However, anticipating higher tariffs in 1929, a large amount of speculative imports took place, which caused the depreciation of TL against both sterling and the US dollar.[18] This prompted the first attempt to control ex-

[13]Note also that tobacco, tea, sugar and coffee imports were brought under government monopolies with Laws 1701 in 1930 and 2054 in 1932.

[14]Government Decree 2/11940.

[15]Tezel, *Cumhuriyet Dönemi*, p.157.

[16]Government Decrees 1887 and 13888 in February 1933.

[17]The New Import Regime, Government Decree 2/7005 on 5 July, 1937. The countries for which the quotas were abolished were Germany, Belgium, Luxembourg, France, Netherlands, UK, Ireland, Spain, Sweden, Switzerland and Greece. The imports from the US, Egypt, Syria and Palestine were allowed in freely without any conditions.

[18]The TL/sterling parity was 8.95 in 1925 and 10.32 in 1930, while the TL/dollar parity

change rates and the government stopped public sector imports for a short period.[19] In February 1930, the TL was pegged to gold and all kinds of currency transactions came be regulated by the government.[20] To supervise this, Bankalar Konsorsiyumu, a semi-public initiative holding a large amount of foreign currency, was established the following month. It helped the government to control exchange rates until the Central Bank, which was founded in 1931, started its operations in January 1932. In August 1930 the TL was pegged to Sterling and thus gold at the rate of 10.30 TL per pound. When Britain went off gold in 1931, Turkey did not follow suit; instead, it pegged the TL to the French Franc, which remained on gold. TL was tied to the Franc until France left the gold standard in 1936, and thereafter an artificial gold parity was maintained by the Turkish authorities. In short, during the whole decade a very strict and orthodox monetary policy was adopted, which led TL to overvalue against other currencies, such as dollar and sterling.

To what extent did Turkish trade policies conform to the international trends outlined in the Introduction? First of all, the protectionist wave obviously came to Turkey immediately after 1929 with a large policy menu to choose from. The 1929 tariff reform nonetheless had nothing to do with the worldwide deflation, but instead reflected the protectionist aspirations of policy makers, the origins of which can be traced back to World War I. Due to the international agreements Turkey had entered into, tariff reforms could be not carried out before 1929. On the other hand, the deflationary environment of the 1930s allowed Turkey to sustain such high tariffs, although there is no evidence that the government planned to adopt other measures, such as quotas, before 1929. They were mostly ad hoc responses to the rapid decline in export prices and the deteriorating expectations regarding the timing of recovery. The strict policy in favour of an overvalued currency and balanced budget required the curtailment of imports and exchange controls. Thus, increasingly unorthodox policies became necessary to attain quite orthodox goals, gradually becoming more systematic over the course of the 1930s.

was 1.87 in 1925 and 2.12 in 1930. Tezel, *Cumhuriyet Dönemi*, p.154.

[19]Law 1447, May 1929.

[20]Law 1567, February 1930.

## 4.2. Measuring the Impact of Protection on Industrial Growth

The empirical literature on quantifying the impact of trade protection had been far from satisfactory prior to the introduction of the concept of effective protection in the 1960s.[21] The first empirical application was made by Balassa, but it was Capie's famous work on the British tariff reform in 1932, along with other similar works, which popularised the concept in the economic history literature.[22] Effective protection on a good is calculated in the following way:

$$g_j = \frac{t_j - \sum a_{ij} t_i}{1 - \sum a_{ij}}$$

where, $t_j=$ the nominal tariff on the final good, $t_i=$ the nominal tariff on inputs, and $a_{ij}=$ the coefficients of intermediate inputs, per unit of output j. The concept therefore refines the idea of tariff protection by considering tariffs on intermediate goods, so it leads to estimated protection rates on the final products that are different from the nominal rates, unless the inputs are not protected. For this reason, in spite of the identical nominal rates, the effective protection on good X can be higher than on good Y due to the different value added coefficients and/or the nominal rates on the intermediate goods.

Capie argues that a reason why effective rates are of interest is that they shed light on the direction of the resource allocation effects of the tariff structure because the tariff schedule has the capacity to change the movement of resources towards highly protected goods in the domestic economy.[23] On the other hand, the subsequent debates about Capie's work indicated the limitations of the concept, despite its usefulness.[24] Its first drawback is the most

[21] Roger Middleton, Macroeconomic Policy in Britain Between the Wars. *Economic History Review*, 64.V1 2011. Also for a brief history of the concept, see Forest Capie, The British Tariff and Industrial Protection in the 1930s. *Economic History Review*, 31 1978, p.400.

[22] Bela Balassa, Tariff Protection in Industrial Countries: An Evaluation. *Journal of Political Economy* 63 1965; and Capie, British Tariff. Two earlier examples are Sundararajan on the US iron and steel industries before the WWI and Hawke again on US industrial protection in the late nineteenth century. J. Sundararajan, The Impact of the Tariff on Some Selected Products of the US Iron and Steel Industry, 1870-1914. *Quarterly Journal of Economics*, 1970 1984; andG.R. Hawke, The United States Tariff and Industrial Protection in the Late Nineteenth Century. *Economic History Review*, 38 1975.

[23] Capie, British Tariff, p.401.

[24] J.S. Foreman-Peck, The British Tariff and Industrial Protection in the 1930s: an Alternative Model. *Economic History Review*, 34 1981; M. Kitson, Solomos Solomou and M.R. Weale, Effective Protection and Economic Recovery in the United Kingdom During the

obvious one: it is very demanding as far as data is concerned. To find effective protection rates, one needs to have the technical coefficients of the value added structure.[25] Economy-wide input-output tables are obviously not sufficient to assess resource flows within manufacturing. Second, notwithstanding the availability of such data, protectionism usually changes the value added structure in the economy, thereby changing the coefficients in the value added structure, while the formula for effective protection assumes free trade values.

Third, and perhaps more importantly, the concept of effective protection has been criticised on economic grounds: for the effective rates to affect resource allocation between industries, domestic prices should rise by the same amount as the tariff. Foreman-Peck argues that was unlikely to be the case in Britain in the 1930s because imports and home products were not perfect substitutes, so import prices did not fully determine home prices.[26] Additionally, if there were constant returns to scale in the home market, due to technology, competition or the absence of barriers to the entry of new firms, there would have been no price increase. He also reminds us of some price-fixing arrangements in the British iron and steel industry, implying the presence of some factors, other than import prices, that impacted on home prices. The same issue was raised by Solomou as well.[27] He maintains that the inflationary effects of tariffs were not so strong in Britain, possibly because of excess capacity in the depressed conditions of the time. Furthermore, the existence of economies of scale might have encouraged domestic producers to keep their competitive edge against imported goods by not raising prices. Similarly, Kitson, Solomou and Weale argue that the assumptions behind the concept are too restrictive: full employment, constant returns to scale, perfect competition and the law of one price. In their view, these assumptions cannot be upheld for the interwar period.[28]

1930s. *Economic History Review*, 44 1991; and Solomos Solomou, *Themes in Macroeconimic History: the UK Economy, 1919-1939*. Cambridge University Press, 1996.

[25] One alternative is to take a country with low tariffs, which is, however, hard to find in the 1930s. Instead, Capie prefers to derive coefficients from this formula: $a_{ij} = \frac{p'_{ij}/(1+t_i)}{p'_j/(1+t_j)}$ where the $p'_{ij}$ and $p'_j$ where the $p'_{ij}$ and $p'_j$ are the values of input i per unit of output and the unit value of output of industry j, respectively. Capie, British Tariff, p. 403.

[26] Foreman-Peck, The British Tariff, pp.132-33.

[27] Solomou, *Themes in Macroeconimic History*, p. 144.

[28] Kitson, Solomou and Weale, Effective Protection, p.335. Their parallel argument is that effective protection represents one framework for analysing the resource flow effects of tariffs, but nominal tariffs are important as well to the extent that they influence

Obviously, all these points cast serious doubt on the explanatory power of the effective protection concept for our case: the underlying assumptions (full employment, full capital mobility and perfect competition) seem far-fetched as far as the early period of Turkish manufacturing is concerned. On one level, it is clear that the domestic prices of manufactures rose in accord with increasing tariff rates, but the idea that higher tariffs drew capital and labour towards particular goods is too unrealistic, since profits were not only related to the input-output price ratio but also to supply and demand elasticities, the initial level of capacity and investment decisions, which were also affected by exogenous factors.

The literature does not abound with alternative methodologies for measuring the impact of tariffs. Foreman-Peck suggests an alternative way of calculating the tariff-induced change in the domestic output, which is itself an improved version of Richardson's "import replacement ratio", as follows:

$$g = -\frac{\Delta(p_m + m - p_d - d)}{1 + p_m + m - p_d - d}$$

where $p_m$, $p_d$, $m$ and $d$ are logs of the prices of the imported and domestic goods and import and domestic output.[29] Apart from the strong assumptions made in the derivation of the formula (such as the same and constant income elasticities in imports and home output and the perfectly elastic supply of imports), the basic shortcoming of the model is that price changes are only assumed to be the result of the imposition of tariffs. For instance, the state of domestic demand is completely lacking in the model. In short, by comparison, as Broadberry argues, the effective protection approach might provide a more useful framework, since Richardon's and Foreman-Peck's measure of effect of tariff is an ex post measure, while effective protection rate is ex ante measure. Crucially the ex post measures besides not only the effect of tariff but also changes in other economic variables.[30]

consumption decisions and macroeconomic processes of import substitution.

[29]Foreman-Peck, The British Tariff; and H.W. Richarson, *Economic Recovery in Britain, 1929-39.* Weidenfeld and Nicolson, 1967.

[30]For a more detailed discussion, see S.N. Broadberry, *British Economy Between the Wars.* Basil Blackwell, 1986, pp.132-38.

# 4.3. Empirical Model

This chapter however applies a more comprehensive and elaborate empirical framework suggested by Irwin and Temin and Irwin and Davis, which look into the growth of US antebellum cotton and iron industries in response to tariffs.[31] Both papers use similar partial equilibrium models, which are based on the original model developed by Grossman (1986).[32] The model perfectly fits our research question and analytical concerns: it is based on a set of clearly defined supply and demand equations, takes the domestic prices, as well as the domestic output level, as endogenous variables and also considers the other determinants of output growth such as relative prices and domestic income. So we do not need to assume that the tariff is fully captured by the increase in the domestic prices or higher tariffs necessarily lead to higher growth rates. In comparison with ex ante and ex post measures described above, the partial equilibrium framework suggested here is based on a limited number of assumptions regarding the relative prices and output elasticities. The drawback of this approach is that it does not address the general equilibrium effects of tariffs, however, first, our primary concern here is to identify the source of industrial output growth rather than the macro impact of tariffs. Besides, as briefly argued in Conclusion of this dissertation, the general equilibrium effects of tariffs were in most likelihood not contractionary due to the movement of exchange rates and wages. That said, a conclusive analysis should be based on general equilibrium framework, as suggested by Eichengreen.[33]

On the supply side of this model, the home textile output function takes the following Cobb-Douglas form

$$Q = Ae^{\pi t} C^{\alpha_1} L^{\alpha_2} K^{\alpha_3} \tag{4.1}$$

where C is raw material, L wage labour and K capital.[34] $\pi$ and t represent the rate of Hicks-neutral technological change and time respectively. Note that

[31] Douglas Irwin and Peter Temin, The Antebellum Tariff on Cotton Textiles Revisited. *Journal of Economic History*, 61 2001; and Douglas Irwin and Joseph Davis, The Antebellum US Iron Industry: Domestic Production and Foreign Competition. *Explorations in Economic History*, 45 2008.

[32] Gene Grossman, Imports as a Cause of Injury: The Case of the U.S. Steel Industry. *Journal of International Economics*, 29 1986.

[33] Barry Eichengreen, *The Political Economy of the Smooth-Hawley Tariff.* NBER, 2001 – Working paper

[34] See Appendix B for details of the solution of the model.

there is no restriction on the coefficients of the production function. Raw material and labour are the traded inputs and are available at exogenous price $p_c$ and w. Capital ($K$) is the non-traded factor, whose supply grows at the exogenous trend rate of $\delta$ per year: K=$\bar{K}e^{t\delta}$.

Therefore, the quantity of raw material and labour employed are determined by the marginal value of the product of each one being equal to their prices ($p_c$ and w), as follows:

$$C = \alpha_1 pQ/p_c \tag{4.2}$$

$$L = \alpha_2 pQ/w \tag{4.3}$$

On the demand side, the domestic goods are imperfect substitutes of imports, which are perfectly elastic in supply and imported at exogenous price $p^*$. Moreover, domestic textiles are imperfect substitutes of the aggregate basket of domestic goods so that the demand function appears as follows:

$$Q = Be^{\psi t}(\frac{p^*(1+\tau)}{p})^{b_1}(\frac{p^a}{p})^{b_2}Y^{b_3} \tag{4.4}$$

where $\psi$ is the secular demand shift, $p^*$ is the import price of textiles, $\tau$ is the ad valorem tariff rate on imported textiles, $p^a$ is the price of the aggregate basket of domestic goods and $Y$ is the real income. As pointed out above, the domestic price and output are endogenous variables. Then the domestic output is solved at the equilibrium level and substituted in the supply equation, which gives, after taking logs, the following reduced form partial equilibrium output:[35]

$$\begin{aligned} lnQ = \beta_0 + \beta_1 t + \beta_2 ln\left[\frac{p^*(1+\tau)}{p_c}\right] + \beta_3 ln(\frac{p_a}{p_c}) + \beta_4 ln(\frac{p_c}{w}) \\ + \beta_5 lnY + \epsilon \end{aligned} \tag{4.5}$$

The domestic output is therefore a function of the tariff-inclusive import prices and the aggregate price level, both relative to the input prices, the

[35]The system is constituted by four equations, consisting of the four endogenous variables $p$, $Q$, $C$ and $L$, all as stated above, and the following exogenous variables: $p_c$,w,$p^a$,Y and $p^*$. The reduced form allows us to estimate the output from the exogenous variables, rather than estimating all four equations separately.

ratio of input prices to wages and the growth of domestic income. $t$ captures the composite effect of technological change, the capital growth rate and the demand shift independent of prices and income.

The model was originally estimated from time series data, but the scope of analysis is here expanded to account for separate effects on different textile types, so we estimate panel data, which requires us to consider the substitution between different kinds of textiles. Therefore, the original demand equation is revised to include the relative substitute textile prices $(p_s/p)$ as an independent variable, where $p_s$ and $p$ denote the substitute prices and own prices. Thus, the reduced form equation takes a slightly different form, as explained in Appendix B:

$$\begin{aligned} lnQ = \beta_0 + \beta_1 t + \beta_2 ln\left[\frac{p^*(1+\tau)}{p_c}\right] + \beta_3 ln(\frac{p_a}{p_c}) + \beta_4 ln(\frac{p_s}{p_c}) \\ + \beta_5 ln(\frac{p_c}{w}) + \beta_6 lnY + \epsilon \end{aligned} \tag{4.6}$$

Here, all variables except time trend are expected to have positive values.[36] The economic meaning of this is clear: the more expensive the foreign goods, the more expensive the other goods, including the substitute textiles, and the higher the output growth rate, as long as raw material prices do not put a check on profits. Interpreting the coefficient $\frac{p_c}{w}$ is nonetheless a bit more complicated: the value of the coefficient depends on the relative supply elasticities of labour and raw materials. Given a fixed amount of demand and wages, the increase in raw material prices implies higher sales prices and thus profits. And finally, the higher income growth necessarily induces greater effective demand.

The downside of panel data estimates in comparison with time series is that they produce an average value of parameters across the range of different textiles. If the supply elasticities vary, say, from cotton to silk, the model will fail to capture the degree of individual parameters. For instance, if cotton production is more elastic to import prices than silk or woollens, then the estimated coefficients will only reflect its average impact on output growth. On the other hand, the fact that all the textile branches grew massively in Turkey in the 1930s means that the difference between the actual individual

[36] See Appendix B for the technical details of expected signs of coefficients.

elasticities and the estimated average ones can be supposed to be relatively small. This is also the reason why the present model specifically focuses on fast-growing textiles, instead of covering other manufacturing branches, such as food processing, which grew much more slowly.

As discussed earlier, Turkish tariffs were supplemented by import quotas for a range of goods, including textiles, during 1932-1937. However, how the quota policy differed from tariffs with regard to its protective impact remains unknown. It is known that quantitative import restrictions were introduced in the early 1930s mostly in the exchange control countries and German trading area. In principle, there were a couple of factors behind quotas: First of all, under tariffs imports were still subject to changes for a large number of reasons related to the costs of production and prices abroad and in the home market, whereas quotas reduced this uncertainty on behalf of policy makers.[37] Secondly, under import tariffs, there is still a relationship between domestic and world prices, determined by the size of duties and transportation costs, whereas quotas cut this link, thus bringing a more secure protection on home markets. Additionally, quotas allowing quantitative planning must have seemed more appropriate from administrative point of view, as they afford a more predictable and a more precise control than duties, because relevant demand and supply schedules and price policies of exporting countries cannot be known for sure. Last but not the least, tariffs, unlike quotas, did not allow to circumvent the most-favoured nation policy, which prevented discriminatory actions.[38] When policy makers sought to give specific concessions to certain partners, they were able to use bilateral quotas. In this respect, quotas might have been seen as a way of discriminatory commercial tool, rather than a protective instrument per se. Therefore, these differences were likely to lead governments to switch to quotas, as the depth and persistence of deflation by 1931 reduced the prospect of the early and strong recovery in world prices.

[37] Lawrence Towle, *International Trade and Commercial policy.* Harper and Brothers, 1940, p.614

[38] Towle, *International Trade*, p.615. Another relevant question might be the persistence of quota policy: League of Nations points out that although quotas were not necessary elements of national planning, their persistence in the late 1930s, when recovery began, can be explained two facts: First, the economic and political insecurity continued. Additionally, the palliative measures taken in the early stage of the Depression to prevent isolate home market gave way to policies geared increasingly towards the self-sufficiency and economic nationalism. League of Nations, *Industrialisation and Foreign Trade*, p.35.

In short, quotas might have either served some additional import protection, or have been a tool in the bilateral agreements. If they effectively became, whatever the policy motivations and intentions were, a protective measure, they had to operate by changing the association between local and import prices. The implication is that if they were not redundant, that is, if quotas were not set at lower than the amount of imports that tariffs implied (above the autarky level), then they should have changed the elasticity of the local output to the import prices. For this purpose, we check to see if the effect of foreign prices on output changes during the sub-period 1932-1937 by interacting the import price variable with the dummy variable. This is exactly the same way that Irwin and Temin control if the protection rates were redundant, that is, above autarky rates, for the periods when they think that tariff reforms might have changed the linkage between local and foreign prices by increasing nominal tariffs above the autarky prices.[39]

## 4.4. Data

The dependent variable in Equation 4.3.5 is output growth ($Q$). The physical output data covers cotton, wool, silk and hemp textiles, which were all estimated for the period 1925-1939 in the preceding chapter.

The average import prices ($p^*$) are equivalent to the total value in TL of the imported fabrics divided by import volume. Cotton fabrics in the trade data feature all kinds, including the ones that did not compete against the local production. That is why only the bleached and unbleached types are considered in calculating average import prices.

The raw material prices ($p_c$) represent the prices of domestic raw cotton, greasy wool, fresh cocoons (for silk) and finally the hemp seed prices, all home market wholesale prices.[40] The price of the aggregate basket of domestic goods is represented by the wholesale price index that Bulutay et al. provides, as

[39]Irwin and Temin, Antebellum US Cotton Industry.

[40]Greasy wool prices: annual average Istanbul commodity exchange prices. İstanbul Ticaret ve Zahire Borsası, Yıllık, 1934/35; and Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Fiyat İstatistikleri 1941*. Dried cocoon: annual average Istanbul commodity exchange prices. İstanbul Ticaret ve Zahire Borsası, Yıllık, 1934/35; and Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Fiat İstatistikleri.* 1947. Hemp seed prices: İstanbul Ticaret Odası, Mecmua, 1925; İstanbul Ticaret ve Zahire Borsası, Yıllık, 1934/35; and Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Fiat İstatistikleri 1947*. See Chapter Two for raw cotton prices.

was used in the earlier chapters.[41]

For the substitute prices we first construct the final good prices as far as the available data permits. The cotton fabric prices are the average wholesale prices on the Istanbul Commodity Exchange during 1930-1939 and the data is extrapolated with the average imported fabric prices for the earlier years. Wool prices are the only available relevant series representing the greasy wool prices.[42] For silk, we use the wholesale raw silk prices in Istanbul.[43] Finally, the hemp fibre price represents the hemp goods prices.[44] Then we take the geometric average of the four price series to approximate the common substitute prices ($p_s$) by assuming that each good competes against the basket of all others. All related series are in Tables 4.3 and 4.5.

There is only one available industrial wage series, which Pamuk estimates.[45] It is assumed to represent all four sectors due to the lack of sectoral data. Lastly, we consider the revised real GDP figures, which are based on our own estimates in the earlier chapters, to represent the change in the demand for industrial goods. For wages and revised GDP series, see Table 4.6.

The estimates of the ad valorem tariff rates need to be explained in more detail. There is not any existing estimate of ad valorem equivalents of specific tariffs to date.[46] The nominal protection rate is here measured by the percentage of custom revenues to the import value for a good. Turkish trade publications report only the import volume (in kg) and import value in Turkish currency (TL), with further information on the origins of imports. Thus, the key variable to be estimated for each good is the customs revenue.[47]

The basic empirical difficulty in deriving custom revenues is the preferential tariff treatments. More explicitly, in principle there was not a single amount of

[41] Bulutay et al., *Türkiye'nin Milli Geliri*.

[42] Bulutay et al., *Türkiye'nin Milli Geliri*, Supplementary Table 24.

[43] İstanbul Ticaret ve Zahire Borsası, Yıllık, 1934/35; and Turkey, Başvekalet İstatistik Umum Müdürlüğü, *Fiat İstatistikleri 1947*.

[44] Turkey, Ziraat Vekaleti, *Kastamonu Kendirciliği*.

[45] Şevket Pamuk, *İstanbul ve Diğer Kentlerde 500 Yıllık Fiyatlar ve Ücretler*. T.C. Başbakanlık Devlet İstatistik Enstitüsü, 2000b, p.84.

[46] The only exception to this is a calculation of the nominal tariff rates in 1916 and 1929 for a wide range of goods. Kurmuş, 1916-1929 Gümrük Tarifeleri.

[47] Note that the import duties were not the only taxes on imports. Transaction and consumption taxes were also of significant size. However, both were applied to both local output and imports, so did not lead to extra protection in favour of local output. Tezel, *Cumhuriyet Dönemi*, p.147. Actually, Tezel does not explicitly point out that the consumption tax was not discriminatory, which was though clearly stated in Law 2458 and subsequent revisions (Laws 2546, 2731 and 3101).

duty applied to all trade partners due to the special concessions determined in the bilateral trade agreements. However, a closer look reveals that the preferential specific tariffs were more of a problem during the 1920s owing to the fact that some trade partners did not benefit from a most favoured nation clause, which would have provided equal tariff treatment. At this stage, the reader should bear in mind that we limit our analysis only to the *major* trade partners: the countries whose exports to Turkey added up to around 90 percent of the total imports of each good. This is just a practical definition to reduce the computational costs. Defined this way, the major partners appear as the European countries, Japan, Syria, Egypt, and the US. Within this group, the number of countries that were outside the sphere of most favoured nation clauses decreased every year, so that by 1929 only Syria and Egypt remained excluded.

What we do, then, is identify the different specific rates in each year for certain statistical units and then multiply the imports from each country by the relevant specific rate. Then we add up the revenues received from each country's imports and divide it by the total imports value to obtain the ad valorem tariff rate for that statistical unit. When more than one specific rate is identified, then all countries benefiting from a most favoured nation clause enjoy the lowest rate, and the official not-discounted rate is applied to the others. In the 1920s, this practically means the partners in the most favoured nations sphere enjoyed the rates applied to the parties of the Lausanne Treaty, for which the rates for all goods were frozen until 1929 (at 5 or 9 times the 1916 levels), and to those countries outside that sphere, which were fewer and fewer, were applied the official rates (that is, at 5, 8, 12 times at the 1916 levels). For the years after 1929, the lowest rate is equivalent to the official rate minus the discount that was determined by the trade agreements. That is, if one agreement, say with Germany, specifies a certain amount of discount on an item, then this applies not only to Germany but also to all other countries benefiting from the most favoured nation clause. If different trade agreements set more than one discount rate for the same item, then the highest discount rate is taken due to the nature of equal treatment.[48]

Above it was outlined how the official specific duties can be categorised into four different periods: 1925-29, 1930-33, 1934-37 and 1938-39. The first was

[48]The procedure is explained in Nuri, *Ahdi Tarifeler 1929*.

characterised by the sanctions of the Lausanne Treaty, the second by the 1929 tariff reform, the third by the 1933 revisions and the last by the 1936 revisions. Although 1929 reform came into effect in September 1929, almost all imports of that year happened before September due to the expectation that the rates were going to be increased, so we take pre-reform rates as representative of the whole of 1929.[49] Similarly, even though the revision in 1933 was made in the middle of year, we assume that the new rates came to be applied in the following year because the bilateral trade agreements allowed an extra six months for the new rates to be effective. Again for the very same reason, the 1936 revisions are considered to be effective between 1937 and 1939.[50]

Therefore, following the procedure described above, we obtain the nominal rates for all statistical codes of textile fabrics for all years. The second step is to aggregate the duties in an appropriate way to obtain the aggregate rates, such as the nominal rate for cotton or woollen fabrics as a whole. As expected, there are a large number of statistical codes corresponding to different kinds of cloths. In principle, as explained by Federico and Tena, the duties should be weighted with the composition of imports in a hypothetical free-trade situation. But obviously such a free-trade environment did not exist.[51] Nonetheless, even if it was possible to find the "free trade" weights, one should consider that the import composition for an industry is inherently bound to change for different reasons, as we see in the rapid and early development of the textile sector in Turkey. Production is expected to begin with the lower quality products and develop towards the finer cloth types, meaning that a gradual change in the types of imports occurs partly irrespective of the tariff policy. It is therefore controversial as to whether free trade weighting is really ideal.

The more common method is to use the current quantities, that is, the current import composition.[52] It is true that this systematically biases es-

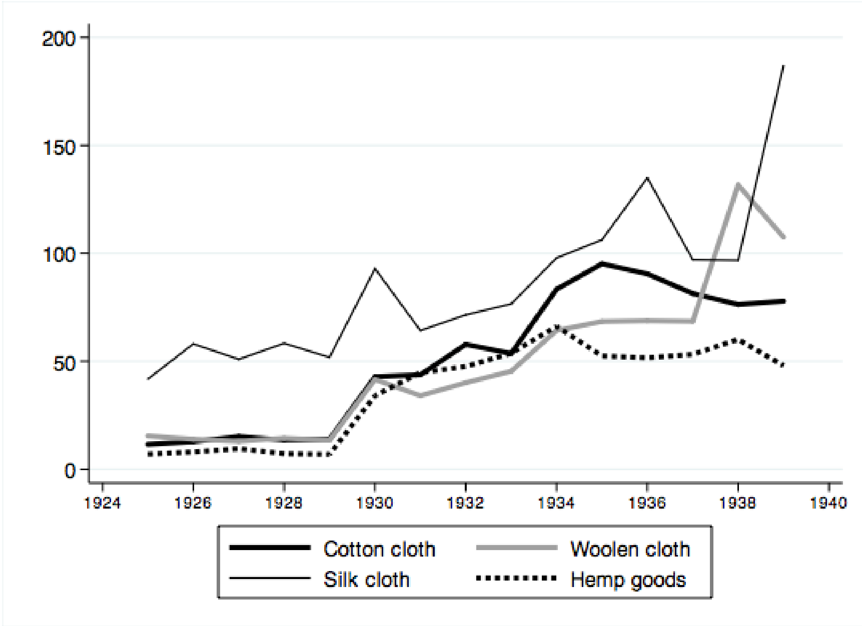
[49]Kazgan, Türkiye Ekonomisinde Depresyon, pp.243-44.

[50]All the necessary information is combined in a number of volumes published by various contemporary experts. These volumes outline the changes of specific rates at key times and the discounts rates. Nuri, *Ahdi Tarifeler 1929*; Mustafa Nuri, *Türkiye'de Ahdi Tarifeler*. Türk Anonim Şirketi, 1931; Mustafa Nuri, *Türkiye'de Ticaret Muahedeleri*. Hakimiyeti Milliye Matbaası, 1934; Sirri Emilsili, *Haşiyeli Gümrük Tarife Kanunu ve İthalat Umumi Tarifesi ile Ahdi Tarifeler*. Secid Basımevi, 1938; Neset Yücelir, *Haşiyeli Gümrük Tarife Kanunu ve İthalat Umumi Tarifesi ile Ahdi Tarifeler*. Bozkurt Matbaası, 1935.

[51]Federico and Tena, Was Italy a Protectionist Country?, pp.75-76.

[52]Eichengreen and Irwin, Slide to Protectionism; and Irwin and Temin, Antebellum US

Figure 4.2.: Ad Valorem Tariff Rates in Turkey (%), 1925-1939




Source: See the text.

timates downwards, since the higher duties reduce the imports of the more protected goods. This means that if a duty is prohibitive for, say single count cloth, whereas it is nil for the multiple count cloth, given that the substitution between them is large, then the resulting import of the less protected multiple count cloth will increase and substitute for the import of the prohibited single count cloth, which yields in this way a downward bias in the average *ad valorem* rate. Yet, Federico and Tena argue, the degree of bias depends on the diversity of duties within groups. In our case, there were no big gaps between the duties on the different types of cloths, so the extent of the downward bias is probably small.[53]

Therefore, we prefer to follow the conventional method by using the current values as weights to aggregate the rates of statistical codes.[54]

Cotton Industry.

[53]Other alternatives would be the simple averaging of duties across items, using the share of each item in domestic output or assuming an ideal case of trade vectors, such as the composition of British exports or world trade. Among all these, the first is clearly the least perfect because it means no weighting at all, giving the most important and least important import items the same weights. Similarly, there is no reason that each country should have a similar import structure, meaning the last method is ruled out. Also the composition of the domestic output is not practical due to the lack of data.

[54]Note that the trade statistics do not make a distinction between hemp and flax, so the nominal duties are assumed to apply hemp only.

The average ad valorem rates are presented in Figure 4.2 (also Tables 4.4 and 4.5). Cotton (bleached and unbleached) and woollen fabrics and hemp goods were rated at around 10-15 percent between 1925 and 1929, then they saw a sharp increase up to 50 percent in 1930 and stayed there in the first half of the 1930s. The movement in the rest of the decade was more diverse because of the subsequent changes in official rates, as well as changes in import prices. For unbleached and bleached cotton cloths, it stabilised around 80-90 percent, while it exceeded 100 percent for woollens by 1939. On the other hand, the case of silk goods was entirely different, as it had already been more heavily taxed before 1929 at around 50 percent. However, the nominal rate on silk fabrics gradually doubled over the 1930s.

## 4.5. Estimation Results

We present the estimation results of the reduced form output growth equation in Table 4.1. To begin, it is necessary to remember that the error term in the main specification (equation 4.3.5) takes the form $\epsilon_{it} = \alpha_i + \beta_{it}$ in the panel data, where the first part captures sector-specific disturbances and the second captures the common error term across both time and sector. The way $\alpha_i$ is handled is of crucial importance to estimate the model. If one assumes that $E[\alpha_i|X_i] \neq 0$, that is, the unobservable sector-specific effects are correlated with the predictors, then the fixed effects model should be estimated, and otherwise random effects are more appropriate.[55] In this particular case, one tends to think that the sector-specific disturbances should be related to the tariff-inclusive import prices, if not others, because both the import prices and nominal protection rates were not arbitrarily determined, but instead associated with the structure of different textile industries. As a matter of fact, this is usually so when data is at the industry level, that is, not drawn randomly from the population. The conventional technique to test this is the Hausman test and it confirms that the error term is correlated with the regressors.[56] Therefore, the pooled OLS and random effect estimates in the first two columns of Table 4.1 are biased and inconsistent.

[55] Cheng Hsiao, *Analysis of Panel Data*. Cambridge University Press, 2005; and A. Colin Cameron and Pravin Trivedi, *Microeconometrics: Methods and Applications*. Cambridge University Press, 2005.

[56] A. Colin Cameron and Pravin Trivedi, *Microeconometrics Using Stata*. A Stata Press Publication, 2009.

Table 4.1.: Reduced-Form Estimates of Domestic Textile Output in Turkey

dependent variable: domestic textile output growth

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Pooled OLS | Random | Within | Within-Base model | Within | Within |
| $ln(p*(1+t)/p_c)$ | -0.0365 | -0.0365 | 0.855** | 0.828** | 0.838** | 0.839** |
| | (0.328) | (0.921) | (0.189) | (0.144) | (0.160) | (0.166) |
| $ln(p_a/p_c)$ | 0.894 | 0.894 | -0.235 | -0.332 | -0.168 | -0.166 |
| | (0.979) | (0.675) | (0.141) | (0.161) | (0.268) | (0.266) |
| $ln(p_c/w)$ | -0.224 | -0.224 | 0.652* | 0.507** | 0.473* | 0.525 |
| | (0.953) | (0.425) | (0.236) | (0.159) | (0.150) | (0.331) |
| ln(Y) | 0.948 | 0.948 | 0.0744 | 1.375** | 1.401** | 1.401** |
| | (3.677) | (1.134) | (0.930) | (0.272) | (0.260) | (0.265) |
| time | 0.0360 | 0.0360 | 0.0617 | | | |
| | (0.167) | (0.0671) | (0.0437) | | | |
| $ln(p_s/p_c)$ | | | | | -0.260 | -0.214 |
| | | | | | (0.269) | (0.332) |
| $ln(p*(1+t)/p_c)x1933-1937$ | | | | | | 0.0165 |
| | | | | | | (0.0824) |
| Constant | -3.669 | -3.669 | 9.268 | -0.330 | -0.0621 | -0.0819 |
| | (26.69) | (11.12) | (7.435) | (1.932) | (2.201) | (2.204) |
| Observations | 60 | 60 | 60 | 60 | 60 | 60 |
| R-squared | 0.529 | | 0.758 | 0.739 | 0.742 | 0.742 |
| Number of pr | | 4 | 4 | 4 | 4 | 4 |

Standard errors in parentheses

** p<0.05, * p<0.10

Columns 3-7 provide the output elasticities estimated by alternative within effects models. In all specifications, the relative tariff-inclusive import prices appear strongly significant, which indisputably shows the impact of tariff protection on output growth. The raw material prices-wages ratio seems significant except in the last model. As for the income variable, its effect depends on the time trend. Since income has a strong time trend, it appears as insignificant if we include the time trend, which explains the difference between models 3 and 4. In the original equation the coefficient of the time trend captures the effect of technology, the capital growth rate and exogenous demand changes. If we assume that capital growth was proportional to the growth of raw material and labour, all change in demand was due to income and substitution effects and the impact of technology was negligible, then we can take model 4 as the base model. Such assumptions do not seem far fetched, as the industrial growth at the time in Turkey was mainly labour intensive and it is quite reasonable that income and relative prices capture most of the change in demand for textiles.

As mentioned earlier, some substitution among different types of textiles might have happened. This is considered in the last two models by adding the relative substitute prices as a regressor (as described in equation 4.3.6), but it does not turn out to be significant. And finally, the last model (column 6) incorporates the possibility that the import quotas might have driven the protection rates to autarchy levels, which would make tariffs redundant. We interact the first variable with the dummy variable for 1933-1937. However, the results do not confirm such a hypothesis, as the import prices remain the most important driver of the output growth. This supports the view that quotas were most likely the instruments of trade discrimination rather than intensifying protection.

Therefore, the estimated coefficients in the base model imply that a 10 percent increase in the relative tariff-inclusive import prices leads to an 8.2 percent increase in local output. Similarly, a 10 percent increase in the raw material prices-wages ratio leads to a 5 percent increase in output. And income growth is the most important driver, as a 10 percent increase in real income results in a 13.7 percent rise in output, which makes sense, as the income elasticity of demand for non-essential goods is usually more than one.

The conventional post-estimation procedures are followed. The standard errors in the base model (column 4) are corrected for heteroskedasticity and serial autocorrelation. The F-test confirms that there is no need to include time effects and the Breusch-Pagan LM test shows there is no contemporaneous dependence, which sometimes exists in long panels.

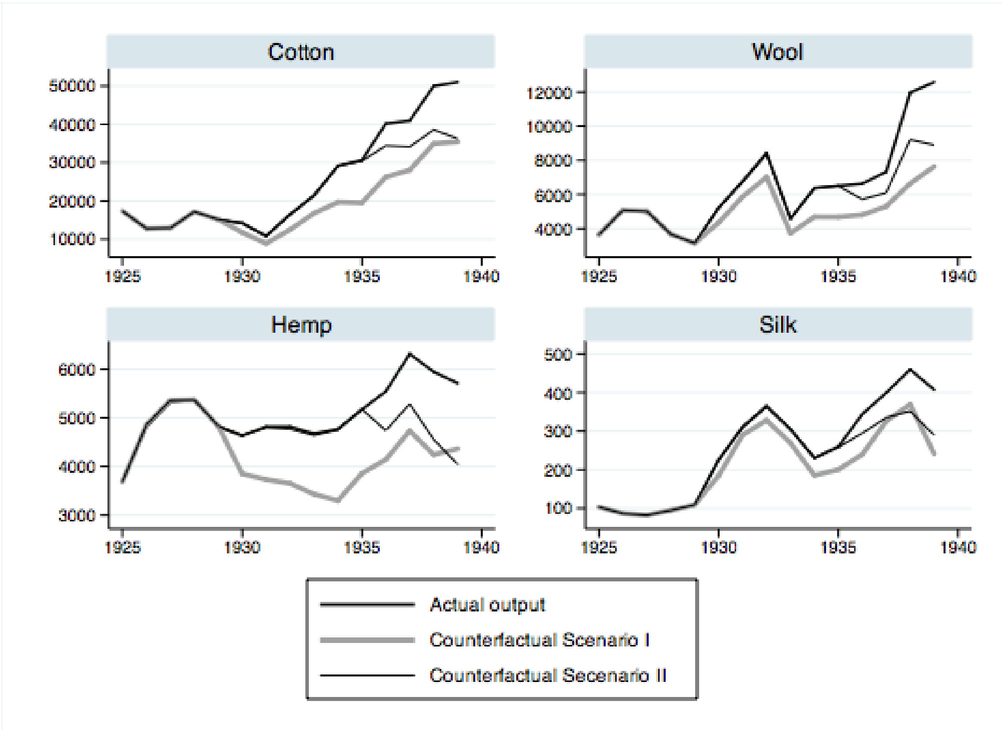
These results basically show the extent to which textile output was sensitive to changes in relative import prices, relative wage costs, as well as real income. To illustrate the causes of output growth more clearly, it would seem useful to run a few counterfactual simulations. How much did the protective tariffs alone or the autonomous agricultural growth in the second half of the 1930s contribute to output growth? In particular, since the variable $ln(P*(1+t)/p_c)$ is determined by average import and raw material prices as well as tariff rates, it is not easy to figure out the impact of tariffs on the dependent variable separately.

To answer the question, we use the output elasticities in our base estimation model, and simulate the counterfactual output growth trajectories of all textile branches in two separate hypothetical scenarios. First is the case in which the mild tariff policy of the 1920s was maintained in the 1930s, that is, in which strong protection was avoided. In this scenario, tariff rates are fixed at 1929 levels and assumed constant during the 1930s. Second, we look at the case where real farm income remained stagnant after 1935 in line with the low agricultural prices. Remember that as shown in Chapter Two, output growth was due to the increases in acreage and yields in the face of persistently low prices, so it can be taken as an autonomous positive shock. It is easy to handle this possibility if the growth of agriculture was not related to the growth of other sectors. On the contrary, the agricultural sector clearly influenced both industry and services through supply and demand linkages. Therefore, we just assume that real income increased at the same rate as population growth (2 percent per annum) in the second half of the 1930s, so that the per capita income remained the same.

The counterfactual simulations exercises are conducted in the same way as Grossman does.[57] In each scenario an alternative growth path is calculated in the following way. First, we take the fitted growth rates that the base model predicts based on historical values of the independent variables. Then we simulate the alternative implied growth rates, based on the counterfactuals, using the estimated coefficients in the model. Then the difference between

[57]Grossman, Imports as a Cause of Injury.

Figure 4.3.: Actual and Counterfactual Output Levels in Turkey (Tons), 1925-1939




Note: In Scenario I, the tariff rates remained moderate as explained in text. In Scenario II, the income grows in line with population growth (2 percent per annum).

these two predicted and implied rates is subtracted from the actual output rates, which provides counterfactual growth paths. That is, we change certain values of two exogenous variables according to two different historical counterfactuals, and then see what the output growth would have been.

Figure 4.3 compares the output levels in Scenario I (moderate tariffs after 1929) and Scenario II (stagnant income per capita after 1935) with the actual figures for each sector. It seems that both the tariff rates and income growth have some explanatory power, while the impact of the former was more substantial, as the counterfactual output was smaller in the first scenario than in the second. While the trend growth rate of cotton textile growth was 10.4 percent per annum over 1925-1939, it falls to 6.7 percent in the first scenario and 8.4 in the second (Table 4.2). Overall, both effects account for more than half of the output growth. As for woollens, the average growth is half of the actual level in the first and around two thirds in the second scenario. In this case, protection and income growth explain almost all growth in woollens. Finally, silk textiles are a different case, as the counterfactual growth rates are relatively closer to the actual level: around 40 percent of growth was explained by these two factors. The existence of different import price and income elasticities is rather sensible, since they were not perfect substitutes.

Table 4.2.: Actual and Counterfactual Trend Growth Rates for Turkey (%), 1925-1939

| | Actual output growth (%) | Counterfactual I (%) | Counterfactual II (%) |
|---|---|---|---|
| Cotton textiles | 10.4 | 6.7 | 8.4 |
| Woollen textiles | 7.2 | 3.2 | 5.2 |
| Silk textiles | 12.5 | 9.6 | 10.6 |

## 4.6. Conclusion

The conventional wisdom asserts that the industrial take off in interwar Turkey was achieved through an autarchic import regime and/or state-led industrialisation.[58] Accordingly, consumer good imports were restricted by high

[58]Tezel, *Cumhuriyet Dönemi*; andKorkut Boratav, 1923-1939 Yıllarının İktisat Politikası Açısından Dönemleştirilmesi. In *Atatürk Döneminin Ekonomik ve Toplumsal Sorunları 1923-1938*. İstanbul Yüksek İktisat ve Ticaret Mektebi Mezunları Derneği, 1977;

tariffs, quotas and exchange controls and state investment was instrumental to output growth in the absence of sufficient industrial investment.

This chapter calls into question the first part of this widely held view by assessing output growth in a systematic way for the first time. The textile sector is chosen as the focus of the empirical analysis for two main reasons. First, it was the fastest growing sector in the interwar period, as demonstrated earlier. And second, import substitution was most evident in textiles due to the high level of import penetration before 1929 and the rapidly declining imports during the 1930s. So if import substitution was the actual driver of industrialisation, it should be most clearly observed in textiles. Turkey undoubtedly became self-sufficient in cereals, sugar and vegetable oils as well, but the share of imports in domestic consumption had already been relatively low in the 1920s, so declining imports cannot explain the output growth in such sectors. For these reasons, the growth of the food processing sectors or construction was due either to the increasing supply of raw materials (cereals, for instance) or the changes in domestic demand.

The present empirical analysis is based on a partial equilibrium analysis of output growth in cotton, woollen, silk and hemp fabrics. The reduced form equation relates the output growth with relative tariff-inclusive import prices, relative aggregate prices, the raw material prices-wages ratio and real income growth. The most important conclusion emerging from this analysis is that the main driver of output growth was real income growth, which was followed by tariff-inclusive import prices and the raw material prices-wages ratio. In other words, industrialisation was not only driven by the increasing costs of imported goods but also domestic demand and relative raw material prices. Money wages were kept low throughout the 1930s, which made it possible to raise profits thanks to the deflation in raw material prices. Counterfactual simulations show that around 40 percent of growth in cotton textiles over 1925-1939 was accounted for by high tariffs alone, as was 60 percent of growth for woollen textiles and 25 percent for silk textiles.

Therefore, this chapter has provided a nuanced view of industrialisation in interwar Turkey. In addition to import contraction, there were also independent factors that operated in favour of industrial growth. The import-restricting regime undoubtedly directed demand to domestic goods, but the

Boratav, *Türkiye İktisat Tarihi*.

significant increase in real incomes in the second half of the 1930s, which was partly driven by the expansion of agricultural production, also increased demand in general. Additionally, the change in the domestic terms of trade in favour of manufactures indicates a rise in industrial profits.

# 4.7. Data Appendix

Table 4.3.: Cotton and Woollen Textiles in Turkey, 1925-1939

| | Cotton cloth | | | Woollen cloth | | |
|---|---|---|---|---|---|---|
| | Average import price TL/kg | Ad valorem duty % | Raw cotton price piastres/kg | Average import price TL/kg | Ad valorem duty % | Greasy wool price piastres/kg |
| 1925 | 1.62 | 0.11 | 62.90 | 4.24 | 0.15 | 87.75 |
| 1926 | 1.52 | 0.13 | 46.10 | 4.89 | 0.14 | 79.17 |
| 1927 | 1.28 | 0.15 | 63.40 | 5.34 | 0.13 | 78 |
| 1928 | 1.40 | 0.13 | 65.50 | 4.86 | 0.14 | 79.56 |
| 1929 | 1.42 | 0.14 | 62.30 | 4.71 | 0.13 | 81.12 |
| 1930 | 1.39 | 0.43 | 49.40 | 5.33 | 0.42 | 56.92 |
| 1931 | 1.14 | 0.44 | 31.70 | 5.71 | 0.34 | 47.01 |
| 1932 | 0.86 | 0.58 | 30.00 | 4.81 | 0.40 | 38.74 |
| 1933 | 0.91 | 0.54 | 30.70 | 4.36 | 0.45 | 36.59 |
| 1934 | 0.96 | 0.83 | 33.10 | 4.20 | 0.64 | 45.52 |
| 1935 | 0.88 | 0.95 | 38.00 | 4.17 | 0.68 | 49.14 |
| 1936 | 0.94 | 0.90 | 40.90 | 4.07 | 0.69 | 50.33 |
| 1937 | 1.13 | 0.81 | 37.90 | 4.66 | 0.68 | 58.99 |
| 1938 | 1.17 | 0.76 | 34.00 | 4.67 | 1.32 | 50.01 |
| 1939 | 1.15 | 0.78 | 37.80 | 4.33 | 1.07 | 52.48 |

Source: See the text.

Table 4.4.: Hemp Goods and Silk Textiles in Turkey, 1925-1939

| | Hemp goods (bags, strings and ropes) | | | Silk fabrics | | |
|---|---|---|---|---|---|---|
| | Average import price | Ad valorem duty | Hemp seed prices | Average import price | Ad valorem duty | Dried cocoon prices |
| | TL/kg | % | piastres/kg | TL/kg | % | piastres/kg |
| 1925 | 0.64 | 0.07 | 14.90 | 12.77 | 0.42 | 420 |
| 1926 | 0.64 | 0.08 | 12.50 | 13.35 | 0.58 | 439 |
| 1927 | 0.55 | 0.09 | 9.94 | 13.43 | 0.51 | 307 |
| 1928 | 0.57 | 0.07 | 29.54 | 12.58 | 0.58 | 380 |
| 1929 | 0.56 | 0.07 | 15.60 | 14.56 | 0.52 | 376 |
| 1930 | 0.40 | 0.34 | 15.39 | 20.35 | 0.93 | 329 |
| 1931 | 0.32 | 0.45 | 9.77 | 17.62 | 0.64 | 250 |
| 1932 | 0.30 | 0.48 | 11.21 | 15.61 | 0.71 | 229 |
| 1933 | 0.23 | 0.54 | 13.03 | 16.13 | 0.77 | 164 |
| 1934 | 0.23 | 0.66 | 17.56 | 10.71 | 0.98 | 216 |
| 1935 | 0.24 | 0.52 | 7.28 | 12.06 | 1.06 | 182 |
| 1936 | 0.25 | 0.52 | 10.10 | 8.14 | 1.35 | 195.4 |
| 1937 | 0.24 | 0.53 | 10.70 | 11.62 | 0.97 | 208.8 |
| 1938 | 0.21 | 0.60 | 12.86 | 13.48 | 0.97 | 258.72 |
| 1939 | 0.29 | 0.48 | 12.42 | 10.62 | 1.87 | 210 |

Source: See the text.

Table 4.5.: Substitute Price Indices for Turkey (1925=100), 1925-1939

| | Cotton cloth | Woollens | Silk fabrics | Hemp | Common index |
|---|---|---|---|---|---|
| 1925 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1926 | 91.4 | 70.4 | 87.2 | 83.9 | 82.8 |
| 1927 | 85.0 | 70.4 | 60.5 | 66.7 | 70.1 |
| 1928 | 90.6 | 72.4 | 57.0 | 198.2 | 92.8 |
| 1929 | 87.3 | 73.1 | 83.3 | 104.7 | 86.4 |
| 1930 | 77.3 | 51.3 | 66.1 | 103.3 | 72.1 |
| 1931 | 64.4 | 41.5 | 71.8 | 65.6 | 59.6 |
| 1932 | 58.7 | 33.7 | 56.3 | 75.2 | 53.8 |
| 1933 | 53.2 | 28.5 | 57.7 | 87.4 | 52.6 |
| 1934 | 60.3 | 35.1 | 36.6 | 117.8 | 55.0 |
| 1935 | 64.3 | 40.1 | 45.1 | 48.8 | 48.8 |
| 1936 | 60.5 | 46.9 | 47.4 | 67.8 | 54.9 |
| 1937 | 59.1 | 49.3 | 55.4 | 71.8 | 58.3 |
| 1938 | 59.3 | 42.3 | 77.2 | 86.3 | 63.9 |
| 1939 | 55.1 | 44.3 | 99.0 | 83.3 | 67.0 |

Source: See the text.

Table 4.6.: Wages and Revised GDP Estimates for Turkey, 1925-1939

| | Wages | Revised value added at 1927 prices (TL million) | | | |
|---|---|---|---|---|---|
| | Nominal, TL/month | Agriculture | Industry | Services | GDP |
| 1925 | 44.3 | 775.7 | 134.4 | 625.2 | 1535.4 |
| 1926 | 41.3 | 790.9 | 212.3 | 622.5 | 1625.7 |
| 1927 | 45.6 | 712.0 | 166.9 | 622.8 | 1501.6 |
| 1928 | 43.3 | 727.7 | 226.7 | 645.4 | 1599.8 |
| 1929 | 47.1 | 849.3 | 247.3 | 694.6 | 1791.2 |
| 1930 | 41.5 | 837.7 | 245.5 | 778.2 | 1861.4 |
| 1931 | 42.5 | 889.6 | 260.0 | 803.7 | 1953.2 |
| 1932 | 39.4 | 924.8 | 244.4 | 861.0 | 2030.2 |
| 1933 | 44.0 | 840.0 | 283.5 | 952.1 | 2075.5 |
| 1934 | 50.0 | 759.9 | 291.9 | 1006.1 | 2057.9 |
| 1935 | 39.5 | 756.1 | 303.9 | 974.9 | 2034.9 |
| 1936 | 38.1 | 982.3 | 335.3 | 1005.7 | 2323.4 |
| 1937 | 40.2 | 973.2 | 391.5 | 1063.2 | 2427.8 |
| 1938 | 39.6 | 1059.2 | 386.9 | 1169.5 | 2615.7 |
| 1939 | 44.8 | 1137.7 | 446.3 | 1248.7 | 2832.7 |

Source: The wages series is from Pamuk, *Fiyatlar ve Ücretler*, p.84. Value added in industry and agriculture are revised figures provided in Chapters 3-4 and services figures are from Bulutay et al., *Türkiye'nin Milli Geliri*.

# 5. Agriculture in Interwar Egypt: Failure to Overcome Deadlock

## 5.1. Introduction

The main contours of the economic problem in Egyptian agriculture in the interwar period have already been described in the Introduction. Nonetheless, recapitulating the main points will remind the reader of the historical context. First of all, while Egypt can easily be classified as an underdeveloped country before World War II, it was one of the major cotton producers and exporters in the world, ranking third after the United States and India in total output by the beginning of the 20th century.[1] The country was specialised in long staple cotton, giving it a price premium over the short staples. This competitive position in the world cotton markets was due both to the fertile Nile soil and a large amount of public investment in irrigation due to the canals and dams that had been built in the 19th century. However, by the onset of World War I, the prospects for agricultural growth were quite gloomy, as concerns were raised in the public and scientific domains regarding declining cotton yields. They believed that this decline had to be reversed in one way or another because it was the main determinant of the country's export revenues. Thus, this was the main motive behind the large investment in drainage projects during the forthcoming decades, which apparently succeeded in getting yields back to the previous levels by the end of the 1930s. Yet the recovery in cotton yields did not translate into any notable rise in per capita agricultural output due partly to rapid population increase, but also to the fact that crop yields were already high by international standards. Further increases in output actually depended on either an expansion in cultivated land per capita, export diversification or increasing cotton prices.

[1] W.H. Johnson, *Cotton and Its Production*. Macmillan and Co. Limited, 1926, pp.16-17.

This short description is based on the relatively rich literature on the history of Egyptian agriculture and basic statistical indicators: crop output, land and price series, as well as the rich historical sources on Egyptian cotton.[2] However, long-term estimates of agricultural net income, or value added, do not exist to date, except for a few benchmark estimates. Therefore, this chapter begins by looking into the sources of crop output growth by applying the same composition methodology employed earlier in Chapter 2 to the estimates of output and prices provided by el-Imam.[3] Moreover, it provides the first estimates of livestock output value and cultivation costs. By incorporating these new estimates with those of crop output, we then approximate the net agricultural output, then finally the average farm income by deducting rural taxes and net credit outflow from net output. For clarification, our methodology is based on the following two simple equations:

Agricultural net output = Crop total output + Livestock output - Cultivation costs

Farm income = Agricultural net output - Taxes - Net credit outflow

As we argued in the corresponding chapter on Turkey, land rentals and labour costs are not considered in this estimate of the farm income, mainly because they can be considered a matter of income distribution within the rural population. Admittedly, this assumption is more questionable in the case of Egypt owing to the larger presence of rentier landowners in Egypt, which has been the subject of a large amount of historical scholarship.[4] However, since the present work is concerned with documenting the *change* of farm income, rather than getting a precise measure of it, the bias is not likely to be large, given that the existing estimates of the distributive shares indicate that the shares of rentals and labour costs did not change much during the time frame of this analysis.[5]

As was stated above, there were major constraints on the growth of agricultural output in Egypt after World War I: rapid population growth, the deterioration of cotton yields and external price shocks. The main argument

[2] See the discussion of historical context in Egypt in Introduction.
[3] el-Imam, *A Production Function for Egyptian Agriculture*.
[4] A comprehensive source is Baer, *History of Landownership*.
[5] Bent Hansen, Distributive Shares in Egyptian Agriculture. *International Economic Review*, 9(2) 1968.

of this chapter is that none of these barriers was easy to surmount, since the population pressure was irreversible, extra land was not available at low costs and cotton prices did not recover until World War II. Yet this does not mean that Egypt's agriculture was static in the interwar period: land came to be cultivated more intensely, the government invested in irrigation and drainage to get yields back to higher levels and finally the improvements in seeds and cultivation techniques were aimed at reversing the deflationary pressures. However, although such efforts only had a limited success, they were critical in easing the agricultural crisis in the interwar period.

## 5.2. Agricultural Value Added

### 5.2.1. Crop Output and Output Decomposition

There exist a number of alternative estimates of gross crop production, among which el-Imam is the best, as it covers all major crops in Egypt, except clover (*berseem*).[6] The variation among the existing estimates is not large, as they all point to similar trends, so we here utilise the yield, acreage and price series for the major 11 crops provided by el-Imam.[7] The crop basket consists of cotton, cotton seed, wheat, barley, maize, millet, rice, beans, lentils, onions, sugarcane and fenugreek (*helba*). The extent of the coverage leaves no question about the representativeness of the data, except that clover, a very widely planted crop in the cotton rotation, is left out because no reliable acreage and yield data is available. Nevertheless, since we eventually add the crop and animal output together and clover was the major animal feed, this omission does not bias our final value added estimates, although it does cause some underestimation

[6] el-Imam, *A Production Function for Egyptian Agriculture*. Alternative series calculated for different periods are as follows: M. el-Darwish, *Index Numbers of Agricultural Production in Egypt 1913-1929.* Ministry of Finance, Egypt, 1932; Charles Issawi, Un Indice du Volume de la Production Agricole. *L'Egypte Contemporaine*, 205 1942; Patrick O'Brien, The Long-Term Growth of Agricultural Production in Egypt: 1821-1962. In P.M.Holt, editor, *Political and Social Change in Modern Egypt.* Oxford University Press, 1968; Roger Owen, Agricultural Production in Historical Perspective: A Case Study of the Period 1890-1939. In P. Vatikiotis, editor, *Egypt Since the Revolution.* 1968; and Bent Hansen and Michael Wattleworth, Agricultural Output and Consumption of Basic Foods in Egypt, 1886/1887-1967/1968. *International Journal of Middle Eastern Studies* 9 1978.

[7] For the comparison with alternative series, see Hansen and Wattleworth, Agricultural Output and Consumption.

in the crop value figures.[8] Similarly, in order to avoid double counting in the estimate of agricultural net output, we also leave out barley, since it was another major animal food and there is no way of figuring out human's share of consumption.

The main trends in crop output, total acreage and prices of the two leading crops (cotton and wheat) over 1913-1945 are shown in the Figures 5.1 and 5.2. It seems that the whole period can be classified into four sub-periods. First, during World War I the value of output peaked due to wartime inflation, which is shown in the stationary acreage and the shooting up of cotton and, to a lesser degree, wheat prices. The prices of cotton and wheat can be taken as representative since the gross value of cotton, cotton seed and wheat made up 60 percent of aggregate crop output value on average over this period.[9] The second period is 1920-1932, when the decline in output started and deepened towards the end of the period. What is striking is that this was the case despite some improvement in the total acreage. The main factor behind the slump was obviously the ongoing deflation in prices, particularly in the case of cotton. One can argue that the worldwide deflation after 1929 seems to just have maintained a deflation that had begun previously in Egypt. Subsequently, the third period is the rest of 1930s, during which a small degree of recovery happened, accompanied by a small increase in the price level but a decrease in the cropped land at the end of the 1930s, the total acreage had declined to the level of the early 1920s. And finally, as one would expect, total output value surged massively during World War II due to the soaring prices.

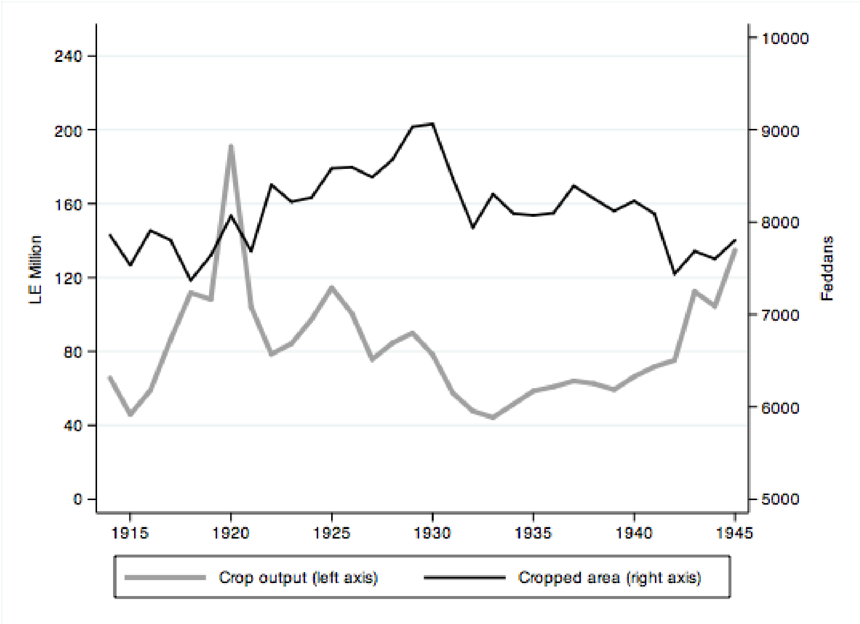
The causes of the changes in output should be discussed in more detail. To do so, the output change is here decomposed into its main components with the same methodology as in Chapter 2. To recall, Jamal and Zaman suggests a multiplicative model which decomposes the total change in crop output value as the multiplication of changes in acreage, yields, prices and crop composition.[10] The corresponding equations of the decomposition exercise

[8]The only correction to the raw output series for the absence of clover was made by **Hansen** and **Wattleworth**, Agricultural Output and Consumption, pp.454-55. They argue that the exclusion of clover and straw causes a strong downward bias in the estimates of crop value, increasing particularly after the late 1930s.

[9]On average, cotton and cotton seed alone accounted for 43 percent of the total value. Moreover, cotton was the main cash crop and thus provided an overwhelming majority of the total cash earnings.

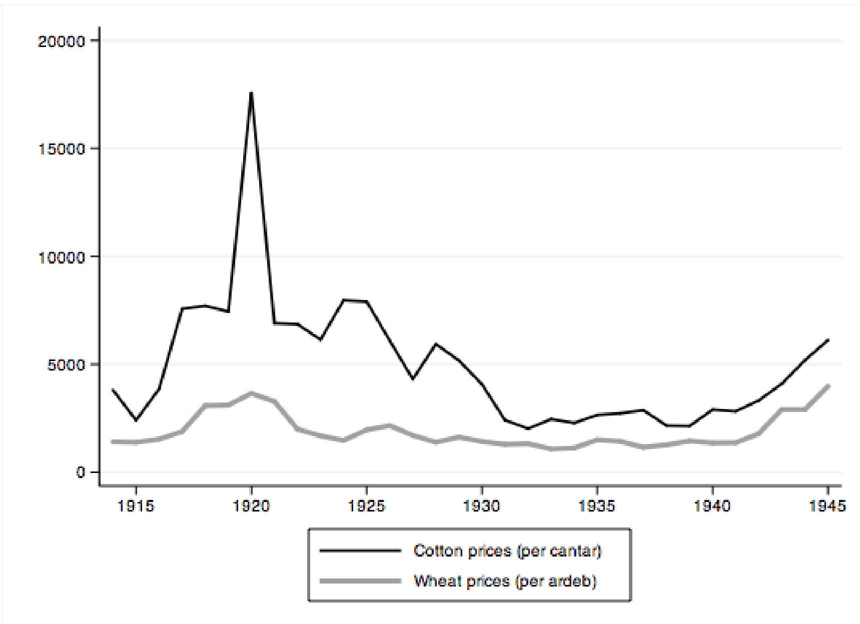
[10]Jamal and Zaman, Decomposition of Growth Trend. Note that Hansen applied a variant of the additive model with the residual element, yet the residual appears rather small

Figure 5.1.: Total Crop Output (Current Prices) and Acreage in Egypt, 1913-1945




Source: el-Imam, *A Production Function for Egyptian Agriculture*.

Figure 5.2.: Cotton and Wheat Prices (Piastres) in Egypt, 1913-1945




Source: el-Imam, *A Production Function for Egyptian Agriculture*.

Table 5.1.: Crop Output Decomposition 1913-1939, Egypt

| | Total change | Area effect | Price effect | Yield effect | Crop mix effect |
|---|---|---|---|---|---|
| 1913-20 | 1.60 | 1.02 | 1.83 | 0.86 | 0.99 |
| | **(100)** | **(5)** | **(129)** | **(-31)** | **(-2)** |
| 1920-29 | 0.74 | 1.12 | 0.55 | 1.19 | 1.01 |
| | **(100)** | **(-38)** | **(199)** | **(-58)** | **(-3)** |
| 1929-32 | 0.57 | 0.88 | 0.67 | 1.00 | 0.97 |
| | **(100)** | **(23)** | **(71)** | **(0)** | **(5)** |
| 1932-39 | 1.49 | 1.02 | 1.24 | 1.13 | 1.04 |
| | **(100)** | **(6)** | **(55)** | **(30)** | **(10)** |
| 1913-39 | 1.002 | 1.028 | 0.818 | 1.155 | 1.031 |

Notes: The multiplication of the individual effects yields the total change. The figures in parentheses indicate the relative contribution of each effect to the overall change in the total output. The numbers were rounded.

can be found in Appendix A and our estimates are presented in Table 5.1 for all sub-periods before World War II that we identified above. The relative contribution of each component is shown in the parentheses under each line.

Looking at the period 1913-1939, we do not observe any notable change in the gross output during 1913-1939. The price index declined by around 18 percent, but its negative impact was offset by a 15 percent rise in yields and, to a lesser degree, by a 3 and 2 percent increase in the crop mix and acreage respectively. Yet, the long-term picture can be deceptive because there were different dynamics at work in each sub-period. First, the deterioration in the yields was definitely reversed during and after the 1920s. Even in the worst years after the Great Depression, when all economic activities were severely hit, the yield index does not seem to have deteriorated and a 13 percent increase in yields in the rest of the 1930s helped to balance out the persistent deflationary pressures. Therefore, the improvement in yields should be considered the most important achievement of Egypt's agriculture in the interwar years, when expansion of the cultivated area was not feasible and the cropped area could only be expanded at a high cost due to the required investment in land reclamation and perennial irrigation.[11]

in his model. el-Imam also employed a very similar methodology without including the price index as a separate component. Hansen, Income and Consumption; and el-Imam, *A Production Function for Egyptian Agriculture* .

[11]Another immediate result of the expanded irrigation was the increase in the cropped area, whereas the cultivated area remained almost steady. This is clearly seen in the 12

As mentioned in the Introduction, Egypt's historiography has largely discussed the decline in yields in terms of the ecological crisis argument. The long-term movement of cotton and wheat yields is shown in Figure 5.3.[12] During 1900-1920 there was a secular decline in both cotton and wheat yields, although the decline was less pronounced for wheat. The trend was reversed for cotton immediately after 1920, whereas the improvement in wheat yields took place in the 1930s. However, most of the discussion has been centred on cotton. Almost all primary and secondary sources agree that cotton yields started to fall at the turn of century due to a number factors: the spread of cotton to newly reclaimed land, the expansion of perennial irrigation, a lack of drainage – all led to the rising water table and the resulting accumulation of salt.[13] On the other hand, later in the 1930s, though the perennial irrigation was expanded particularly after the second heightening of the Aswan Dam in 1933, the drainage works that had been largely ignored prior to World War I were given priority.[14] In addition, this was accompanied by the use of better cultivation techniques (such as closer spacing and early sowing), control of pests and diseases, the adoption of high-yielding seeds and the greater application of fertilisers.[15]

Perhaps the only heterodox view on the issue is put forward by Ellis Goldberg, who argued that the ecological crisis argument is unsubstantiated and reflects the methodological biases of the dominant "liberal and nationalist his-

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percent growth in the area index in the 1920s, which then declined again in the 1930s because some of the marginal land was left uncultivated. Hussein Kamel Selim, *Twenty Years of Agricultural Development in Egypt (1919-1939)*. Ministry of Finance, Egypt, 1940, p.77.

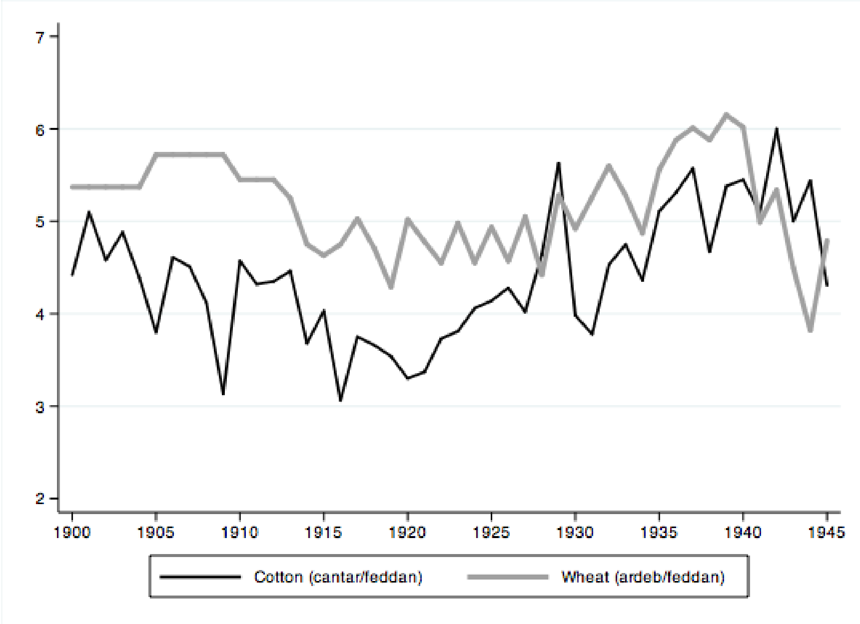
[12] The wheat yields for the pre-1913 years are obtained from Owen, *Cotton and the Egyptian Economy*, p.250. And cotton yields are from C.H. Brown, *Egyptian Cotton*. Leonard Hill Limited, 1953, pp.16-17.

[13] Alan Richards, *Egypt's Agricultural Development, 1800-1980: Technical and Social Change*. Westview Press, 1982, 1982, p.111; Selim, *Twenty Years*, p.114; Issawi, *Egypt at Mid-Century*, p.101; Hansen and Marzouk, *Development and Economic Policy*, p.47; and Brown, *Egyptian Cotton*, p.18.

[14] The total public drain stock increased from 6,500 to 10,000 kilometres between 1922 and 1939. Richards, *Egypt's Agricultural Development*, p.121.

[15] The rapid deterioration of cotton yields due to the mixing of different varieties was stopped when a special law was issued in 1926, which mandated that all cotton seed for sowing would be distributed under government supervision. This ensured seed standardisation, maximising the purity of seeds. Selim argues that the economic value of agricultural research was best exemplified by Giza 7, the variety that largely replaced Sakel in the 1930s, since its quality was not inferior and it yielded more. The same point is also made by Brown. Selim, *Twenty Years*, p.78; and Brown, *Egyptian Cotton*, p.18.

Figure 5.3.: Long-Term Cotton and Wheat Yields in Egypt, 1900-1945




Source: el-Imam, *A Production Function for Egyptian Agriculture*; Owen, *Cotton and the Egyptian Economy*, p.250; and Brown, *Egyptian Cotton*, p.16-17.

toriography".[16] Instead, he argues that the aggregate cotton yields decreased due to the rising share of a special cotton variety, Sakel, whose yields were lower than the existing varieties. It is indeed true that Sakel's expansion might have contributed to the decline in cotton yields, though Goldberg's critique has two main problems. First, cotton yields had already started to deteriorate before Sakel was introduced around 1910, so the shift to Sakel cannot be responsible for the start of the decline at least. And second, a simple algebraic exercise based on the average yields of Sakel and other varieties illustrate that the decline in the aggregate cotton yields was actually much more than the shift to Sakel would have induced. So Goldberg's attack on the conventional view on the decline of yields seems rather exaggerated.[17]

Returning to Table 5.1, the degree of the area and yield effects, particu-

[16] Ellis Goldberg, Historiography of Crisis in the Egyptian Political Economy. In I. Gershoni, Amy Singer and Hakan Erdem, editors, *Middle Eastern Historiographies: Narrating the Twentieth Century*. University of Washington Press, 2006. For a larger exposition of the discussion, see Ellis Goldberg, *Trade, Reputation and Child Labour in the Twentieth-Century Egypt*. Palgrave Macmillan, 2004.

[17] We elaborated on the issue a bit more more extensively in a commentary on Goldberg's thesis. Ulaş Karakoç, A Commentary on Goldberg's Thesis: Ecological Crisis or Historiographical Artifact? *The Chronicles (American University in Cairo, Economic and Business History Research Center)* 2012.

larly in the 1920s, reflect the intensification in cultivation. Richards takes the cropped area relative to the almost steady cultivated land as a sign of the intensified exploitation of land.[18] Moreover, he points to the qualitative evidence for the shift from three-year to two-year crop rotation in the interwar years, meaning that land was increasingly planted more heavily. Although it is empirically hard to prove, this was possibly another factor, next to expanded irrigation, behind the increase in the cropped area in the 1920s.[19]

Another important aspect of output growth concerns the attempts to diversify the crop basket. Egypt was never a one-crop producing country, but cotton was the principal source of monetary revenue. The falling cotton prices after World War I and wartime food shortages triggered concerns about monocropping and popularised arguments for the merits of crop diversification.[20] Thus, in the 1920s restrictions on cotton acreage aimed at facilitating this shift. Similarly, high import duties on cereals, sugar and rice after 1930 was another policy favouring the cultivation of such crops. However, while some historians have emphasised the importance of such attempts to promote diversification, these measures were less successful than initially thought. Our indices show that during 1933-1939, the recovery period, the impact of crop mix on output growth remained at 10 percent, which was much less than price and yield effects. Nonetheless, this should not be surprising because the potential for diversification was actually limited by a number of factors. First, cotton, along with rice, was *on average* superior to the other crops in monetary terms, despite their volatile prices.[21] Secondly, there was already some complementarity between certain crops, such as cotton and clover and beans, which limited the scope of substitution.[22] Thirdly, location, in the case of sugarcane, fruits and vegetables, that is, the proximity to factories,

[18]Richards, *Egypt's Agricultural Development*, pp.115-16.

[19]Hansen and Marzouk consider irrigation as the main determinant of the change in cropped area. Hansen and Marzouk, *Development and Economic Policy*.

[20]Added to this was the question on the future of the international position of Egyptian cotton, especially due to the growing competition from artificial silk and other countries' attempt to grow fine cotton, which was considered as a potential threat for Egyptian cotton from the 1920s onwards. Selim, *Twenty Years*, pp.87, 129.

[21]This is also emphasised by Issawi who maintains that the shift from cotton to cereals was economically senseless, as Egyptian soil was too precious to waste with cereals. Instead, he argues, other higher value added crops, like fruits and vegetables, should have been given more attention. Issawi, *Egypt at Mid-Century*, p.123. For the comparison of profits from producing alternative crops, also see Hansen and Marzouk, *Development and Economic Policy*, pp.56-57. Cotton and rice were by far the most profitable ones.

[22]Hansen and Marzouk, *Development and Economic Policy*, pp.53-54.

was a critical determinant of the crop decision. And last but not least, the rigid consumption patterns, such as the preference for maize and wheat, were another constraining factor. In short, there were already strong barriers to crop diversification in Egypt, which limited the supply elasticity. Therefore, the limited shift away from cotton in the 1930s is far from surprising.[23]

All in all, the most decisive determinant of output growth turns out to be the prevailing price decline during the whole interwar period, which was not unusual for a country that had already reached the limits of extensive growth. During the 1920s the price index halved, and then declined by another third between 1929 and 1932. And during the rest of the 1930s, a 13 percent increase in the price level accounted for half of the output growth. On the other hand, the issue should be discussed for cotton and other crops separately. For all other crops before 1930, prices were determined under almost free trade conditions. By contrast, after 1930 the high duties on major crops – wheat, rice and sugar – led prices to be determined in the domestic market, which is why the recovery in prices after 1933 can be partly explained by protectionism.

Cotton policy was, however, more complicated. Until 1933, the government intervened in cotton prices using a number of policy tools, such as restrictions on cotton acreage, loans to farmers on the security of their cotton to prevent seasonal fluctuations in prices, and purchases of cotton by the government.[24] Acreage restriction was the most widely used policy tool, but the Egyptian government gave up on it in 1932 with the assumption that the Egyptian crop was too small to affect world cotton prices.[25] Whether Egypt had market power in the world cotton market has become one of the most controversial issues since then. A number of studies on the price elasticity of the demand for Egyptian cotton have been undertaken, yet no consensus seems to have emerged. Most of the early contemporary technical works confirmed the wisdom of the government in removing the cotton restrictions and switching to the opposite policy of expanding cotton production as much as possible.[26]

[23] A longer discussion is found in Bent Hansen and Karim Nashashibi, *Foreign Trade Regimes and Economic Development: Egypt.* Columbia University Press for National Bureau of Economic Research, 1975, pp.147-50.

[24] The purchases happened in 1921, 1926 and 1929, at three moments of rapid deflation. Selim, *Twenty Years*, pp.70-73.

[25] The removal of the restriction was not applied to Sakel, which remained limited to Delta, where the best yields were obtained. Selim, *Twenty Years*, p.72.

[26] A brief bibliography of the econometric estimates of the supply elasticity of prices is provided by Yousef, Explorations in Economic History 37 [2000], pp.311-12.

This belief was also shared by many historians.[27] Hansen himself tried his hand at the issue a couple of times, but concluded that any definite judgement on the precise measurement of the demand elasticity may not be done due to the lack of sufficient data for proper specifications, which should take into account short-term speculation, substitutions between consumption of different textiles and the raw cotton supply responses from other countries in the medium to long term.[28] Finally, the last salvo came from Yousef, whose econometric study of the demand for Egyptian cotton indicates that Egypt definitely had market power in cotton, though the vested interests in Egypt, mainly landlords and British interests, did not allow the cotton restrictions to continue or to adopt a more effective export tax policy.[29] This debate is beyond the confines of our interest in this chapter, but it needs to be noted that even though Egypt had market power in long staple cotton, as Yousef maintains, the wisdom of the policy shift should be considered in relation to the degree of Egyptian market power rather than its existence per se. In other words, what matters more is how much change in export revenues would have been induced by the decline in the Egyptian supply. In this connection, its long-term consequences, such as competitors' responses and the possible shifts to other competing fibres, should also be studied.

### 5.2.2. Cultivation Costs

The existing estimates of crop value added are limited to a few benchmark estimates. One was suggested by Hansen, who deducted "purchased inputs" from gross output and presents his findings for a number of benchmark years.[30] The term "purchased inputs" is, however, not explained in the text, but it seems to refer only to fertilisers. Additionally, Azmi and Minost separately

[27] Issawi has "no doubt regarding the wisdom of change". Issawi, *Egypt at Mid-Century*, p.121. Selim argues that these supply side policies failed because they did not consider the "deep-rooted problems and worldwide character of the crisis". Selim, *Twenty Years*, p.71. Furthermore, he argues that Egyptian cotton did not have an absolute monopoly in the long staple market, referring to Craig's estimate that only 20 percent of Egyptian cotton was indispensable for spinners, and the rest was open to international competition. Besides, on the low end of the cotton market, artificial silk was increasingly competing with coarser and weaker cottons. Selim, *Twenty Years*, p.129.

[28] Hansen, *Egypt and Turkey*, p.108.

[29] Yousef, Explorations in Economic History 37 [2000].

[30] Hansen, Income and Consumption.

provided guesstimates for 1929 and 1930/31.[31] Here, by contrast, we offer the first long-term estimates of output for 1914-1945. The major cost items under consideration are chemical fertilisers, seeds, oil and maintenance. Note also that the present method is almost identical to that employed by the Department of Statistics and Census in the calculation of net output during 1950-1960.[32]

The information on seeding rates for each crop can be derived from three different sources: First, *Annuaire Statistique*, the comprehensive Egyptian yearbooks, presented an estimate of the total production and consumption of a few crops for each year, – consumption was estimated by subtracting the net exports and the amount of seeds from the gross output. The seeding rates for rice, wheat, maize and beans are thus given in these yearbooks as an average amount of seeds per unit of area.[33] Second, the Egyptian government helped to establish Credit Agricole in 1931 to supply credits for the small cultivators, mainly for seed and fertiliser. We have detailed data in *Annuaire Statistique* on how much seed per feddan was distributed to debtors for major crops for each year after 1931. We thus obtain the seeding rates for cotton, millet, sugarcane, onion, lentils and fenugreek from these annual accounts of the Credit Agricole.[34] In order to crosscheck these rates, we could refer to Azmi's assumptions in estimating gross agricultural revenue for 1930/31. His figures are probably no more than informed guesses, however, and in the event they turn out to be close to our estimates, apart from in the case of millet, for which our sources imply 25 ardeb/100 feddan, whereas Azmi takes it as 8 ardeb/100 feddan. We here prefer the former, since it seems more reasonable, considering the ratio of costs to crop value for other crops. Table 5.2 presents all the estimated seeding rates: the seed/yield ratio varies from one crop to

[31] Hame el-Sayed Azmi, A Study of Agricultural Revenue in Egypt, Rental Value of Agricultural Land and the Present Incidence of the Land Tax. *L'Egypte Contemporaine*, 1934; and M.E. Minost, Le Revenu Agricole de L'Égypte. *L'Egypte Contemporaine*, 1930. For the earlier period, Willcocks makes a similar calculation of profits for each major crop. W. Willcocks, *Egyptian Irrigation*. Volume 2, Spon and Chamberlain, 1913, pp.782-83.

[32] Hansen and Marzouk, *Development and Economic Policy*, p.73.

[33] Rice was usually recorded in *dariba* (a weight unit) and the conventional weight-volume unit conversion is 1 dariba = 3.2 ardeb.

[34] There are no separate figures for fenugreek, which was under the category of "others" in the raw data, so we assume 31 ardeb/feddan indicated the average figure for "others". Egypt, Ministere des Finances, *Annuaire Statistique* [1912-1950], 1937/38, pp.378-79. Furthermore, in the absence of reliable data on onions, we simply assume a 10 percent seed cost, referring to the average costs of other crops.

Table 5.2.: Seeding Rates for Egypt's Major Crops

| | Seeding rate Ardeb/100 feddans | Yield Ardeb/100 feddans |
|---|---|---|
| Cotton seed | 46 | 316 |
| Rice | 33 | 522 |
| Wheat | 53 | 588 |
| Maize | 25 | 749 |
| Millet | 25 | 862 |
| Sugarcane | 9000 | 75000 |
| Beans | 50 | 478 |
| Lentils | 43 | 404 |
| Helba | 31 | 371 |

Source: For the seeding rates see the text. Yields from el-Imam, *A Production Function for Egyptian Agriculture*. The unit for sugarcane is cantar/100 feddans.

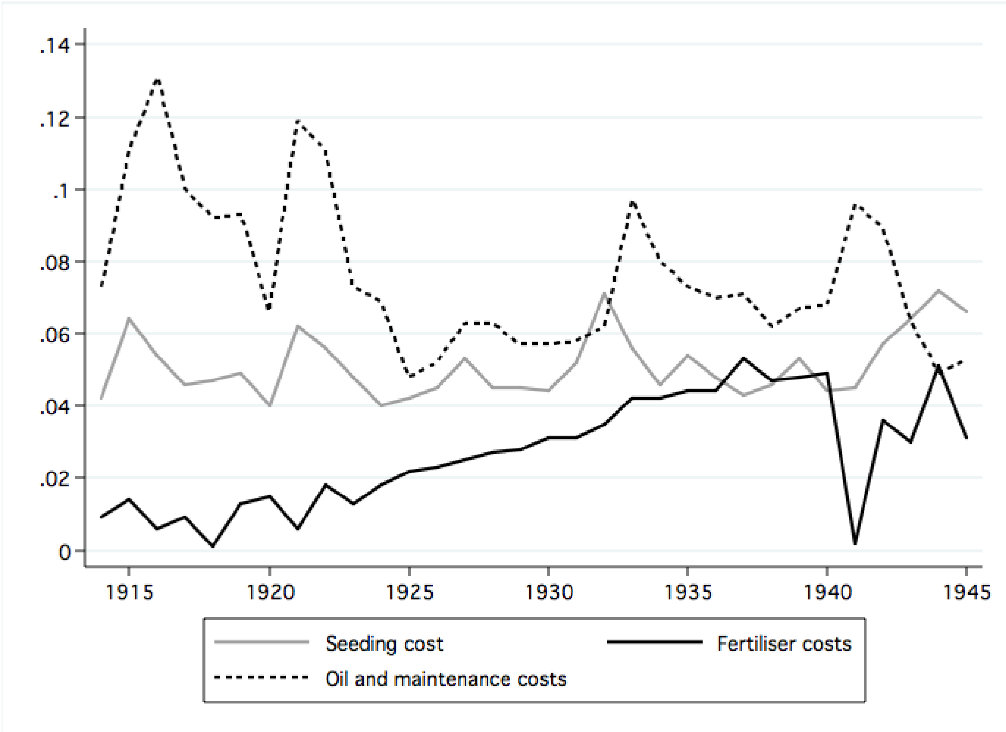
another, with the lowest productivity for millet and maize (2-3 percent) and highest for the cotton and sugarcane (12-14 percent).

We then calculate the total seeding cost in each year by multiplying these rates by the acreage of the following years at the current year prices. Eventually we find that gross seed costs remained in the range of 4-7 percent of total output value, which are quite close to the corresponding official figures for the 1950s.[35] All estimated costs are presented in Table 5.11.

After seeding costs, we take into account fertiliser expenditure, which is here taken to be equivalent to the imports of chemical fertilisers. That is acceptable since there was not any notable local fertiliser production until World War II. Animal manure is deliberately excluded from this calculation because it was an animal output. Import figures imply that the interwar period witnessed a spectacular growth in the use of fertilisers. From the early 1920s to the onset of World War II, total fertiliser imports increased by around two and half times, which greatly exceeded the change in cropped area. In effect, despite the moderate fall in import prices, the ratio of fertiliser costs to the gross output increased from 1 to 4-5 percent throughout this period (Figure 5.4). As a land-saving and labour-intensive technology, this rapid growth makes much sense since it perfectly suited Egypt's factor endowments, that is, relative land scarcity. As such, fertilisers, water and labour came as a complementary package, which was utilised to the fullest in Egypt in the

[35] Hansen and Marzouk, *Development and Economic Policy*, p.73.

Figure 5.4.: Ratio of Cultivation Costs to Total Crop Output in Egypt, 1914-1945




Source: See the text.

interwar years.[36]

Lastly we need to look at the costs of machinery and fuel. Although cultivation was mostly conducted with simple and traditional techniques in Egyptian agriculture, large-scale irrigation led to a significant use of fuel and some machinery, such as water pumps.[37] Unfortunately, there is no systematic data on fuel consumption and machinery use in agriculture. To offer a reasonable estimate, we rely on the machinery and fuel cost figure used by Azmi for 1930/31.[38] This was LE 3.35 million, around 5 percent of the total crop value

[36]Richards also underlines that wheat was more responsive to fertilisers than cotton, so fertiliser use expanded in line with the increasing wheat acreage. His argument is confirmed by the Credit Agricole sources, wherein the credit advanced on fertilisers for wheat was more than those on cotton. Richards, *Egypt's Agricultural Development*, p.121.

[37]Issawi, *Egypt at Mid-Century* explains the persistence of backward techniques through the institutional and social setting of agricultural production, such as the abundance of labour, small size of landholdings and absentee landlordism. Issawi, *Egypt at Mid-Century*, p.102.

[38]The figure includes the "expenses of fuel and lubricating oil", "expenses in the form of wages for mechanics and assistants" and the "value of imported machines for agriculture as tractors, accessories, spare parts etc.". Azmi, A Study of Agricultural Revenue in

in 1930/31. We first construct a cost index, based on the total cropped area and oil prices. The cropped area data is readily available and the latter is represented by the retail fuel prices in Cairo, which are available in *Annuaire Statistique*. The index is constructed by multiplying the total acreage by fuel prices and then the 1931 figure is extrapolated with this index. Since the change in cropped area was largely determined by water use, it is a good proxy for the irrigated area. The resulting cost figures indicate that the machinery and fuel made up 4-9 percent of the gross crop output, except in the periods when fuel prices are exceptionally high, such as at the end of World War I and its aftermath (Figure 5.4).[39]

## 5.2.3. Livestock output

Hansen and Marzouk point out that the main agricultural produce in Egypt was non-animal because of the shortage of capital, low standard of living and "almost complete lack of pastures".[40] They refer to the gross figures for 1959/60, when the value of animal output was less than one quarter of the crop output, whilst its value added was less than a sixth of crop value added. Since animal output increased more than crop output between the 1930s and 1950s, it can be argued that the share of animal value added was considerably less than one sixth in the interwar years.[41] However, no satisfactory systematic estimates of animal output for the interwar period have been suggested to date. The first attempt was made by Levi as a part of his well-known work on Egyptian national income.[42] He employed a simple income approach by first identifying the total income emanating from different major sources: land, commerce, taxes, buildings and so on. He then estimated animal output from the assumed per family consumption of butter, milk, cheese, fowls, meat and eggs, all of which were derived from the statistics of the family budgets collected by the official statistical agency in 1920 to construct a cost of living

Egypt, p.707.

[39]The number of imported agricultural machinery (pumps, tractors and others) remained relatively stable until 1937, except in 1932, so the possibility that fuel consumption per cropped or irrigated area increased was small until then. Samir Radwan, *Capital Formation in Egyptian Industry and Agriculture, 1882-1967.* Ithaca Press, 1974, p.269.

[40]Hansen and Marzouk, *Development and Economic Policy*, p.65.

[41]The rate of change of animal and crop output between 1937 and 1960 can be seen in Hansen and Marzouk, *Development and Economic Policy*, p.75.

[42]I.G. Levi, L'Augmentation Des Revenus de L'État. *L'Égypte Contemporaine* 68 1922.

index.[43] Levi's work then triggered an exchange between him and Baxter, who strongly criticised his method and findings on the ground that the meat and milk consumption figures in the family budgets were too high.[44]

Later on, Azmi and Minost provided two more figures for animal output.[45] Minost, then the general secretary of the Crédit Foncier Egyptien, calculated the gross output of meat, milk, wool and other animal farm products in a somewhat crude and ambiguous way. His gross estimate for 1930 was around two thirds of Levi's estimate for 1923.[46] Similarly, Azmi made some quite crude assumptions on the average "yields" and "expenses" of cows and buffaloes, and the wool and poultry yields.[47] His final gross figure for 1930/31 and 1931/32 is around LE 2.1 million, which is strikingly lower than other estimates. Lastly, Anis provides two benchmark figures for 1937 and 1944. He points out that since the data on slaughtering is limited to the public abattoirs, his estimate is based upon the animal output of female livestock with "due allowance being made for the births and casualties".[48] He then presents the output estimates for 1937-1945, classified by animal types plus poultry, milk and eggs. However, the details of his procedure are left unexplained.[49]

Table 5.3 brings together all of these estimates to show how broad their range is. It is hard to draw a consistent conclusion from these figures since not only their methods and coverage vary significantly but they also lack the

[43] To arrive at the gross figures, a regional classification is made by Levi, as the different average consumption units are assumed for Cairo, Alexandria, the cities with 10,000 inhabitants or more, and the countryside of Upper and Lower Egypt. For instance, the annual average meat consumption per family is taken as follows: 12 rotolis in Cairo, 10 rotolis in Alexandria and 10 rotolis in Lower and 9 rotolis in Upper Egypt (the last two indiscriminately for cities and countryside).

[44] James Baxter, Notes on the Estimate of the National Income of Egypt for 1921-1922. *L'Egypte Contemporaine*, 1923. Baxter maintains that the consumption survey had been carried out only in the Governorates and Mudiriya towns, so the figures for other cities must have been inferred from them without any credible basis. What is more, the assumed consumption of all animal goods actually exceeded the total stated income of the clerks, artisans and labourers by 92-97 percent. Although this upward bias might not be important from the point of the cost of living index calculation as long as the relative consumption of different goods is measured correctly, it is highly dubious to derive total consumption from these figures. For his response, also see I.G. Levi, Réponse à M.J.Baxter. *L'Égypte Contemporaine*, 1923. The controversy remains open to further research.

[45] Azmi, A Study of Agricultural Revenue in Egypt; and Minost, Le Revenu Agricole.

[46] Minost, Le Revenu Agricole, pp. 541-45.

[47] Azmi, A Study of Agricultural Revenue in Egypt, pp. 698-99.

[48] Anis, A Study of National Income, p.121.

[49] Anis, A Study of National Income, p.125.

Table 5.3.: Existing Estimates of Animal Output of Egypt

| Source | Output value (LE Million) | Year |
|---|---|---|
| Levi (1922) | 38.4 | 1921/22 |
| Minost (1930) | 24.1 | 1930* |
| Azmi (1934) | 2.3 | 1930/31 |
| Anis (1949) | 18.8 | 1937 |
| Anis (1949) | 37.9 | 1944 |
| Issawi (1954) | 42.0 | 1946/47 |

* Date assumed, as it is not stated explicitly in the text.

necessary degree of clarity and consistency in methodology. It is only possible to say that Azmi's estimate seems out of all proportion.

The estimation methodology employed here relies on official data on flock sizes and the available price series. A close look at the official sources reveals that meat, milk and wool output can be calculated if yields per animal are known for each product. To obtain the technical coefficients, we draw on the 1929 and 1939 Agricultural Censuses and the Statistical and Census Department's official method for estimating livestock output in 1953.[50] Furthermore, for meat production, the slaughtering rate is derived from the Turkish sources due to the absence of any figure for Egypt.

The procedure goes as follows. To begin, we need the animal flock size. *Annuaire Statistique* gives the summary of the animal censuses for each year from 1914 onwards. These summary tables include the number of the all kinds of animals (cattle, buffaloes, sheep, goats and the others) in each year until 1937.[51] The censuses were conducted every two years after 1937, and they are not easily comparable with the earlier years because the timing of the census underwent a number of alterations: although they had been conducted in January every year before 1937, the 1937 census was done in March, 1939 in June, 1941 again in January, and the 1943 and 1945 censuses in June.[52] The census time matters because flock sizes follow a year-long pattern as

[50] Egypt, Ministry of Agriculture, *Agricultural Census of Egypt, 1929.* 1934; Egypt, Ministry of Agriculture, *Agricultural Census of Egypt, 1939.* 1946; Egypt, Statistical and Census Department, Ministry of Finance and Economy, *National Income of Egypt for 1953: Official Estimate.* 1955.

[51] We only have total numbers for the World War I period, with the female-male composition reported thereafter.

[52] For a bibliographical note on the animal censuses in Egypt, see Egypt, Ministere des Finances, Annuaire Statistique, 1945/46, pp.368-69.

Table 5.4.: Livestock Coefficients, Egypt

| | | Cattle | Buffaloes | Sheep | Goats |
|---|---|---|---|---|---|
| (I) | Slaughtering rate (%) | 14.95 | 15.3 | 38.3 | 38.3 |
| (II) | Average carcass weight (kg) | 158.7 | 138.1 | 15.7 | 11.3 |
| (III) | Ratio of those supplying milk (%) | 59 | 44 | 90 | 71 |
| (IV) | Average annual milk yield (kg) | 450 | 994 | 3.6 | 4 |

Sources: (I) from Bulutay et al., *Turkiye'nin Milli Geliri*, pp.41-42. (II) from Egypt, Statistical and Census Department, Ministry of Finance and Economy, National Income 1953, p.17. (III) and (IV) are from Egypt, Ministry of Agriculture, Agricultural Census 1939, pp.108-109.

animals are slaughtered at certain times of a year. This inconsistency is clearly observed in the raw data as the flock sizes appear unusually large during World War II.

In order to correct for this inconsistency, we first calculate the trend growth rates of flock sizes for each group of animals and then assume that they grew by this historical rate during 1937-39.[53] That seems reasonable because flock sizes followed a pretty clear and smooth positive trend with small fluctuations until 1936. Moreover, neither the slaughterings in public abattoirs nor the imports and exports show an unusual development during 1937-1939. Then, for the post-1939 period, 1941 figures are taken as the same as in the official source since the census month was January, the same as before 1937. The 1943 and 1945 figures are obtained by the extrapolation of the estimated 1939 figure by the ratio of the official 1939 and 1943 and 1945 figures, as census times were the same in those years. Finally, for the missing years (1940, 1942 and 1944), when censuses were not undertaken, we make simple interpolations by the taking average of the following and preceding years. Thus, this procedure produces the flock size series for the whole of 1914-1945 for four animal categories (cattle, buffaloes, sheep and goats). All components of livestock output are presented in Tables 5.12 and 5.13.

So now, let's proceed with the estimates of meat, milk and wool output one by one. To derive the meat output, we first refer to the slaughtering coefficient used by Bulutay et al. for calculating Turkish meat production. The number of slaughtered animals is obtained by multiplying the flock size with the slaughtering coefficient and then the slaughtered animal series are

[53] The long-term trend growth rate of cattle, buffaloes and sheep flocks was 3 percent and it was 5 percent for goats. All are calculated by regressing the OLS of the natural log of flock size on a constant and the time trend over 1914-1936.

turned into the meat output series using the average carcass weight (rows 1 and 2 in Table 5.4). The average carcass weight is taken from the official figures for 1953.[54] The meat prices are then taken as the average of the wholesale cattle, buffaloes and sheep prices in Cairo and Alexandria, which are all reported in *Annuaire Statistique* after 1919. For the pre-1919 period only retail prices are available, so the 1919 wholesale prices were extrapolated backward with the retail prices. Note that sheep prices are also applied to goats.

For the milk output, the percentage of animals supplying milk and the average milk yield per animal are obtained from the 1939 Agricultural Census. These coefficients are compared with those in the 1929 Agricultural Census and they seem to be pretty much similar (rows 3 and 4 in Table 5.4). The prices are the average wholesale prices in Cairo and Alexandria for the years after 1919 and the 1919 figures are extrapolated backwards with the retail milk prices. All price data is taken from *Annuaire Statistique*.[55]

Lastly, wool production is calculated in a different way due to the lack of price data. First, the wool output in weight is derived from the flock size times 2.17 kg wool per animal, taken from the 1929 Agricultural Census results.[56] Wool prices are available only in the post-1935 period, so for the years between 1935 and 1939, we look at the ratio of wool value to the combined meat and milk value and they turn out to be in the the narrow range of 10-12 percent. Therefore, we take their average and apply this to all other years to obtain the wool output. Note that the calculation is entirely based on sheep wool, since hairs obtained from other animals were a negligible amount.[57]

In this way, we have obtained the meat, milk and wool output. The official animal output estimate for 1953 also takes into account poultry, honey and wax, silk and worms.[58] However, meat, milk and wool output made up 83 percent of the total output for that year, and thus in the absence of the

[54] Egypt, Statistical and Census Department, Ministry of Finance and Economy, National Income 1953, p.17.

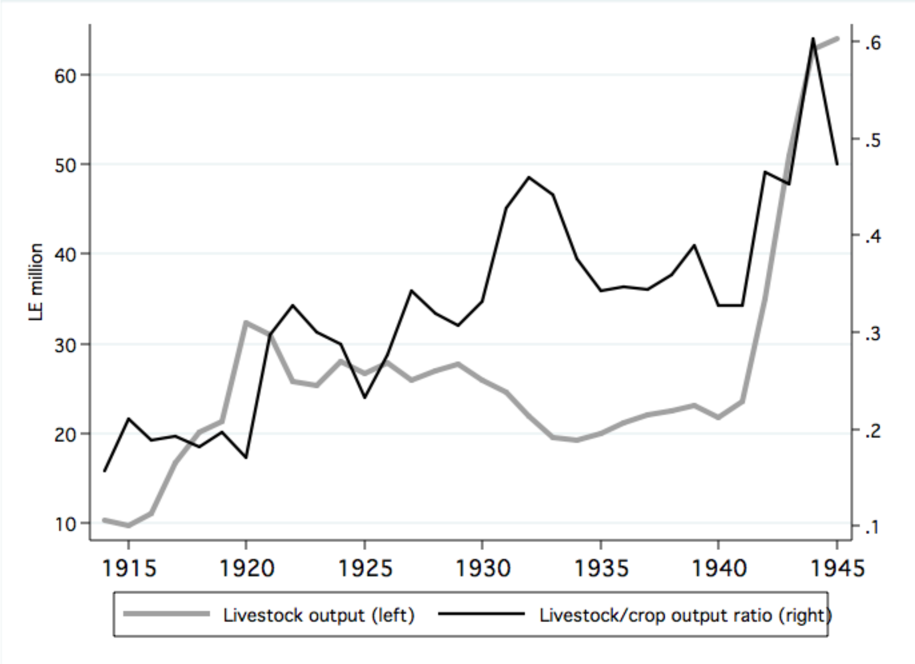
[55] According to the results of the 1929 Agricultural Census, around 20 percent of milk was consumed locally, 60 percent turned into butter and another 20 percent used in cheese making. In the present study the production of butter and cheese are considered to be a part of manufacturing. Egypt, Ministry of Agriculture, Agricultural Census 1929, p.58.

[56] Egypt, Ministry of Agriculture, Agricultural Census 1929, p.58.

[57] While total sheep wool was 3,100 tons in 1929, goat wool was 24 tons and camel hair 14 tons.

[58] Egypt, Statistical and Census Department, Ministry of Finance and Economy, National Income 1953, p.11.

Figure 5.5.: Animal Output and Its Ratio to Crop Value in Egypt, 1914-1945




Source: See the text.

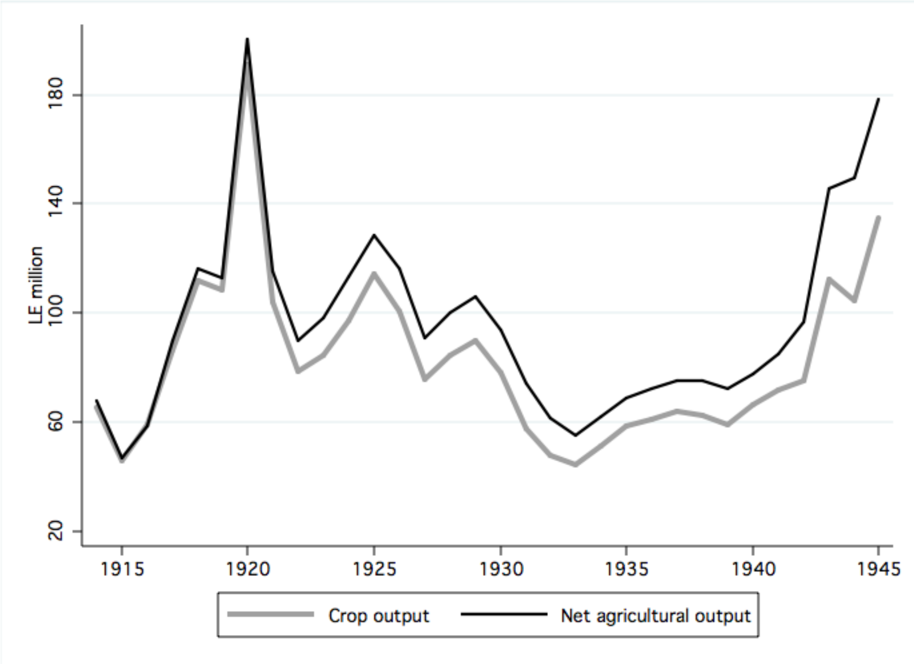
estimate of all these "unobserved" components, we prefer to linearly adjust our total observed output (meat, milk and wool) by that ratio to arrive an estimate of the gross animal output.

Finally, Figure 5.5 shows both our estimated total animal output and its ratio to the gross crop output. It suggests that output was rather stable, below LE 30 million during most of the 1920s, then had a downturn between 1929 and 1932 and recovered slightly until World War II. Similarly, its ratio to crop output remained slightly above 30 percent during the 1920s, but it increased up to 50 percent in the midst of the Great Depression, possibly due to the greater decline in the crop prices in comparison with animal product prices. Then the ratio returned to around 35 percent of the normal level in the second half of the 1930s.

How are these findings compatible with the other existing predictions? Our estimate for 1937 is close to Anis and Minost for 1930.[59] However, it seems that Levi's estimate of LE 38 million for 1920/21 is remarkably higher than our figure for the average of 1921 and 1922, LE 27 million, implying that Baxter's criticism that his figures were upward biased was most likely right. Finally

[59] Anis, A Study of National Income; and Minost, Le Revenu Agricole.

Figure 5.6.: Crop Output and Net Agricultural Output in Egypt (Current Prices), 1914-1945




Source: See the text.

Issawi's gross animal output figure of LE 42 million for 1946/47 reasonably corroborates our figure for 1945, LE 63 million, once the decrease in prices right after the war is taken into account.[60]

As a result, we obtain the net agricultural output (value added) by adding the livestock output to the gross crop value net of cultivation costs (seeds, fertilisers, machine and fuel costs). It turns out that gross crop output and net agricultural output were more or less the same up to the 1920s, when a consistent gap between them began to open up (Figure 5.6). It was on average 20 percent larger than the crop value during 1920-1945, while this gap was largest between 1930 and 1932 due to the relative increase in livestock output. Nonetheless, it is clear that these two series for the most part followed each other very closely.

To be able to see the contribution of components of net output to the total change, we deflate all current price crop values, cultivation costs and livestock output by the agricultural price index that we construct separately.[61] Table

[60]Unfortunately, Issawi does not provide any explanation of his calculations. Issawi, *Egypt at Mid-Century*, p.130.

[61]See Chapter 7 for the details of the construction of the agricultural price index.

Table 5.5.: Estimates of Agricultural Output in Egypt (LE Millions), 1914-1945

| | Crop output | Cultivation costs | Livestock output | Net agricultural output (current prices) | Agricultural price index (1938=100) | Net agricultural output at 1938 prices |
|---|---|---|---|---|---|---|
| 1914 | 65.5 | 8.1 | 10.3 | 67.7 | 97.2 | 69.6 |
| 1915 | 45.8 | 8.7 | 9.7 | 46.8 | 108.6 | 43.1 |
| 1916 | 58.9 | 11.3 | 11.1 | 58.7 | 151.2 | 38.8 |
| 1917 | 86.4 | 13.4 | 16.7 | 89.7 | 225.5 | 39.8 |
| 1918 | 111.7 | 15.6 | 20.2 | 116.2 | 233.3 | 49.8 |
| 1919 | 108.2 | 16.8 | 21.3 | 112.7 | 263.2 | 42.8 |
| 1920 | 190.8 | 23.1 | 32.4 | 200.1 | 455.2 | 44.0 |
| 1921 | 103.9 | 19.5 | 30.9 | 115.4 | 172.8 | 66.8 |
| 1922 | 78.6 | 14.6 | 25.7 | 89.7 | 166.7 | 53.8 |
| 1923 | 84.3 | 11.3 | 25.3 | 98.2 | 164.4 | 59.7 |
| 1924 | 97.4 | 12.4 | 28.1 | 113.1 | 192.0 | 58.9 |
| 1925 | 114.5 | 12.7 | 26.7 | 128.4 | 226.7 | 56.6 |
| 1926 | 100.5 | 12.0 | 27.8 | 116.3 | 159.0 | 73.2 |
| 1927 | 75.7 | 10.7 | 25.9 | 90.9 | 144.0 | 63.1 |
| 1928 | 84.5 | 11.4 | 27.0 | 100.0 | 157.9 | 63.3 |
| 1929 | 90.0 | 11.7 | 27.7 | 106.0 | 150.8 | 70.3 |
| 1930 | 78.3 | 10.3 | 26.0 | 93.9 | 120.0 | 78.3 |
| 1931 | 57.5 | 8.2 | 24.6 | 74.0 | 99.2 | 74.6 |
| 1932 | 47.7 | 8.0 | 21.9 | 61.6 | 86.7 | 71.0 |
| 1933 | 44.2 | 8.6 | 19.5 | 55.1 | 75.8 | 72.8 |
| 1934 | 51.4 | 8.6 | 19.3 | 62.0 | 104.6 | 59.3 |
| 1935 | 58.5 | 10.0 | 20.0 | 68.6 | 94.1 | 72.9 |
| 1936 | 60.9 | 9.8 | 21.1 | 72.1 | 95.0 | 75.9 |
| 1937 | 64.0 | 10.7 | 22.0 | 75.3 | 98.8 | 76.2 |
| 1938 | 62.6 | 9.7 | 22.5 | 75.3 | 100.0 | 75.3 |
| 1939 | 59.3 | 9.9 | 23.0 | 72.4 | 95.9 | 75.4 |
| 1940 | 66.4 | 10.7 | 21.8 | 77.5 | 101.3 | 76.5 |
| 1941 | 71.7 | 10.2 | 23.5 | 85.0 | 128.3 | 66.3 |
| 1942 | 75.2 | 13.7 | 35.0 | 96.5 | 182.0 | 53.0 |
| 1943 | 112.4 | 17.7 | 50.9 | 145.5 | 222.9 | 65.3 |
| 1944 | 104.4 | 17.9 | 62.8 | 149.3 | 254.4 | 58.7 |
| 1945 | 134.8 | 20.1 | 63.9 | 178.5 | 273.7 | 65.2 |

Source: See the text.

Table 5.6.: Percentage Change in the Components of Net Output at 1938 Prices (%)

| | Crop output | Livestock output | Production costs | Net output |
|---|---|---|---|---|
| 1914-1920 | -37.8 | -33.0 | 1.0 | -36.9 |
| 1920-1929 | 42.4 | 158.0 | 165.2 | 59.9 |
| 1929-1932 | -7.9 | 37.5 | 12.8 | 1.1 |
| 1932-1939 | 12.3 | -4.8 | 56.7 | 6.2 |
| 1914-1939 | -8.3 | 126.3 | 373.4 | 8.3 |

Source: See the text.

5.6 presents the resulting percentage change in the three components of net agricultural output at constant prices. It is very striking that over 1914-1939, the increase in net output remained very moderate, around 8 percent, whereas crop output declined by 8 percent, livestock output increased by 126 percent and the cultivation costs by almost four times. In other words, the decline in crop output and increase in costs was corrected by the small yet substantial rise in livestock output. This clearly confirms the argument put forward earlier that agricultural production became more and more resource intensive in the interwar period.

## 5.3. Farm Income

Up to this point, we have estimated the net agricultural output and now finally we continue by estimating two direct cash outflows from the agricultural sector: tax payments and credit services.

In Egypt rural taxation was predominantly based on the land tax. Under the British occupation, the survey of state lands started in 1892 and tax commissions finished estimating the rental value and the rate of tax to be paid by the cultivator in 1898.[62] The ratio was fixed nominally at 28.64 percent of the rental value as assessed in 1898 and this remained so until 1939, when the rental values were reassessed and the tax rate was reduced to 16 percent.[63] The system was strongly progressive as the nominal tax

[62]The history of the taxation system in Egypt is briefly summarised in Egypt, Ministere des Finances, Annuaire Statistique, 1928/29, p.501); and Hansen, *Egypt and Turkey*, pp.92-94.

[63]Issawi, *Egypt at Mid-Century*, p.233.

was proportional to the rental value. In the meantime, even at the peak of Great Depression, the government could not revise tax rates due to the Capitulations, let alone carrying out a comprehensive tax reform.[64] Then World War II delayed reassessment, so the next adjustment only occurred in 1949, when it was reduced to 14 percent.[65] Since the tax rate was fixed in nominal terms, its real value and ratio to output was subject to significant changes due to the movements of both prices and output. When farmers had difficulty in paying off their taxes during times of hardship, the government provided occasional exemptions: between 1942 and 1945 small cultivators were granted remission and the total land tax was reduced by LE 2 million between 1933-1934.[66]

In addition to the land tax, there were two other rural taxes: the *ghaffir* (night watchman levy) and the cotton tax. The *ghaffir* was introduced in 1914 and applied both in cities and the countryside, but it is usually considered a rural tax because most of the *ghaffir* revenue, around 92 percent in 1927 and 86 percent in 1931, was collected in the countryside.[67] In the cities, it was levied as a ratio of building tax, whereas in the countryside the commissions appointed by the Ministry of Interior decided its amount.[68] The *ghaffir* revenues between 1918 and 1945 are obtained from *Annuaire Statistique*. For the earlier years, it was not stated as a separate item, so we simply took its ratio to the land tax in 1918, which was 13 percent, as an approximation.

Cotton tax was first levied in 1920 on the cotton ginned in the country at 35 piastres per cantar, and occasional revisions were made thereafter. Finally, it was abolished in 1936.[69] Since the tax was most probably passed by merchants onto cultivators, as Azmi argued, it is here considered to be a rural tax.[70]

Working out the gross sum of the land, cotton and *ghaffir* taxes, it turns out

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[64] Tignor, *State and Private Enterprise*, pp.115-16; and A.E. Crouchley, *Economic Development of Modern Egypt*. Longmans, Green and Co., 1938, p.237.

[65] Issawi, *Egypt at Mid-Century*, p.234.

[66] Issawi, *Egypt at Mid-Century*, p.234; and Selim, *Twenty Years*, p.73.

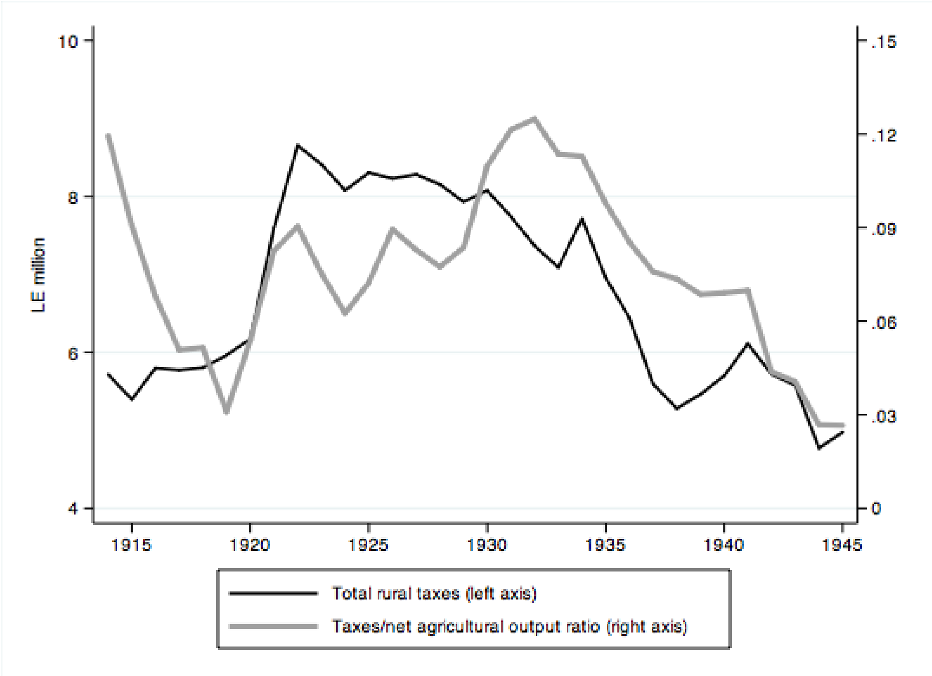
[67] Minost, Le Revenu Agricole, pp. 551-52; Azmi, A Study of Agricultural Revenue in Egypt, p.771; Tignor, *State and Private Enterprise*, p.116; and Issawi, *Egypt at Mid-Century*, p.233.

[68] Azmi, A Study of Agricultural Revenue in Egypt, p.771.

[69] Azmi, A Study of Agricultural Revenue in Egypt, p.711; and Egypt, Ministere des Finances, Annuaire Statistique, 1928/29, p.501. The revisions were made in 1922, 1926, 1931 and 1933. Egypt, Ministere des Finances, Annuaire Statistique, 1932/33, p.496 and 1937/38, p.514.

[70] Azmi, A Study of Agricultural Revenue in Egypt.

Figure 5.7.: Total Rural Taxes in Egypt, 1914-1945




Source: Tax data from Egypt, Ministere des Finances. Net output is based on our own estimates.

that together they amounted to around LE 8 million for most of the 1920s and then gradually declined in the 1930s (Figure 5.7). The reduction in the ghaffir and the gradual abolition of the cotton tax up to 1936 substantially lowered total payments. Similarly, the ratio of taxes to the net agricultural output, a more sensible indicator of the tax burden, remained around 6-9 percent over the 1920s, whereas it jumped to the 10-12 percent range during 1930-1934 and then smoothly decreased because of both reductions in payments and the small recovery in the agricultural output.

Turning to credit, the development of cotton cultivation and credit expansion reinforced each other, which led to a fairly developed credit market. There were a number of mortgage banks operating in the country, with Crédit Foncier Egyptien, founded in 1871, the largest mainly working with the middle and large farmers.[71] Until the early 1930s, the Agricultural Bank, founded under the British administration, and credit cooperatives provided small credits, yet its operations then slowed down until its liquidation in 1937. [72] This was

[71] Issawi, *Egypt at Mid-Century*, p.221.

[72] The cooperative movement started in 1908 and they provided small credits, as well small implements, seeds and fertilisers, but it only gained momentum in earnest in 1923 with government support. Issawi, *Egypt at Mid-Century*, pp.222-23. It then gradually

mainly due to the Five Feddan Law issued in 1916, which banned the cultivators owning less than five feddans from getting loans from mortgage banks in the name of saving small farmers from the threat of foreclosures. Thus, the law effectively excluded small cultivators from the mortgage market, and possibly made them more vulnerable in the informal credit mechanisms until the early 1930s.[73]

Since mortgage debts were nominally fixed beforehand, the ongoing deflation in late 1929 led to a growing debt crisis. Heavily-indebted farmers were faced with the difficulty of paying off debts and the possibility of large-scale bankruptcies meant that the whole market came to the verge of collapse. The magnitude of the crisis can be seen in the fact that, according to Hansen, the annual debt service was around LE 3.5 million, which amounted to LE 12-13 million together with taxes, but the cotton output value, as the main cash source, declined from LE 40-45 to 15-16 million in a few years after 1929.[74] Even with a more liberal guess, assuming a total of LE 10 million tax and cash payments, the cash obligations were around 10-12 percent of the net agricultural revenue during 1928-29, and it almost doubled by 1932/33. Thus, by 1931 forced sales had begun, and between 1931 and 1939 around 188 thousand feddans were expropriated due to a failure to service debts.[75]

In such an environment, the government needed to take immediate measures to ease the liquidity crisis, in addition to its failed attempts to stop the fall in cotton prices. In its effort to ease the liquidity trap, the government first extended credits for the purchases of fertilisers and seeds in 1930 and then gave some tax relief in 1932.[76] More decisively, mortgage debts were consolidated through an agreement with three major mortgage banks in 1933. According to this agreement, the government took on two thirds of the overdue interest and in return the banks were to extend outstanding loans and reduce interest rates.[77] This led to a reduction of nearly one half of the annual repayment of

expanded so that by mid-century half of the farmers were members of cooperatives. O'Brien, *Egypt's Economic System*.

[73] Hansen argues that the local money lenders, particularly Greeks, played a major role in supplying small credits to small farmers after the Five Feddan Law. Hansen, *Egypt and Turkey*, p.52.

[74] Hansen, *Egypt and Turkey*, p.94. Tignor cites a contemporary estimate of LE 31 mortgage debt for a feddan, which was 75 percent of the rental value. Tignor, *State and Private Enterprise*, p.117.

[75] Tignor, *State and Private Enterprise*, p.118.

[76] Hansen, *Egypt and Turkey*, pp.94-95.

[77] Issawi, *Egypt at Mid-Century*. The arrangement cost the government LE 3.5 million.

mortgage debt. Subsequently, further reductions in interest rates were made in 1935 and 1938.[78] All debts were then scaled down so as not to exceed 70 percent of land rentals in 1942.[79] What is more, the government initiated the foundation of Crédit Agricole in 1931 to provide small farmers with loans, which also ensured the abolition of the Five Feddan Law. The aim was to ease the burden on smaller cultivators by providing short-term loans for fertiliser, seed and other costs on the security of land or crops.[80]

In the present estimate, we take the annual net change in the gross mortgage debt as a proxy of debt service in each year. Unfortunately, the informal credit market is entirely unknown and the short-term credits provided by the Agricultural Bank, cooperatives or Crédit Agricole were mostly small in scale. The data on the mortgage debt is provided in *Annuaire Statistique* as an annual index of the gross debt with respect to the 1913 level, whose current value is also stated, including both principal and interests, and covers four major mortgage banks: Crédit Foncier, Land Bank of Egypt, Agricultural Bank of Egypt and Mortgage Co. of Egypt.[81] The data shows that the total stock was reduced by one fourth (from LE 40 to 30 million) during and after World War I and stayed around that figure during the 1920s. Then it declined by one third over the course of the 1930s and evaporated to a large degree owing to wartime inflation during World War II. Note that a part of the repayments was financed by the government, which took over two thirds of the overdue interest in 1933, although it was to be paid over a long period, so it is hard to figure out the extent of government contributions for each year.

We can then obtain the farm income by calculating the agricultural value added net of tax payments and credit outflows. To deflate the current-price farm income figures, we use two separate indices: the aggregate wholesale

Selim, *Twenty Years*, p.74.

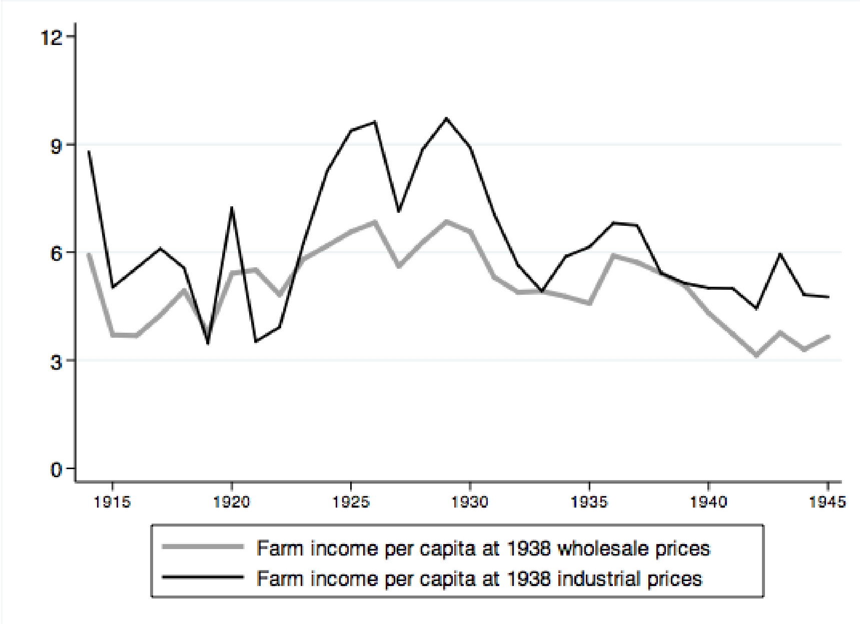
[78] Selim, *Twenty Years*, p.74. In addition, land rentals also were reduced by a third in 1929 and 1931, with additional reductions made in 1935-36.

[79] Issawi, *Egypt at Mid-Century*, p.224.

[80] For a bibliographical note on Crédit Agricole, see Egypt, Ministere des Finances, Annuaire Statistique, 1934/35. The extent to which Crédit Agricole managed to serve its initial objectives is a controversial issue. It was mainly supposed to work with cooperatives, but the share of cooperatives in its loans increased from 5 to only 20 percent between 1933 and 1938. This might have been the result of big landowners' bid to make use of bank resources by getting around the legal limitations. Issawi, *Egypt at Mid-Century*, p.225. Similarly, Tignor refers to a foreign office official arguing that the main objective of the bank was to stop land sales and maintain land prices, rather than to help small farmers per se. Tignor, *State and Private Enterprise*, p.119.

[81] Egypt, Ministere des Finances, Annuaire Statistique, 1944/45, p.552.

Figure 5.8.: Farm Income Per Capita in Egypt (LE), 1914-1945




Source: See the text.

price index provided by Mitchell and the index of manufacturing prices that we construct separately.[82] Figure 5.8 presents farm income per capita at 1938 aggregate and manufacturing prices. In the first place, it can be clearly observed that the average farm income largely stagnated. The two income per capita series, however, do not perfectly follow each other over the whole period due to the changes in relative prices. In particular, the manufacturing prices increased more than the aggregate prices in the late 1920s. Yet more importantly, the precise calculation of agricultural net output and farm income actually confirms the conventional wisdom that Egypt's agriculture suffered from a long-term stagnation in the interwar period – a view that had previously just been based on crop output estimates.

One more comment on the measurement of farm income is in order. As mentioned at the beginning of the chapter, we do not take into account land rentals in the calculation, since it is considered basically a matter of income distribution within the rural population. Hansen (1968) brings together the findings of all the available estimates of land rentals and finds that the share

[82] Brian Mitchell, *International Historical Statistics: Africa, Asia and Oceania, 1750-1993.* 3rd edition. Macmillan, 1998. The two wholesale price indices with different base years presented by Mitchell are spliced to get a single index. See Chapter 7 for the details of the construction of the index of manufacturing prices.

Table 5.7.: Estimates of Farm Income in Egypt, 1914-1945

| | Net agricultural output | Rural taxes | Net credit inflow | Farm income | Rural population | Farm income per capita | Wholesale price index (I) | Industrial Price Index (II) | Farm income per capita at 1938 prices | Farm income per capita at 1938 prices |
|---|---|---|---|---|---|---|---|---|---|---|
| | LE millions | LE millions | LE millions | LE millions | '000 | LE | 1938=100 | 1938=100 | Deflated by (I) | Deflated by (II) |
| 1914 | 75.2 | 5.7 | 0.1 | 62.1 | 9624 | 6.46 | 109 | 82.4 | 5.92 | 8.79 |
| 1915 | 54.9 | 5.4 | -1.0 | 40.4 | 9744 | 4.15 | 112 | 92.7 | 3.70 | 5.03 |
| 1916 | 69.6 | 5.8 | -2.0 | 50.9 | 9865 | 5.16 | 140 | 133.7 | 3.68 | 5.56 |
| 1917 | 102.4 | 5.8 | -2.6 | 81.4 | 9980 | 8.15 | 192 | 204.4 | 4.25 | 6.10 |
| 1918 | 131.8 | 5.8 | 4.3 | 114.7 | 10090 | 11.37 | 230 | 272.3 | 4.94 | 5.56 |
| 1919 | 128.1 | 6.0 | -10.4 | 96.4 | 10201 | 9.45 | 252 | 257.9 | 3.75 | 3.47 |
| 1920 | 220.3 | 6.2 | -1.6 | 192.3 | 10313 | 18.65 | 345 | 295.8 | 5.41 | 7.23 |
| 1921 | 134.2 | 7.6 | 0.7 | 108.5 | 10427 | 10.41 | 189 | 195.5 | 5.51 | 3.52 |
| 1922 | 102.8 | 8.7 | -0.3 | 80.8 | 10542 | 7.67 | 159 | 133.9 | 4.82 | 3.92 |
| 1923 | 108.5 | 8.4 | -0.6 | 89.2 | 10657 | 8.37 | 144 | 116.8 | 5.81 | 6.25 |
| 1924 | 123.7 | 8.1 | -1.1 | 103.9 | 10774 | 9.65 | 156 | 116.3 | 6.18 | 8.26 |
| 1925 | 138.7 | 8.3 | -1.3 | 118.9 | 10893 | 10.91 | 166 | 102.3 | 6.57 | 9.38 |
| 1926 | 126.0 | 8.2 | 0.3 | 108.4 | 11013 | 9.84 | 144 | 103.8 | 6.83 | 9.62 |
| 1927 | 99.7 | 8.3 | -0.1 | 82.5 | 11135 | 7.41 | 132 | 92.8 | 5.61 | 7.14 |
| 1928 | 109.1 | 8.2 | 0.8 | 92.6 | 11262 | 8.22 | 131 | 89.5 | 6.28 | 8.86 |
| 1929 | 115.1 | 7.9 | 1.0 | 99.1 | 11390 | 8.70 | 127 | 84.0 | 6.85 | 9.72 |
| 1930 | 101.8 | 8.1 | 0.3 | 86.2 | 11518 | 7.48 | 114 | 79.6 | 6.57 | 8.91 |
| 1931 | 80.3 | 7.7 | -0.6 | 65.6 | 11649 | 5.63 | 106 | 78.9 | 5.31 | 7.07 |
| 1932 | 67.9 | 7.4 | -1.8 | 52.4 | 11781 | 4.45 | 91 | 76.9 | 4.89 | 5.64 |
| 1933 | 61.9 | 7.1 | -2.9 | 45.1 | 11915 | 3.79 | 77 | 77.0 | 4.92 | 4.92 |
| 1934 | 68.5 | 7.7 | 0.3 | 54.6 | 12050 | 4.53 | 95 | 77.5 | 4.77 | 5.88 |
| 1935 | 76.0 | 7.0 | -3.5 | 58.1 | 12187 | 4.77 | 104 | 79.8 | 4.58 | 6.15 |
| 1936 | 79.3 | 6.4 | 1.2 | 66.9 | 12325 | 5.43 | 92 | 81.3 | 5.90 | 6.81 |
| 1937 | 82.6 | 5.6 | -1.2 | 68.5 | 12486 | 5.49 | 96 | 100.0 | 5.72 | 6.75 |
| 1938 | 82.1 | 5.3 | -0.8 | 69.3 | 12788 | 5.42 | 100 | 100.0 | 5.42 | 5.42 |
| 1939 | 79.4 | 5.5 | -0.4 | 66.5 | 12939 | 5.14 | 101 | 107.7 | 5.08 | 5.14 |
| 1940 | 84.9 | 5.7 | -0.7 | 71.1 | 13172 | 5.40 | 125 | 116.1 | 4.31 | 5.01 |
| 1941 | 95.1 | 6.1 | -1.1 | 77.8 | 13408 | 5.80 | 156 | 147.5 | 3.73 | 5.00 |
| 1942 | 107.5 | 5.7 | -1.7 | 89.0 | 13610 | 6.54 | 208 | 167.0 | 3.14 | 4.44 |
| 1943 | 159.8 | 5.6 | -1.8 | 138.1 | 13895 | 9.94 | 264 | 209.8 | 3.76 | 5.95 |
| 1944 | 161.9 | 4.8 | -1.6 | 143.0 | 14145 | 10.11 | 306 | 250.3 | 3.30 | 4.82 |
| 1945 | 194.5 | 5.0 | -1.8 | 171.7 | 14399 | 11.92 | 326 | 241.1 | 3.65 | 4.76 |

Source: See the text.

of rents in net output, which is equivalent of the gross crop and animal output net of fodder and seeds, declined from 51 percent in 1923-1927 to 47.7 percent in 1936-1938.[83] Consequently, even if we considered the impact of rentals, we would not arrive at a different conclusion about the long-term movement of the average farm income.

That said, the stagnation in average farm income does not precisely reflect how the purchasing power of the bulk of the rural population changed over time. That is because there were factors working to the disadvantage or advantage of the different sections of the rural population. Although it is impossible to gauge the precise extent of income inequality, some conjectures can be suggested. First, the Gini coefficient for landownership does not show any serious deterioration between 1914 and 1952.[84] Second, based on both fragmentary evidence and the nature of agricultural growth in the 1930s, there is reason to believe that the position of landless labourers did not really deteriorate. The average wage per day was around 2.5 piastres in 1914 at 1938 prices and it remained around 3 piastres (again at 1938 prices) in the 1930s.[85] The evidence is on a par with the labour-intensive character of growth in the 1930s, as mentioned above. The expanded application of water, fertilisers and two-year crop rotation must have increased the demand for labour, which was likely to have checked the pressure on wages.

On the other hand, the case of small farmers was more complicated. Among those who were solely dependent on farm income, that is, those who were out of the labour market, the conditions were more favourable for the richer: those who had the capacity to purchase fertilisers and were able to shift to a 2-year rotation could more easily escape the deflationary pressure. In other words, since increasing the cropped area through irrigation and the yields with better seeds and fertilisers were the only way to increase output, the position of rich farmers was more advantageous. Yet government attempts to ease the financial burden on small farmers by abolishing the Five Feddan Law, extending credits through Credit Agricole, providing tax relief and reducing rents in certain years must have been helpful, even though some of these measures only had a short-term impact. A conclusive analysis is impossible,

[83]Hansen, Distributive Shares

[84]Richards, *Egypt's Agricultural Development*, p.153.

[85]Richards, *Egypt's Agricultural Development*, p.159. A similar pattern is also mentioned by Issawi, who argues that rural wages increased by 15-20 percent between 1912 and 1929 and then halved during the depression. Issawi, *Egypt at Mid-Century*, p.131.

then, but one can assume that the well being of all rural classes in the interwar period increasingly depended on their access to seeds, fertilisers and waters, and therefore to credits and cash. Therefore, as the access to resources varied from one group to another, they experienced the agricultural crisis in varying ways.

## 5.4. Conclusion

Whether measured by per capita crop output, net agricultural output or farm income, Egyptian agriculture undisputedly suffered from a long-term stagnation during 1914-1945. In this sense, the conventional wisdom has rightly emphasised the role of land scarcity and population increase in the long term.[86] Facing the unfavourable set of factor endowments, farmers sought to increase output in all possible ways: cultivating more valuable crops (like cotton, rice and sugar cane), employing better cultivation methods, using better seeds and applying chemical fertilisers.[87] The Egyptian government successfully eased the debt and liquidity crisis in the early 1930s in response to powerful landed interests, yet it was equally unsuccessful, until 1933, in its bid to increase the price of Egyptian cotton in the world market by means of supply restrictions. Whether the policy of cotton acreage restrictions was doomed to fail is still an open question.

All that being said, it is also important to note that the interwar performance of Egypt's agriculture was not as poor as is usually portrayed. In this chapter the new estimates of cultivation costs, livestock value added and the net agricultural output have strikingly shown how Egypt's agricultural production became increasingly resource-intensive, which offset the massive impact of deflation. From the onset of World War I to 1939, a moderate increase in net output (8 percent) was achieved due to the almost fourfold increase in costs and the 126 percent rise in livestock output. The decomposition of the growth of crop output also clearly indicates that the earlier deterioration in yields was reversed between 1920 and 1939, as the average yields increased by one third, even if the expansion in cropped area in the 1920s could not be continued into the 1930s due to the unfavourable prices (Table 5.1). In this respect, it would seem that Hansen and Marzouk's argu-

[86] O'Brien, Long-term Growth, p.190; and O'Brien, *Egypt's Economic System*, pp.3-12
[87] Richards, *Egypt's Agricultural Development*.

ment that Malthusian nightmares for Egyptian agriculture were relevant until the mid-1930s is misplaced since productivity gains started to be realised in the 1920s.[88] Therefore, the performance of Egyptian agriculture should not be underestimated, given the resource constraints and unavoidable external price shocks that it faced. Given that the agricultural production was almost irreversibly dependent on a valuable crop, long staple cotton, and the social and institutional framework was to a large extent rigid, even the success to offset the decline in prices deserves due credit. In other words, Egyptian agriculture had reached the margins of extensive growth by the onset of the World War I and it made a moderate yet significant progress toward intensive growth in the interwar period.

[88] Hansen and Marzouk, *Development and Economic Policy*, p.77.

## 5.5. Data Appendix

Table 5.8.: Output of Major Crops in Egypt (1,000 feddans), 1913-1945

| | Cotton | Cotton seed | Rice | Wheat | Maize | Millet | Barley | Sugar-cane | Beans | Onion | Lentils | Helba |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1913 | 1723 | 1723 | 225 | 1306 | 1686 | 204 | 369 | 48 | 478 | 28 | 60 | 50 |
| 1914 | 1755 | 1755 | 43 | 1253 | 1820 | 285 | 383 | 48 | 428 | 16 | 35 | 37 |
| 1915 | 1186 | 1186 | 320 | 1534 | 1777 | 275 | 446 | 52 | 623 | 23 | 63 | 48 |
| 1916 | 1656 | 1656 | 148 | 1394 | 1675 | 245 | 423 | 59 | 503 | 30 | 62 | 57 |
| 1917 | 1677 | 1677 | 263 | 1076 | 1623 | 264 | 479 | 62 | 472 | 28 | 92 | 92 |
| 1918 | 1316 | 1316 | 371 | 1239 | 1745 | 303 | 324 | 64 | 476 | 44 | 68 | 103 |
| 1919 | 1574 | 1574 | 144 | 1275 | 1727 | 257 | 343 | 57 | 505 | 29 | 62 | 92 |
| 1920 | 1828 | 1828 | 159 | 1147 | 1867 | 249 | 328 | 52 | 418 | 33 | 70 | 90 |
| 1921 | 1290 | 1290 | 312 | 1405 | 2009 | 259 | 380 | 64 | 494 | 27 | 78 | 79 |
| 1922 | 1801 | 1801 | 48 | 1462 | 1960 | 237 | 361 | 63 | 476 | 35 | 85 | 75 |
| 1923 | 1715 | 1715 | 179 | 1481 | 1797 | 224 | 386 | 56 | 471 | 40 | 80 | 76 |
| 1924 | 1788 | 1788 | 246 | 1364 | 1809 | 230 | 359 | 51 | 436 | 39 | 73 | 84 |
| 1925 | 1924 | 1924 | 137 | 1329 | 2000 | 213 | 353 | 51 | 446 | 39 | 64 | 103 |
| 1926 | 1786 | 1786 | 229 | 1475 | 2086 | 273 | 321 | 52 | 414 | 36 | 63 | 74 |
| 1927 | 1516 | 1516 | 420 | 1594 | 2133 | 255 | 362 | 47 | 447 | 41 | 81 | 74 |
| 1928 | 1738 | 1738 | 255 | 1532 | 2059 | 232 | 353 | 57 | 511 | 52 | 84 | 64 |
| 1929 | 1841 | 1841 | 316 | 1555 | 2086 | 255 | 386 | 54 | 502 | 58 | 69 | 70 |
| 1930 | 2082 | 2082 | 346 | 1466 | 1827 | 260 | 332 | 54 | 424 | 41 | 74 | 75 |
| 1931 | 1683 | 1683 | 65 | 1589 | 2113 | 330 | 295 | 65 | 424 | 43 | 82 | 105 |
| 1932 | 1094 | 1094 | 472 | 1697 | 1968 | 346 | 352 | 70 | 592 | 45 | 91 | 122 |
| 1933 | 1804 | 1804 | 422 | 1374 | 1578 | 263 | 282 | 71 | 469 | 64 | 85 | 88 |
| 1934 | 1732 | 1732 | 392 | 1389 | 1572 | 295 | 274 | 60 | 432 | 41 | 88 | 87 |
| 1935 | 1669 | 1669 | 471 | 1410 | 1575 | 335 | 271 | 60 | 416 | 35 | 81 | 81 |
| 1936 | 1716 | 1716 | 471 | 1410 | 1520 | 333 | 272 | 61 | 395 | 33 | 78 | 94 |
| 1937 | 1978 | 1978 | 263 | 1369 | 1559 | 320 | 261 | 68 | 386 | 42 | 76 | 92 |
| 1938 | 1784 | 1784 | 476 | 1416 | 1497 | 390 | 264 | 68 | 385 | 26 | 79 | 86 |
| 1939 | 1625 | 1625 | 545 | 1446 | 1549 | 412 | 263 | 72 | 385 | 35 | 81 | 83 |
| 1940 | 1685 | 1685 | 509 | 1506 | 1540 | 374 | 268 | 76 | 394 | 30 | 82 | 80 |
| 1941 | 1644 | 1644 | 448 | 1502 | 1527 | 429 | 256 | 78 | 369 | 33 | 82 | 79 |
| 1942 | 706 | 706 | 673 | 1576 | 1983 | 824 | 321 | 88 | 359 | 17 | 76 | 110 |
| 1943 | 713 | 713 | 642 | 1917 | 1951 | 729 | 419 | 87 | 381 | 19 | 57 | 57 |
| 1944 | 853 | 853 | 620 | 1651 | 1890 | 728 | 331 | 96 | 425 | 21 | 81 | 52 |
| 1945 | 982 | 982 | 630 | 1647 | 1879 | 684 | 359 | 96 | 392 | 22 | 75 | 55 |

Source: el-Imam, *A Production Function for Egyptian Agriculture*

Table 5.9.: Crop Yields in Egypt (Per 1000 Feddans), 1913-1945

| | Cotton | Cotton seed | Rice | Wheat | Maize | Millet | Barley | Sugar-cane | Beans | Onion | Lentils | Helba |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | cantar | Ardeb | Dariba | Ardeb | Ardeb | Ardeb | Ardeb | 100 cantars | Ardeb | cantar | Ardeb | Ardeb |
| 1913 | 4440 | 3040 | 1620 | 5250 | 6330 | 7460 | 5860 | 6550 | 5530 | 1900 | 4700 | 3800 |
| 1914 | 3670 | 2600 | 1130 | 4750 | 7160 | 8070 | 5240 | 6750 | 4410 | 1440 | 3880 | 3800 |
| 1915 | 4020 | 3060 | 1370 | 4630 | 7410 | 8260 | 5600 | 6680 | 4470 | 1570 | 3520 | 3800 |
| 1916 | 3060 | 2330 | 1230 | 4750 | 6960 | 8110 | 5650 | 6750 | 4000 | 1570 | 3960 | 3910 |
| 1917 | 3750 | 2870 | 1460 | 5030 | 7150 | 7330 | 5720 | 6550 | 4530 | 1410 | 3620 | 3690 |
| 1918 | 3660 | 2810 | 1470 | 4710 | 6810 | 8400 | 5680 | 6350 | 4730 | 1570 | 3980 | 3800 |
| 1919 | 3540 | 2710 | 1340 | 4290 | 6720 | 8430 | 5330 | 6750 | 4480 | 1500 | 3910 | 3710 |
| 1920 | 3300 | 2530 | 1410 | 5020 | 6860 | 8420 | 5780 | 6890 | 4460 | 1510 | 3590 | 3650 |
| 1921 | 3370 | 2590 | 1200 | 4780 | 6070 | 8070 | 5710 | 6520 | 4460 | 1460 | 3990 | 3350 |
| 1922 | 3730 | 2860 | 910 | 4550 | 6150 | 7970 | 5680 | 6540 | 4440 | 1410 | 3580 | 3300 |
| 1923 | 3810 | 2920 | 1340 | 4980 | 6780 | 8050 | 5640 | 6840 | 4430 | 1410 | 3040 | 3030 |
| 1924 | 4070 | 3090 | 1320 | 4550 | 6780 | 8230 | 5440 | 7420 | 3950 | 1480 | 4060 | 3340 |
| 1925 | 4140 | 3160 | 1360 | 4940 | 7000 | 8450 | 5720 | 6930 | 4450 | 1480 | 4020 | 3350 |
| 1926 | 4290 | 3270 | 1380 | 4570 | 7010 | 8790 | 5710 | 7040 | 3870 | 1410 | 3750 | 3160 |
| 1927 | 4010 | 3050 | 1360 | 5050 | 6960 | 8330 | 6000 | 6920 | 4650 | 1510 | 4120 | 3470 |
| 1928 | 4640 | 3510 | 1420 | 4420 | 6920 | 9020 | 5550 | 7470 | 3800 | 1480 | 2780 | 3090 |
| 1929 | 4630 | 3510 | 1410 | 5280 | 7010 | 9170 | 5950 | 6640 | 4560 | 1600 | 3740 | 3320 |
| 1930 | 3970 | 3000 | 1390 | 4920 | 6940 | 8580 | 5740 | 6440 | 4310 | 1430 | 3800 | 3210 |
| 1931 | 3780 | 2850 | 1180 | 5260 | 6710 | 8950 | 5970 | 7250 | 4170 | 1490 | 3760 | 3250 |
| 1932 | 4530 | 3420 | 1250 | 5600 | 7010 | 8850 | 6210 | 7180 | 4870 | 1490 | 3930 | 3250 |
| 1933 | 4750 | 3580 | 1350 | 5280 | 6680 | 8230 | 5950 | 7240 | 4470 | 1480 | 3820 | 3200 |
| 1934 | 4360 | 3290 | 1400 | 4870 | 7140 | 9210 | 5980 | 7870 | 4090 | 1440 | 3490 | 3100 |
| 1935 | 5110 | 3800 | 1600 | 5560 | 7660 | 9870 | 7010 | 7710 | 4550 | 1410 | 4120 | 3310 |
| 1936 | 5310 | 3990 | 1570 | 5880 | 7490 | 8750 | 7220 | 7730 | 4890 | 1470 | 4210 | 3600 |
| 1937 | 5570 | 3700 | 1510 | 6010 | 7560 | 9080 | 7350 | 7820 | 4940 | 1560 | 4490 | 3630 |
| 1938 | 4670 | 3160 | 1630 | 5880 | 7490 | 8620 | 7350 | 7510 | 4780 | 1630 | 4040 | 3710 |
| 1939 | 5350 | 3600 | 1740 | 6150 | 7030 | 9260 | 7550 | 7590 | 5130 | 1710 | 4840 | 3840 |
| 1940 | 5440 | 3650 | 1390 | 6020 | 7090 | 8670 | 7500 | 7330 | 5090 | 1660 | 4800 | 3840 |
| 1941 | 5090 | 3400 | 1350 | 4990 | 6000 | 7810 | 6860 | 6780 | 4980 | 1690 | 4720 | 4900 |
| 1942 | 6000 | 3990 | 1480 | 5340 | 5230 | 8360 | 7170 | 6330 | 4980 | 1390 | 4600 | 3780 |
| 1943 | 5000 | 3430 | 1130 | 4490 | 4040 | 7580 | 6250 | 5570 | 4810 | 1350 | 4680 | 3580 |
| 1944 | 5440 | 3730 | 1390 | 3820 | 5890 | 7490 | 5710 | 6040 | 4900 | 1250 | 3970 | 3680 |
| 1945 | 4310 | 3610 | 1450 | 4790 | 6450 | 7660 | 6080 | 6110 | 5070 | 1620 | 4400 | 3940 |

Source: el-Imam, *A Production Function for Egyptian Agriculture*

Table 5.10.: Crops Prices in Egypt (Current Prices, 1/1000 LE), 1913-1945

| | Cotton | Cotton seed | Rice | Wheat | Maize | Millet | Barley | Sugar-cane | Beans | Onion | Lentils | Helba |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | cantar | ardeb | dariba | ardeb | ardeb | ardeb | ardeb | 100 cantars | ardeb | cantar | ardeb | ardeb |
| 1913 | 3803 | 895 | 8750 | 1406 | 1093 | 1006 | 958 | 3200 | 1343 | 10500 | 1428 | 1148 |
| 1914 | 2402 | 673 | 8146 | 1381 | 925 | 828 | 789 | 3300 | 1334 | 31600 | 1577 | 1389 |
| 1915 | 3857 | 1056 | 8706 | 1526 | 1051 | 1017 | 1036 | 3500 | 1156 | 20000 | 1791 | 1763 |
| 1916 | 7562 | 1184 | 13676 | 1880 | 1603 | 1435 | 1110 | 4000 | 1822 | 16800 | 1871 | 2417 |
| 1917 | 7703 | 891 | 15251 | 3081 | 1956 | 1974 | 1415 | 4900 | 2224 | 30700 | 2068 | 3728 |
| 1918 | 7440 | 973 | 15663 | 3107 | 2195 | 2064 | 1710 | 5500 | 2450 | 16500 | 2520 | 3008 |
| 1919 | 17562 | 2157 | 28306 | 3649 | 3040 | 3553 | 2505 | 6500 | 4036 | 39100 | 3814 | 3280 |
| 1920 | 6900 | 1252 | 16293 | 3275 | 1294 | 1216 | 2072 | 10200 | 4093 | 32600 | 3554 | 3348 |
| 1921 | 6858 | 1235 | 14228 | 1989 | 1110 | 1120 | 951 | 9200 | 1569 | 43400 | 1811 | 1818 |
| 1922 | 6142 | 1088 | 15243 | 1684 | 1162 | 1227 | 1135 | 6000 | 2043 | 29300 | 1565 | 1944 |
| 1923 | 7959 | 1256 | 11585 | 1469 | 1245 | 1216 | 941 | 4800 | 2138 | 14200 | 1514 | 2947 |
| 1924 | 7897 | 1365 | 13011 | 1961 | 1688 | 1787 | 1221 | 5000 | 2423 | 20400 | 2102 | 3914 |
| 1925 | 6093 | 984 | 13571 | 2158 | 1282 | 1361 | 1182 | 4300 | 2305 | 24400 | 2540 | 2089 |
| 1926 | 4306 | 873 | 10771 | 1703 | 878 | 902 | 1009 | 3800 | 2638 | 24300 | 2141 | 1505 |
| 1927 | 5936 | 1130 | 9861 | 1385 | 1113 | 1177 | 880 | 3900 | 1872 | 20800 | 1701 | 1402 |
| 1928 | 5176 | 975 | 10246 | 1620 | 1279 | 1220 | 940 | 3800 | 1590 | 16600 | 2108 | 2020 |
| 1929 | 4072 | 818 | 9511 | 1420 | 950 | 751 | 720 | 3700 | 1510 | 10900 | 1851 | 2030 |
| 1930 | 2410 | 540 | 8313 | 1291 | 950 | 890 | 700 | 4100 | 1830 | 20600 | 1721 | 1740 |
| 1931 | 2016 | 612 | 9730 | 1320 | 775 | 740 | 880 | 3800 | 1590 | 23400 | 1429 | 1227 |
| 1932 | 2456 | 690 | 6020 | 1070 | 590 | 550 | 560 | 3500 | 850 | 16200 | 900 | 800 |
| 1933 | 2278 | 393 | 6248 | 1120 | 1043 | 939 | 465 | 3400 | 878 | 4600 | 1022 | 996 |
| 1934 | 2650 | 596 | 7403 | 1499 | 1060 | 908 | 901 | 3400 | 1550 | 17300 | 1755 | 2480 |
| 1935 | 2726 | 643 | 6668 | 1427 | 734 | 629 | 847 | 3400 | 1527 | 15100 | 1704 | 2234 |
| 1936 | 2870 | 768 | 7070 | 1149 | 838 | 820 | 505 | 3400 | 1277 | 19300 | 1469 | 1280 |
| 1937 | 2154 | 532 | 8129 | 1265 | 1073 | 972 | 738 | 3400 | 1332 | 9000 | 1529 | 1150 |
| 1938 | 2136 | 604 | 6799 | 1445 | 1051 | 779 | 703 | 3400 | 1497 | 23100 | 1555 | 1217 |
| 1939 | 2896 | 509 | 6991 | 1355 | 942 | 782 | 682 | 3600 | 1262 | 13900 | 1414 | 1414 |
| 1940 | 2818 | 640 | 8409 | 1364 | 1253 | 972 | 763 | 4400 | 1154 | 14600 | 1776 | 2009 |
| 1941 | 3320 | 641 | 10518 | 1781 | 1210 | 1035 | 1300 | 4500 | 2476 | 12000 | 2463 | 2706 |
| 1942 | 4094 | 1022 | 15181 | 2900 | 2330 | 2330 | 2200 | 7100 | 3290 | 18000 | 2790 | 2770 |
| 1943 | 5184 | 1010 | 17351 | 2900 | 2330 | 2330 | 2250 | 9100 | 4020 | 39000 | 4450 | 3600 |
| 1944 | 6116 | 1010 | 19085 | 3980 | 2630 | 2630 | 2250 | 9100 | 4020 | 66000 | 4450 | 6171 |
| 1945 | 6526 | 1010 | 19085 | 3980 | 2630 | 2630 | 2490 | 9100 | 4020 | 38000 | 4450 | 5670 |

Source: el-Imam, *A Production Function for Egyptian Agriculture*

Table 5.11.: Estimated Cultivation Costs in Egypt, 1914-1945

| | Seeding cost | Fertiliser imports | Oil prices | Oil and maintenance cost index | Oil and maintenance cost at 1938 prices |
|---|---|---|---|---|---|
| | LE Million | LE Million | Piastres/4 Gallons | | LE Million |
| 1914 | 2.8 | 0.61 | 12 | 948 | 4.63 |
| 1915 | 2.9 | 0.66 | 12.4 | 974 | 4.75 |
| 1916 | 3.2 | 0.38 | 13.9 | 1047 | 5.11 |
| 1917 | 4 | 0.75 | 20 | 1582 | 7.72 |
| 1918 | 5.3 | 0.09 | 22.7 | 1772 | 8.64 |
| 1919 | 5.3 | 1.43 | 28.6 | 2108 | 10.28 |
| 1920 | 7.7 | 2.90 | 27.1 | 2070 | 10.1 |
| 1921 | 6.4 | 0.67 | 31.8 | 2566 | 12.52 |
| 1922 | 4.4 | 1.44 | 33.1 | 2544 | 12.41 |
| 1923 | 4.1 | 1.06 | 21.2 | 1782 | 8.69 |
| 1924 | 3.9 | 1.79 | 15.4 | 1266 | 6.18 |
| 1925 | 4.8 | 2.46 | 16.6 | 1372 | 6.7 |
| 1926 | 4.5 | 2.28 | 13.1 | 1124 | 5.49 |
| 1927 | 4 | 1.90 | 12.4 | 1066 | 5.2 |
| 1928 | 3.8 | 2.32 | 11.5 | 976 | 4.76 |
| 1929 | 4.1 | 2.55 | 12.5 | 1084 | 5.29 |
| 1930 | 3.4 | 2.42 | 11.6 | 1048 | 5.11 |
| 1931 | 3 | 1.80 | 10.1 | 915 | 4.47 |
| 1932 | 3.4 | 1.65 | 8.1 | 687 | 3.35 |
| 1933 | 2.5 | 1.85 | 7.6 | 604 | 2.95 |
| 1934 | 2.4 | 2.17 | 10.6 | 880 | 4.29 |
| 1935 | 3.2 | 2.56 | 10.4 | 842 | 4.11 |
| 1936 | 2.9 | 2.66 | 10.8 | 872 | 4.25 |
| 1937 | 2.7 | 3.39 | 10.8 | 875 | 4.27 |
| 1938 | 2.9 | 2.96 | 11.1 | 932 | 4.54 |
| 1939 | 3.1 | 2.86 | 9.6 | 792 | 3.87 |
| 1940 | 2.9 | 3.27 | 10 | 812 | 3.96 |
| 1941 | 3.2 | 0.11 | 11.2 | 922 | 4.5 |
| 1942 | 4.3 | 2.74 | 17.4 | 1408 | 6.87 |
| 1943 | 7.2 | 3.41 | 18.4 | 1369 | 6.68 |
| 1944 | 7.5 | 5.32 | 19 | 1460 | 7.12 |
| 1945 | 8.9 | 4.18 | 13.7 | 1041 | 5.08 |

Source: See the text.

Table 5.12.: Meat Output in Egypt: Cattle and Buffaloes, 1914-1945

| | Cattle | | | | | Buffaloes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Flock size | Slaughtered animals | Output | Prices | Output value | Flock size | Slaughtered animals | Output | Prices | Output value |
| | ’000 | ’000 | Tons | Piastres/kg | LE Millions | ’000 | ’000 | Tons | Piastres/kg | LE Millions |
| 1914 | 601 | 90 | 14262 | 5.28 | 0.75 | 568 | 87 | 12010 | 4.21 | 0.51 |
| 1915 | 554 | 83 | 13135 | 4.75 | 0.62 | 538 | 82 | 11370 | 3.79 | 0.43 |
| 1916 | 493 | 74 | 11688 | 5.66 | 0.66 | 515 | 79 | 10884 | 4.51 | 0.49 |
| 1917 | 515 | 77 | 12215 | 7.71 | 0.94 | 566 | 87 | 11954 | 6.13 | 0.73 |
| 1918 | 517 | 77 | 12260 | 10.86 | 1.33 | 571 | 87 | 12067 | 8.64 | 1.04 |
| 1919 | 505 | 76 | 11985 | 12.08 | 1.45 | 540 | 83 | 11404 | 9.58 | 1.09 |
| 1920 | 562 | 84 | 13322 | 13.09 | 1.74 | 585 | 90 | 12367 | 10.39 | 1.29 |
| 1921 | 596 | 89 | 14140 | 9.39 | 1.33 | 646 | 99 | 13640 | 7.43 | 1.01 |
| 1922 | 585 | 87 | 13875 | 8.71 | 1.21 | 616 | 94 | 13026 | 7.08 | 0.92 |
| 1923 | 631 | 94 | 14982 | 6.69 | 1.00 | 656 | 100 | 13867 | 5.80 | 0.80 |
| 1924 | 689 | 103 | 16353 | 7.03 | 1.15 | 727 | 111 | 15362 | 5.97 | 0.92 |
| 1925 | 678 | 101 | 16076 | 7.74 | 1.24 | 723 | 111 | 15275 | 6.88 | 1.05 |
| 1926 | 722 | 108 | 17124 | 7.94 | 1.36 | 763 | 117 | 16124 | 7.74 | 1.25 |
| 1927 | 740 | 111 | 17546 | 7.55 | 1.32 | 758 | 116 | 16014 | 5.95 | 0.95 |
| 1928 | 792 | 118 | 18785 | 7.33 | 1.38 | 788 | 121 | 16660 | 5.75 | 0.96 |
| 1929 | 801 | 120 | 18999 | 7.27 | 1.38 | 823 | 126 | 17381 | 5.65 | 0.98 |
| 1930 | 776 | 116 | 18411 | 7.09 | 1.31 | 796 | 122 | 16809 | 5.79 | 0.97 |
| 1931 | 792 | 118 | 18794 | 5.04 | 0.95 | 820 | 125 | 17323 | 4.11 | 0.71 |
| 1932 | 909 | 136 | 21565 | 4.30 | 0.93 | 882 | 135 | 18646 | 3.56 | 0.66 |
| 1933 | 912 | 136 | 21638 | 4.08 | 0.88 | 857 | 131 | 18100 | 3.37 | 0.61 |
| 1934 | 924 | 138 | 21927 | 4.32 | 0.95 | 888 | 136 | 18754 | 3.50 | 0.66 |
| 1935 | 953 | 142 | 22612 | 4.86 | 1.10 | 899 | 138 | 18995 | 3.80 | 0.72 |
| 1936 | 1042 | 156 | 24714 | 4.76 | 1.18 | 932 | 143 | 19700 | 3.94 | 0.78 |
| 1937 | 1075 | 161 | 25505 | 4.90 | 1.25 | 958 | 146 | 20232 | 3.94 | 0.80 |
| 1938 | 1109 | 166 | 26321 | 4.78 | 1.26 | 983 | 150 | 20778 | 3.91 | 0.81 |
| 1939 | 1145 | 171 | 27163 | 4.69 | 1.27 | 1010 | 155 | 21339 | 4.06 | 0.87 |
| 1940 | 1068 | 160 | 25341 | 4.71 | 1.19 | 968 | 148 | 20444 | 4.27 | 0.87 |
| 1941 | 991 | 148 | 23518 | 6.18 | 1.45 | 925 | 142 | 19549 | 5.53 | 1.08 |
| 1942 | 1055 | 158 | 25036 | 9.86 | 2.47 | 917 | 140 | 19377 | 8.92 | 1.73 |
| 1943 | 1119 | 167 | 26554 | 14.67 | 3.89 | 909 | 139 | 19204 | 13.70 | 2.63 |
| 1944 | 1148 | 172 | 27249 | 16.31 | 4.45 | 958 | 147 | 20250 | 15.24 | 3.09 |
| 1945 | 1178 | 176 | 27943 | 14.81 | 4.14 | 1008 | 154 | 21296 | 13.76 | 2.93 |

Source: See the text.

Table 5.13.: Meat Output in Egypt: Sheep and Goats, 1914-1945

| | Sheep | Goats | Slaughtered animals | Output | Prices | Output value |
|---|---|---|---|---|---|---|
| | thousands | thousands | thousands | tons | piastres/kg | LE millions |
| 1914 | 816 | 331 | 439 | 6340 | 6.90 | 0.44 |
| 1915 | 755 | 290 | 400 | 5798 | 6.40 | 0.37 |
| 1916 | 688 | 263 | 364 | 5274 | 7.84 | 0.41 |
| 1917 | 808 | 308 | 427 | 6190 | 9.99 | 0.62 |
| 1918 | 854 | 231 | 416 | 6136 | 12.79 | 0.78 |
| 1919 | 858 | 326 | 453 | 6570 | 14.30 | 0.94 |
| 1920 | 824 | 334 | 443 | 6396 | 18.66 | 1.19 |
| 1921 | 986 | 424 | 540 | 7766 | 12.87 | 1.00 |
| 1922 | 942 | 395 | 512 | 7371 | 12.04 | 0.89 |
| 1923 | 962 | 401 | 522 | 7520 | 10.42 | 0.78 |
| 1924 | 1085 | 455 | 590 | 8490 | 11.06 | 0.94 |
| 1925 | 1091 | 455 | 592 | 8530 | 11.58 | 0.99 |
| 1926 | 1144 | 530 | 641 | 9170 | 11.79 | 1.08 |
| 1927 | 1232 | 622 | 710 | 10103 | 10.62 | 1.07 |
| 1928 | 1180 | 548 | 662 | 9466 | 10.63 | 1.01 |
| 1929 | 1003 | 731 | 664 | 9193 | 10.75 | 0.99 |
| 1930 | 1129 | 644 | 679 | 9576 | 10.14 | 0.97 |
| 1931 | 1239 | 636 | 718 | 10204 | 7.70 | 0.79 |
| 1932 | 1344 | 664 | 769 | 10958 | 6.18 | 0.68 |
| 1933 | 1345 | 680 | 775 | 11028 | 5.77 | 0.64 |
| 1934 | 1409 | 688 | 803 | 11452 | 6.14 | 0.70 |
| 1935 | 1430 | 730 | 827 | 11755 | 6.92 | 0.81 |
| 1936 | 1496 | 754 | 862 | 12260 | 6.88 | 0.84 |
| 1937 | 1542 | 793 | 894 | 12706 | 6.95 | 0.88 |
| 1938 | 1590 | 833 | 928 | 13168 | 6.89 | 0.91 |
| 1939 | 1639 | 876 | 963 | 13648 | 6.79 | 0.93 |
| 1940 | 1441 | 774 | 848 | 12011 | 6.28 | 0.75 |
| 1941 | 1242 | 671 | 733 | 10373 | 8.09 | 0.84 |
| 1942 | 1236 | 641 | 719 | 10210 | 13.26 | 1.35 |
| 1943 | 1231 | 612 | 706 | 10047 | 19.29 | 1.94 |
| 1944 | 1214 | 600 | 695 | 9897 | 21.73 | 2.15 |
| 1945 | 1197 | 589 | 684 | 9747 | 19.46 | 1.90 |

Source: See the text.

Table 5.14.: Milk Output in Egypt, 1914-1945

| | Cattle | Buffaloes | Sheep | Goats | Total output | Milk prices | Output value |
|---|---|---|---|---|---|---|---|
| | tons | tons | tons | tons | tons | piastres/kg | LE millions |
| 1914 | 159602 | 248590 | 2644 | 940 | 411776 | 1.47 | 6.03 |
| 1915 | 146989 | 235347 | 2448 | 824 | 385608 | 1.51 | 5.82 |
| 1916 | 130799 | 225293 | 2228 | 747 | 359068 | 1.88 | 6.73 |
| 1917 | 136691 | 247431 | 2616 | 876 | 387615 | 2.64 | 10.22 |
| 1918 | 137200 | 249779 | 2768 | 655 | 390402 | 3.06 | 11.96 |
| 1919 | 134117 | 236061 | 2780 | 925 | 373884 | 3.34 | 12.49 |
| 1920 | 149082 | 255985 | 2668 | 947 | 408682 | 4.90 | 20.02 |
| 1921 | 158228 | 282336 | 3195 | 1205 | 444965 | 4.45 | 19.82 |
| 1922 | 155271 | 269627 | 3051 | 1121 | 429070 | 3.79 | 16.25 |
| 1923 | 167652 | 287034 | 3118 | 1138 | 458942 | 3.56 | 16.35 |
| 1924 | 182992 | 317973 | 3514 | 1291 | 505771 | 3.56 | 18.02 |
| 1925 | 179901 | 316186 | 3535 | 1292 | 500915 | 3.34 | 16.73 |
| 1926 | 191621 | 333764 | 3705 | 1505 | 530596 | 3.23 | 17.14 |
| 1927 | 196344 | 331476 | 3992 | 1767 | 533579 | 3.01 | 16.04 |
| 1928 | 210211 | 344854 | 3822 | 1558 | 560445 | 3.01 | 16.85 |
| 1929 | 212611 | 359770 | 3248 | 2077 | 577705 | 3.01 | 17.37 |
| 1930 | 206030 | 347940 | 3658 | 1829 | 559457 | 2.90 | 16.20 |
| 1931 | 210309 | 358563 | 4015 | 1806 | 574693 | 2.78 | 16.00 |
| 1932 | 241316 | 385955 | 4355 | 1886 | 633512 | 2.23 | 14.11 |
| 1933 | 242141 | 374647 | 4357 | 1930 | 623075 | 2.00 | 12.49 |
| 1934 | 245377 | 388186 | 4565 | 1955 | 640083 | 1.89 | 12.12 |
| 1935 | 253041 | 393187 | 4632 | 2073 | 652933 | 1.89 | 12.36 |
| 1936 | 276561 | 407767 | 4847 | 2143 | 691318 | 1.89 | 13.09 |
| 1937 | 285411 | 418777 | 4997 | 2252 | 711437 | 1.89 | 13.47 |
| 1938 | 294544 | 430084 | 5152 | 2367 | 732147 | 1.89 | 13.86 |
| 1939 | 303970 | 441696 | 5312 | 2487 | 753465 | 1.89 | 14.26 |
| 1940 | 283571 | 423177 | 4668 | 2197 | 713613 | 1.89 | 13.51 |
| 1941 | 263172 | 404659 | 4024 | 1906 | 673761 | 2.12 | 14.26 |
| 1942 | 280161 | 401087 | 4006 | 1822 | 687075 | 3.01 | 20.66 |
| 1943 | 297150 | 397516 | 3987 | 1737 | 700390 | 4.23 | 29.64 |
| 1944 | 304923 | 419162 | 3933 | 1705 | 729722 | 5.12 | 37.38 |
| 1945 | 312696 | 440808 | 3879 | 1672 | 759055 | 5.12 | 38.88 |

Source: See the text.

Table 5.15.: Wool Output in Egypt, 1914-1945

| | Output | Output value | Estimated average raw wool price |
|---|---|---|---|
| | Tons | LE Million | LE/kg |
| 1914 | 1771 | 0.83 | 0.47 |
| 1915 | 1639 | 0.78 | 0.48 |
| 1916 | 1492 | 0.90 | 0.60 |
| 1917 | 1752 | 1.35 | 0.77 |
| 1918 | 1854 | 1.63 | 0.88 |
| 1919 | 1862 | 1.72 | 0.93 |
| 1920 | 1787 | 2.62 | 1.47 |
| 1921 | 2140 | 2.50 | 1.17 |
| 1922 | 2043 | 2.08 | 1.02 |
| 1923 | 2088 | 2.05 | 0.98 |
| 1924 | 2354 | 2.27 | 0.96 |
| 1925 | 2368 | 2.16 | 0.91 |
| 1926 | 2482 | 2.25 | 0.91 |
| 1927 | 2674 | 2.09 | 0.78 |
| 1928 | 2560 | 2.18 | 0.85 |
| 1929 | 2176 | 2.24 | 1.03 |
| 1930 | 2450 | 2.10 | 0.86 |
| 1931 | 2689 | 1.99 | 0.74 |
| 1932 | 2917 | 1.77 | 0.61 |
| 1933 | 2918 | 1.58 | 0.54 |
| 1934 | 3058 | 1.56 | 0.51 |
| 1935 | 3102 | 1.61 | 0.52 |
| 1936 | 3246 | 1.63 | 0.50 |
| 1937 | 3347 | 1.87 | 0.56 |
| 1938 | 3450 | 1.81 | 0.53 |
| 1939 | 3557 | 1.79 | 0.50 |
| 1940 | 3126 | 1.76 | 0.56 |
| 1941 | 2695 | 1.90 | 0.71 |
| 1942 | 2683 | 2.83 | 1.06 |
| 1943 | 2671 | 4.11 | 1.54 |
| 1944 | 2634 | 5.08 | 1.93 |
| 1945 | 2598 | 5.17 | 1.99 |

Source: See the text.

# 6. Estimating Industrial Growth in Egypt, 1919-1945

## 6.1. Introduction

Making a comprehensive estimate of output growth in Egyptian industry before World War II is a difficult task and has never before been attempted. Hansen has come closest in his attempt to estimate the consumption of several goods, including cereals, tobacco, sugar and cotton cloth, for some benchmark years between 1886/87 and 1937, although his coverage was far from representative of the whole of industry because his main concern was to measure consumption, rather than output per se.[1] Other than that, it is worth mentioning two notable studies on the history of Egyptian industry. First, the monograph on the Egyptian cotton industry written by Andre Eman in 1942 included some output indices of cotton yarn and cloth for the 1930s.[2] Second, Samir Radwan's detailed long-term study of capital formation in Egyptian industry and agriculture provides the only estimates of fixed capital for 1882-1967, which remain the only long-term series to give an indication of industrial performance for the interwar period.[3]

The conventional interpretation of Egypt's industry in the interwar period was summarised in the Introduction. It draws heavily on anecdotal evidence, trade statistics for some key commodities and some further fragmentary output evidence, all of which are frequently cited in the main historical texts. For instance, the output data of some highly capitalised and concentrated industries like sugar and cement is easy to obtain.[4] For other less docu-

[1]Hansen, Income and Consumption.

[2]Andre Eman, *L'Industrie du Coton en Égypte*. Imprimerie de L'Institute Français, 1943.

[3]Radwan, *Capital Formation*.

[4]This kind of data can be found in Aly Ahmed el-Gritly, *The Structure of Modern Industry in Egypt*. Ph. D thesis, London School of Economics and Political Science, 1947, pp.233-38; Issawi, *Egypt at Mid-Century*, p.141; and Crouchley, *Economic Develop-*

mented branches, like cotton yarn, seed oil and cloth, by contrast, just a few benchmark figures, usually representing factory output, have been provided.[5] Furthermore, trade statistics give an idea of the local consumption of goods for which Egypt was wholly dependent for imports (like iron products and machines). An oft-cited work on the development of industry during the war estimated the domestic share of the supply of some goods by 1939, and these figures have usually been considered as indicative of the depth of import substitution over the course of the 1930s.[6]

However, neither long-term series nor comprehensive benchmark estimates of industrial output exist to date. This is mainly because, despite the abundance of statistical material for other areas of economy, such as agriculture and foreign trade, extensive material on industrial activities only began to be published as late as the World War II period. The first industrial census was undertaken in 1944, and for the inter-war period the most direct comprehensive industrial data is limited to employment and related statistics published as part of the population and industrial and commercial censuses of the earlier years.[7] However, as seen in the summary of the results of the population censuses in Table 6.1, they do not seem to be particularly consistent. Most remarkably, the share of the population employed in manufacturing, utilities and construction seems to have declined between 1927 and 1937, which seems strange because industrialisation is widely believed to have begun in Egypt during the 1930s.

Industrial activity during World War II, by contrast, has received more empirical attention. First, there is the estimate of constant price industrial "value added" for 1939-1945 by Anis.[8] His methodology is, however, laden with ambiguities and appears imprecise – indeed, it just seems to be an index produced by means of extrapolating backward a 1945 value added estimate by a low-quality employment index. The second estimate covering 1938-1946 is

*ment*, pp.227-31.

[5]Hansen and Marzouk, *Development and Economic Policy*, p.114; and O'Brien, *Egypt's Economic System*, pp.13-14. Tignor, *State and Private Enterprise* brings together this kind of evidence throughout his book, along with various contemporary official estimates of textile output not cited in other classic works, which will be used in the present estimate as well. Tignor, *State and Private Enterprise*, pp.38-39, 52-53, 101, 131, 133.

[6]UK, *Egypt: Review of Commercial Conditions.* His Majesty's Stationary Office, 1945.

[7]Note that the "industrial and commercial censuses" carried out in 1927, 1937 and 1947 and the "industrial censuses" after 1944 were different in methodology and coverage.

[8]Anis, A Study of National Income.

Table 6.1.: Composition of Economically Active Population in Egypt (%): Census Results

| | 1907 | 1917 | 1927 | 1937 | 1947 |
|---|---|---|---|---|---|
| Agriculture | 68.2 | 68.0 | 67.4 | 69.5 | 61.6 |
| Mining | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 |
| Manufacturing, Utilities and Construction | 11.0 | 9.9 | 10.1 | 8.4 | 10.4 |
| Trade and Finance | 4.7 | 7.5 | 8.7 | 7.5 | 8.9 |
| Transport and Communication | 2.9 | 3.5 | 3.7 | 2.4 | 3.1 |
| Services | 13.0 | 11.0 | 9.8 | 12.0 | 15.8 |
| TOTAL (Thousands) | 3433 | 4309 | 5249 | 5783 | 6612 |
| Population (Thousands) | 11287 | 12751 | 14218 | 15933 | 19022 |

Source: Radwan, *Capital Formation*, p.283. Based on population censuses.

attributed to Ismail Rifaat, although its construction is completely unknown. Mabro and Radwan maintain that it should be taken seriously, since it seems to be based on official unpublished sources.[9] Another estimate of manufacturing output is provided by Hansen and Marzouk for 1939-1962, but the selected commodities are not spelled out.[10] Then we have the benchmark estimates for 1939 and 1945 suggested by Mead and for 1938 and 1946 by Issawi.[11] The first is based on the output indices of some commodities, which were not stated explicitly, combined with 1947 value added weights. Issawi based his index on the output of a number of commodities without an explicit mention of the index methods he used. Finally, Mabro and Radwan provides a Laspeyres output index of 24 commodities for 1938-1946, for which direct output data or suitable proxies are available.[12] All these estimates will be discussed and compared with the present estimates at the end of the chapter. For now, it should be said that these alternative series seem to agree on around 35-40 percent aggregate output growth during the war, much of which happened thanks to the substantial contraction of imports at the beginning of the war leading to a greater use of domestic capacity. However, this initial spurt could not be

[9]Mabro and Radwan, *Industrialisation of Egypt*, p.244. Issawi also refers to the same study. Issawi, *Egypt at Mid-Century*, p.143.

[10]Hansen and Marzouk, *Development and Economic Policy*, p.117.

[11]Mead, *Growth and Structural Change*; and Issawi, *Egypt at Mid-Century*, p.173.

[12]Mabro and Radwan, *Industrialisation of Egypt*, p.244. The sectors and the number of output series for each are as follows: cotton ginning (1), textiles (2), food (5), beverages (2), tobacco products (1), building material (1), chemicals (6), paper and products (1), petroleum (4) and mechanical (1). Unfortunately, since no further methodological details are provided, it is impossible to compare the individual indices and weights with those produced later in this chapter.

maintained in the final years of the war due to supply side constraints.[13]

## 6.2. Methodology and Data: An Overview

In view of the absence of consistent long-term measures of industrial activity, this chapter attempts to construct an output index representing the whole industrial sector for the first time. The time span covers all the interwar period extending up to the end of World War II, that is, 1919-1945. Ideally, it would be useful to cover World War I as well, when industrial activities probably expanded because of the wartime conditions.[14] However, the methods and data used for the present estimates are probably not sufficient to capture this growth. First, some of the series used do not go back as far as the 1910s. Second, some of the assumptions made in the construction of the series for the 1920s probably do not reflect the extraordinary foreign trade conditions of the war. And last but not least, the import statistics play a key role in our methodology and unfortunately the discontinuity in some key statistics – for instance, in silk and woollen textiles – would lead to complications.

The methodology employed is similar to the one employed in the construction of output indices for Turkish industry in Chapter 3. First, we construct the individual output indices, both for the main sectors where direct output data is available and for those where we could construct suitable consumption proxies. For sugar, vegetable oil and mining output, there is continuous or interrupted direct output data. For most other sectors (milling, dairy and cigarette making), raw material consumption measures are used as a proxy. Finally, for textiles, domestic yarn output is combined with net yarn imports to get the total yarn consumption, which represents the growth of domestic textile output. These indices are obtained through a careful examination of the structure of each industry. In the cases where the domestic raw material output is not precisely known, the massive dependence on imports made the procedure relative easy. Silk cloth is an example of this, as the local raw silk production was negligible, making the yarn and cloth production almost exclusively dependent on the import of the raw material. The same applies to cigarette making, since tobacco was not produced in Egypt, so all tobacco leaves and manufactured tobacco products were imported. Table 6.2

[13] Mabro and Radwan, *Industrialisation of Egypt*, p.81.
[14] Egypt, *Rapport*.

Table 6.2.: Overview of the Sectoral Output Estimates for Egyptian Industry

| Sector | Proxy measure |
|---|---|
| Cotton ginning and pressing | Raw cotton output |
| Cotton textiles | Cotton yarn consumption |
| Woollen textiles | Woollen yarn consumption |
| Silk textiles | Silk yarn consumption |
| Cereal milling | Wheat and maize consumption |
| Vegetable oil | Cotton seed oil output |
| Sugar | Refined sugar output |
| Dairy | Milk consumption |
| Tobacco | Manufactured tobacco consumption |
| Mineral extraction | Index of petroleum, phosphate, manganese output |
| Fuel-connected | Index of fuel derivatives output |
| Construction | Index of cement, iron, steel, timber consumption |

summarises all the measures for the sectors under consideration.

The next step is to combine the individual output series with the estimated value added shares for three benchmark years: 1927, 1937 and 1944. These shares are worked out backwards from the value added figures of the 1944 Industrial Census. For the backward projection, we use a combination of employment, output and price data, depending on how much is available, as is explained below. Finally, the sectoral value added at 1944 prices is obtained by extrapolating the estimated sectoral value added, based on the results of the 1944 industrial census, with the sectoral output indices and the sum of value added in each sector gives the total industrial value added at 1944 prices. Here the value added breakdown available from the census data determines the degree of refinement in the value added construction.

The main data sources used throughout the study are the comprehensive Egyptian statistical yearbooks (*Annuaire Statistique*), the official foreign trade statistics (both annual and monthly collections), the industrial and agricultural censuses of 1927 and 1937 and finally the British consular economic reports, which not only provided valuable extra data and succinct descriptive notes on the history and structure of various Egyptian industries, but had not been used extensively elsewhere. All these sources are combined with other available fragmentary quantitative and qualitative evidence. Inevitably, both the methodology and data quality are far from ideal, but the degree of imprecision remains at an acceptable level, and in order to check the plausibility of estimates, they are crosschecked with alternative sources and anecdotal accounts, whenever such evidence exists.

## 6.3. Sectoral Output Estimates

### 6.3.1. Cotton Textiles

Before 1930 local cotton fabric consumption was for the most part dependent on imported goods as a result of the strong export orientation of the economy. The share of imported cotton fabrics was no less than 80 percent of total consumption before the 1930s, as will be shown shortly. In this period, only a few spinning and weaving factories were operational and handicrafts could supply only low-quality fabrics for the domestic market by processing both imported and local yarns.[15]

The first attempt to build up a modern cotton textiles industry in Egypt goes back to Muhammed Ali's ambitious but failed industrial projects in the first half of the 19th century. Afterwards, around the turn of the 20th century, two modern factories were built: one in Cairo with 20,000 spindles by the Egyptian Cotton Mills Company in 1899 and another in Alexandria by the Anglo-Egyptian Spinning and Weaving Company.[16] Both were intended to supply coarse yarns spun from domestic cotton for the domestic market. However, soon after they started their operations, an 8 percent excise tax, exactly equal to the import duty, was introduced by Lord Cromer, the British consul-general, in the name of free trade, which totally neutralised the small tariff protection.[17] The former company closed down in 1907 and the latter only just survived thanks to the excise tax exemption given exclusively to the company by Lord Cromer's successor. Nevertheless, in 1912 the surviving company became the well-known Filature Nationale d'Egypt with additional German capital and it would go on to become one of the fast-growing textile

[15] Hansen and Nashashibi argue that the turning point in the history of handicrafts was the introduction of perennial irrigation and the resulting extension of agricultural work to the whole year, which consequently limited the idle time of peasants who had otherwise been devoted to non-agricultural work, particularly in Upper Egypt. Hansen and Nashashibi, p.208.

[16] Hansen and Nashashibi, *Foreign Trade Regimes*, p. 207.

[17] Whether the excise tax was brought up out of the ideological stance of Lord Cromer or the Lancashire interests, or both, is a matter of controversy. Hansen and Nashashibi, *Foreign Trade Regimes*, p. 207. For a longer discussion, see Roger Owen, Lord Cromer and the Development of Egyptian Industry, 1883-1907. *Middle Eastern Studies*, 2(4) 1966.

companies in the 1930s. By that point, the Bank Misr had already founded a small factory, Misr Spinning and Weaving Company, at Mahalla and Kubra in 1927, in anticipation of tariff reform. It too would grow massively during and after the 1930s. Haroun views the establishment of this factory as the most important cause of the huge increase in raw cotton consumption in Egypt from around 1 percent of the total crop output in 1930/31 to 8 percent in 1940/41.[18] In addition, the Company of Fine Spinning and Weaving was built in the 1930s, in order to produce the fine yarns that were not produced by the Misr Spinning and Weaving Company.[19]

In addition to these factories, there were a large number of handlooms scattered all over the country. During the 1930s, both existing companies expanded their operations and new ones were established, but overall the textile industry became increasingly concentrated. Tignor maintains that the textile artisans were doomed by the cheap Japanese, Italian and Indian textile imports and by the rising local modern industry in the 1930s.[20] El-Grithly states more openly that the expansion of the cotton industry was not the result of a simultaneous growth of all firms, but rather of the spectacular growth of a few firms controlled by powerful financial interests, particularly in spinning. This was so much so that the three leading firms in the spinning industry produced 80 percent of all domestic yarn in 1941.[21] Yet market concentration was not so pronounced in weaving, as the four major firms produced only half of the output by then.[22]

A couple of explanations have been put forward for why Egypt's cotton industry had remained so underdeveloped before the 1930s, despite the obvious raw material abundance in Egypt. The most prominent is the lack of protection for the local manufactures.[23] Moreover, it has been claimed that the prohibition of raw cotton imports into the country during 1916-1925 dealt a blow to cotton textiles because Egyptian cotton was too expensive to be used for the domestic market. The issue is, however, controversial, as even

[18]Ali Ahmed Haroun, *Cotton in the Egyptian Economy.* Institute de Geographie, Universite Catholique de Louvain, 1979, p.113.
[19]Haroun, *Cotton in Egypt*, p.116.
[20]Robert Tignor, *Egyptian Textiles and British Capital, 1930-1956.* The American University in Cairo Press, 1989, p.11.
[21]el-Gritly, Structure of Modern Industry, p.205; and Eman, *L'Industrie du Coton*, p.61.
[22]el-Gritly, Structure of Modern Industry, p.231.
[23]A contemporary, Eman, considered the lack of import protection to be the most critical issue. Eman, *L'Industrie du Coton*, p.28.

from the 1930s onwards, mostly the short staples and lower grades of Egyptian cotton were consumed by the local industry.[24] And second, as Eman maintains, the removal of the prohibition in 1925 did not cause any visible revival in domestic textiles.[25]

Most importantly, the conventional view on the issue lacks the fundamental output series, as the available evidence is limited mostly to factory output after 1930 and a few benchmark estimates of the number of looms and output. Three sets of reports were produced on the state of Egyptian textiles between 1910 and 1925.[26] The first set was published in *L'Egypte Contemporaine* by Sydney Wells, the Director of Agricultural, Industrial and Commercial Education in Egypt, based on the detailed reports of inspectors in the major handicrafts centres, such as Qalyubia, Fayoum and Daqahlia.[27] Although these reports are not fully exhaustive, they provide the number of looms, wages, raw materials used, prices and types of fabric produced. The second set was part of the comprehensive report of the Egyptian Commission on Commerce and Industry published in 1918.[28] Unfortunately, the latter is not as detailed as Wells' reports, as they only provide only a general outlook for textiles, largely repeating the results of the 1907 population census. And thirdly, after World War I the Ministry of Commerce and Industry sent out inspectors to report on local manufacturing centres and their reports for 1922/23 were published in *Sahifa el-Tiraja* after 1924.[29]

Table 6.3 brings together the estimates in these reports with some other estimates that can be found elsewhere, such as in the British consular reports. The table gives a sense of the direction in which Egyptian textiles moved. It seems that both the number of looms and total fabric output increased during the 1920s by slightly less than half, but it is not easy to figure out which sector of textiles (that is, cotton, wool or silk goods) was responsible for this since the comparable figures for 1930 do not exist. Yet, if the output composition had not changed between 1922/23-1930, then the cotton fabric production

[24]Brown argues that 80 percent of local consumption was Ashmouni and Zagora, two short staple varieties of the crop. Brown, *Egyptian Cotton*, pp.151-53.

[25]Eman, *L'Industrie du Coton*, p.30.

[26]Tignor, *Egyptian Textiles*, p.10-11.

[27]Sidney H. Wells, Note Préliminaire sur L'Industrie du Tissage en Egypte. *L'Égypte Contemporaine*, 1910; Sidney H. Wells, L'Industrie du Tissage en Egypte. *L'Égypte Contemporaine*, 1911.

[28]Egypt, *Rapport*.

[29]Tignor, *Egyptian Textiles*, pp.8-11.

Table 6.3.: Existing Benchmark Estimates for Egyptian Textiles

| | 1907 | 1922/23 | | | 1930 | | 1936 | 1938 |
|---|---|---|---|---|---|---|---|---|
| | Looms | Looms | Output 1000 $m^2$ | Yarn spun tons | Looms | Output 1000 $m^2$ | Output 1000 $m^2$ | Output 1000 $m^2$ |
| Cotton | | 9,000 | 15,000 | 3184.5 | | | 76,000 | 96,250 |
| Wool | | 2,000 | 4,000 | 228.1 | | | | |
| Linen | | 300 | 500 | 51 | | | | |
| Silk | | 2,000 | 3,000 | 252.1 | | | | |
| **Total** | **8,750** | **13,300** | **22,500** | | **20,000** | **30,000** | | |

Sources: 1907: Egypt, *Rapport*, p.110; 1922/23: Tignor, *State and Private Enterprise*, p.38; 1930: L.B.S. Larkins, *Economic Conditions in Egypt.* Department of Overseas Trade, UK, 1931, p.54 (this was also repeated in Ali Soliman, *L'Industrialisation de l'Égypte.* Bosc Freres, M. et L. Riou, 1932, p.151; an alternative total predicted number of looms for 1931 is 16,000 by Eman, *L'Industrie du Coton*, p.104; 1936: Crouchley, *Economic Development*, p.228 (handicrafts are responsible for half of this figure, around 35-40 million m$^2$); 1938: C. Empson, *Report on the Economic and Commercial Conditions in Egypt.* Department of Overseas Trade, UK, 1939, p. 43 (handicrafts production is 30 million m$^2$).

should have been around 20 million m$^2$, which implies that the output increase would have been around five times over the course of the 1930s, since the total cotton fabric produced attained almost 100 million square meters by 1938.[30] Thus, these available figures are used here to crosscheck the plausibility of our independent indices.

The present output series is based on the direct raw cotton consumption by local looms, originally estimated by the National Bank of Egypt.[31] These figures reflect cotton consumption by the mechanised spinning mills, which were located in Alexandria until 1930 and in both the interior regions and Alexandria afterwards. We combine these raw consumption figures with the yarn imports to arrive at the total yarn consumption, while allowing for a 20 percent weight loss during spinning.[32] To show the importance of imports, it suffices to say that they formed more than half of the total yarn consumption before 1930 and quickly declined afterwards, in line with the massive import substitution in spinning. We then take the three-year moving average of the

[30] Eman refers to the estimate made by a Lancashire mission for 1938 and points out that another assessment was made on the same occasion for 1939. The forecast was 130 million square meters with the following shares: Misr Spinning and Weaving Company 65 million, Filature Nationale 35 million and handicrafts 30 million m$^2$. He also provides an enumeration for the war period, estimating the total number of working and registered looms at around 29,000. Eman, *L'Industrie du Coton*, pp.90, 105.

[31] Haroun, *Cotton in Egypt*, pp.145-46.

[32] Eman, *L'Industrie du Coton*, p.70. He suggests that the waste in spinning varies greatly with the raw cotton type, equipment used and the type of yarn spun. Nonetheless, the concern of the spinners to keep competitive led to the use of low quality cottons, and thus a consistently higher rate of waste. Overall, the waste is reported at between 12 and 35 percent.

total yarn consumed, considering inventory changes. Lastly, we get fabric consumption by deducting the annual changes in the year-end inventories of the cotton fabrics, which are only available between 1928 and 1945, from the aggregate local yarn consumption combined with the fabric imports.[33]

The downside of this procedure is that it ignores the hand-spun yarn produced in the countryside. However, the anecdotal evidence indicates that in the local centres many handlooms mainly consumed either imported yarn of Indian, British or American origin or mechanically spun yarn from domestic cotton.[34] However, there is no reliable indicator of the share of hand spun yarn. If one takes the total yarn spun figure referred to by Tignor for 1922/23 (3,200 tones) and compares our mechanically-spun yarn figure (around 2,000 tons) for the 1922/23 period, the difference might be indicative of the size of handicraft spinning. This would suggest that hand-spun yarn was roughly 500-1,500 tons, which remains in the range of 10-25 percent of total yarn consumption for those years. It could therefore be argued that our local yarn series only slightly underestimates total yarn consumption in the 1920s, which keeps the error margin reasonably acceptable. However, one should consider that both Tignor's and our figures have relatively large error margins, so it is almost impossible to make a definitive judgement based on them. Nevertheless, one can reasonably argue that the hand-spun yarn output declined over the course of the 1930s due to the intensifying concentration in spinning, although the degree of such a decline is totally unknown.

Figure 6.1 clearly indicates the spectacular expansion of fabric output in the 1930s. Output, measured by total domestic yarn consumption, was rather stable around 5,000 tons during 1919-1930, but the 1930s witnessed a strong upward trend. Overall, it had increased by around four times by 1939. This trend was maintained in the first half of World War II. At the same time, there

[33]The year-end inventories in the public warehouses were reported in each volume of *Annuaire Statistique*. Before 1921, some fabric types were recorded in weight and the rest in length. To get a single weight figure, the items recorded in length are assumed to have had the same weight distribution as in 1930. In the 1930 classification, all cotton fabrics are classified according to their average weight per $m^2$: 140 grammes or heavier, 110-140, 90-100, 70-90, 50-70, 30-50 and 30 grammes or lighter. The midpoints of these brackets are used to make the length-weight conversions for the pre-1921 period. Furthermore, a relatively small amount of mixed textiles made of cotton and silk is not taken into account, since these were usually recorded in length and there is no explicit way to turn the figures into cotton-equivalent.

[34]Wells' cited reports are particularly informative in this connection and also see Eman, *L'Industrie du Coton*, p.28.

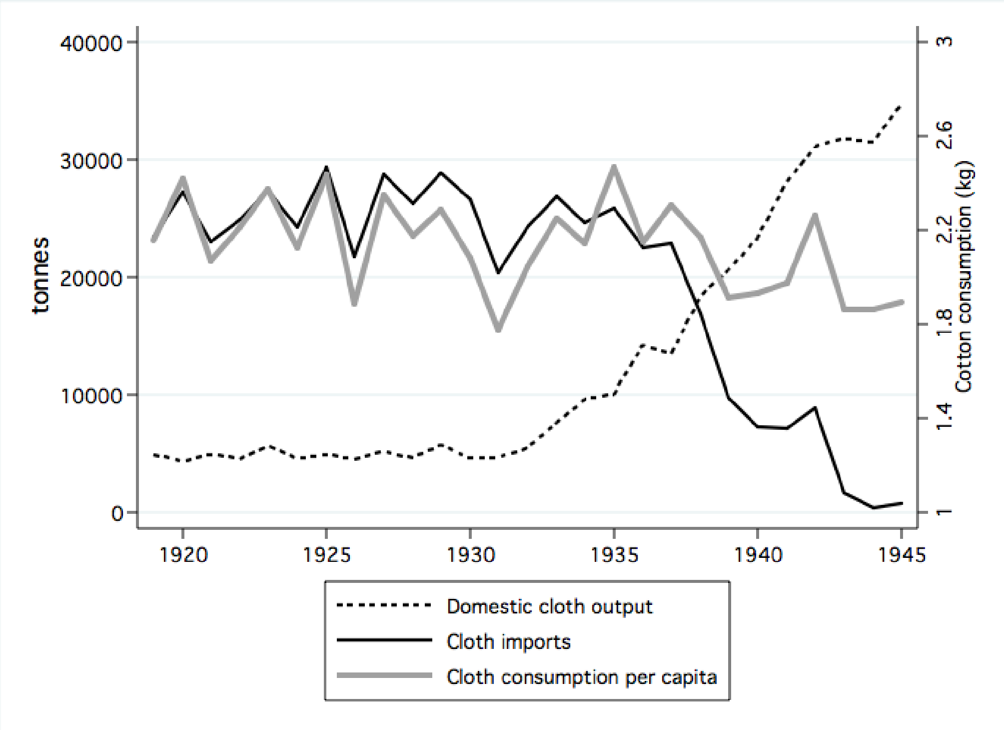
Table 6.4.: Cotton Textiles in Egypt (Tons), 1918-1946

| | Consumption of raw cotton | Import of cotton yarn | Cotton yarn output | Fabric imports | Total cotton textile consumption | Per capita consumption (kg) |
|---|---|---|---|---|---|---|
| 1918 | 2559 | 2859 | 5344 | | | |
| 1919 | 1527 | 2907 | 4774 | 23463 | 28238 | 2.16 |
| 1920 | 2200 | 3132 | 4754 | 27266 | 32020 | 2.42 |
| 1921 | 2470 | 3193 | 4633 | 23039 | 27672 | 2.07 |
| 1922 | 3188 | 2618 | 5083 | 24878 | 29961 | 2.22 |
| 1923 | 2110 | 3153 | 4976 | 27479 | 32455 | 2.38 |
| 1924 | 2559 | 2944 | 5093 | 24274 | 29367 | 2.13 |
| 1925 | 2604 | 2897 | 4708 | 29372 | 34079 | 2.44 |
| 1926 | 2649 | 2463 | 4902 | 21787 | 26689 | 1.89 |
| 1927 | 2470 | 3097 | 4805 | 28785 | 33590 | 2.35 |
| 1928 | 2784 | 2676 | 5209 | 26266 | 31475 | 2.18 |
| 1929 | 2021 | 3531 | 5012 | 28976 | 33408 | 2.29 |
| 1930 | 2919 | 3009 | 5043 | 26630 | 30737 | 2.08 |
| 1931 | 4984 | 2409 | 4955 | 20431 | 26551 | 1.78 |
| 1932 | 8531 | 1508 | 5960 | 24343 | 30901 | 2.05 |
| 1933 | 11494 | 815 | 7591 | 26962 | 34375 | 2.25 |
| 1934 | 11764 | 441 | 9123 | 24681 | 33185 | 2.15 |
| 1935 | 17736 | 681 | 11336 | 25962 | 38613 | 2.47 |
| 1936 | 19621 | 92 | 12652 | 22600 | 34047 | 2.15 |
| 1937 | 22944 | -2113 | 15424 | 22915 | 36981 | 2.31 |
| 1938 | 25593 | 53 | 17556 | 16956 | 35586 | 2.17 |
| 1939 | 29365 | 201 | 20838 | 9775 | 31724 | 1.91 |
| 1940 | 33810 | -62 | 24068 | 7248 | 32689 | 1.94 |
| 1941 | 38345 | 1050 | 27565 | 7172 | 33989 | 1.98 |
| 1942 | 40006 | 491 | 30382 | 8950 | 39578 | 2.27 |
| 1943 | 39288 | -124 | 31531 | 1708 | 33171 | 1.86 |
| 1944 | 43418 | 117 | 32742 | 365 | 33851 | 1.87 |
| 1945 | 47010 | 66 | 34718 | 830 | 34975 | 1.89 |
| 1946 | 52443 | 200 | 37808 | | | |

Notes: Total raw cotton consumption (column 3) is the three-year moving average of the sum of cotton yarn imports and local raw cotton consumption multiplied by 0.8. Total fabric consumption (column 5) is the sum of fabric imports and cotton yarn output. See the text for details.

was a progressive decline in cloth imports – so much so that the market shares of domestic and imported goods were almost equal by 1938. Nonetheless, this impressive expansion did not translate into any improvement in per capita consumption. Fabrics consumption per capita was between 2 and 2.5 kg during much of the 1920s, but it declined slightly during the 1930s. Import

Figure 6.1.: Cotton Fabrics in Egypt: Output, Imports and Consumption, 1918-1945




Source: Table 6.4.

substitution in textiles thus went hand in hand with stagnation, or a small contraction, in per capita consumption, probably due to the fall in incomes in the 1930s and possibly also as a result of rising domestic textile prices, which might have been driven up by the higher import duties.

How plausible are these findings? They actually turn out to be very close to the textile output figures for 1938-1945 published in *Annuaire Statistique*.[35] For the earlier years, the available output figures of the major firms are usually stated in length terms, so it is difficult to compare them. However, the growth rates show how the factory output outpaced aggregate growth, implying the contraction in handicrafts. For instance, the aggregate output increased by around 4-5 times between 1930 and 1938, but the factory output grew by 11

[35] Egypt, Ministere des Finances, Annuaire Statistique, 1944/45, p.452. This "official" estimate seems to use a similar method, yet our series follows it with a one year lag, since the raw cotton consumption figures in a year is here taken forward one year due to the need for seasonal correction, given that the raw cotton consumption figures are given for cotton seasons, which do not overlap with the import statistics. For instance, the consumption figure for the 1924-25 season stands in this estimate for the year 1925.

times over the same period.[36] Aside from this, the estimates of yarn and cloth output by the National Bank of Egypt for 1938 employ a similar methodology and find similar figures of yarn and cloth output.[37] Again, the yarn output figure referred to by Crouchley for 1936, 36 million lbs (16,380 tons) of yarn, is within the reasonable range of our estimate (14,279 tons).

### 6.3.2. Woollens

In Egypt, wool was consumed in much smaller amounts than cotton because the country's hot climate made wool unsuitable for cloth making. What is more, cotton goods were cheaper than woollens,[38] the shortage of pasture in the country contributed to the backwardness of sheep husbandry and local wool types were suitable only for the production of rugs and carpets, so that most of the fabrics, blankets, covers and ready made cloths were either imported or woven of imported woollen yarn of finer quality.[39] Eman's prediction of the consumption of different types of textiles in 1939 indicates how cotton was much more in demand: 32,000 tons of cotton textiles were consumed against 1,864 tons of woollens, 600 tons of natural silk, 2,000 tons of artificial silk and 600 tons of linen.[40]

Most of the spinning was undertaken by a large number of peasants in Upper Egypt and in the 1920s two spinning factories were established to produce coarse yarns for rug making.[41] Apart from this, there is no record of any sustained effort to development a modern woollen industry. Unlike in the case of cotton textiles, World War II probably did not bring much change in the output level: one very rough prediction of output capacity indicates that the pre-war output level was 1,600 tons, of which 700 tons were blankets, with the rest being knitted goods, suiting and hats and the war brought about only

[36]G.H. Selous, *Report on the Economic and Commercial Conditions in Egypt.* Department of Overseas Trade, UK, 1937, p.115; Empson, *Report on the Economic and Commercial Conditions in Egypt*, p.43; and Eman, *L'Industrie du Coton*, p.136.

[37]Tignor, *Egyptian Textiles*, p.115. Local yarn output are 20,500 and 49,700 tons in 1938 and 1948. The corresponding cloth output figures are 20,300 and 48,700 tons.

[38]Eman, *L'Industrie du Coton*, p.131.

[39]Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.118.

[40]Eman, *L'Industrie du Coton*, p.131-32. Of the total figure of woollens, only 300 tons were of domestic wool, though whether this figure represents the raw wool, woollen yarn or textiles is unclear. One can therefore infer that the domestic market was largely supplied by imported woollens.

[41]UK, *Report of the United Kingdom Trade Mission to Egypt.* Department of Overseas Trade, UK, 1931, p.56.

"some increase".[42] The only direct indication of the local output of woollens is the one Tignor referenced for 1922/23, according to which 2,000 handlooms produced 4 million square meters of finished goods and 228 tons of yarn were spun (Table 6.3).[43]

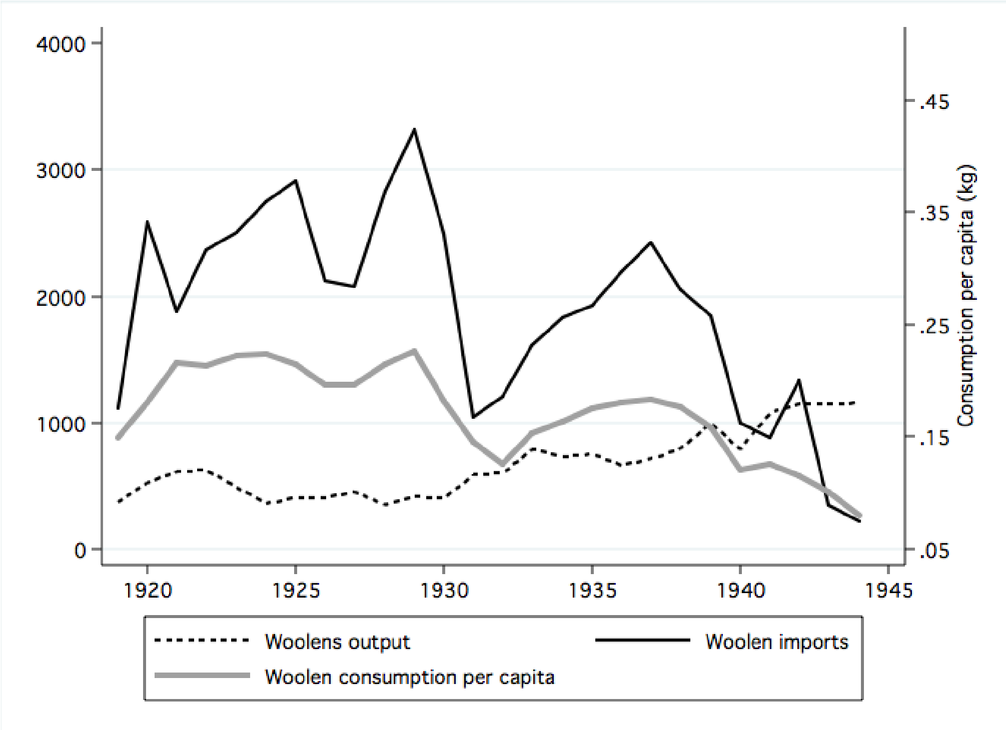
The present output estimate therefore relies on the greasy wool series, which was estimated in the previous chapter as part of livestock output. We deduct the exports of "wool in grease" and "washed or scoured" wool, as reported in the official trade statistics, to arrive at the domestic available raw wool. However, the category "washed wool" does not precisely match with the "clean wool" category that we used in the chapter on Turkish industry, where we assumed an average of 40 percent weight loss during the wool washing. The average price differential over 1930-1937 between the "wool in grease" and "wool washed or scoured" in the export statistics is only 1.05, so we take this price differential as an indication of the average weight difference between "wool in grease" and "wool washed or scoured", whatever it means. Then we turn all these figures into the greasy wool equivalent and then a 40 percent weight loss is applied to the estimated greasy wool series to obtain the available clean wool. After taking the three-year moving average of the clean wool net of exports to take into account the inventory changes, we add the net imports of woollen yarn to obtain the total domestic consumption of woollen yarn. A 10 percent loss is then allowed during spinning. Finally, the estimated woollen goods are added to the imports of such goods (pure and mixed woollen cloths, including blankets and carpets) to get the total consumption of woollen goods.[44]

[42] UK, *Report of the United Kingdom Trade Mission to Egypt*.

[43] Tignor, *State and Private Enterprise*

[44] Throughout, a number of corrections have had to be made because of the modifications in the commodity classification in the foreign trade statistics. First, the raw wool exports were not specified separately as greasy or washed before 1930, so for the 1920s the total raw wool figures are roughly allocated as two thirds greasy and one third washed wool, based on the ratios in 1930. Second, some woollen fabrics were recorded in length and the others in weight before 1935. To convert the length figures into weight for the 1920s, we take the distribution of fabric imports in 1930 as a reference point. For instance, the 3.3 million square meters of fabric imported in 1929 is allocated according to the different weight intervals: in 1930 12 percent of the fabrics recorded in length weighed less than 200 grams per m$^2$, 59 percent between 201 and 350 grams, 20 percent between 351 and 550 grams and 9 percent were heavier than 550 grams per m$^2$; the mean points of these intervals were taken and multiplied by the respective percentages of the sum of fabrics. As for 1930-1935, the length figures for each interval are already known, so they are simply multiplied with the mean points. Third, for the woollen carpets, a different procedure is followed: a length series was constructed from the import statistics and

Figure 6.2.: Woollen Textiles in Egypt: Output, Imports and Consumption, 1918-1944




Source: Table 6.5

Figure 6.2 presents the domestic output, imports and average per capita consumption. A number of patterns can be detected from these estimates. Following an up-down cycle in the immediate aftermath of World War I, the output remained around 400 tons until 1930. Thereafter, the remaining period witnessed a 5.6 percent annual trend growth rate. If the 1924-1930 level is taken as the reference point of the pre-tariff reform period, the output seems to have more than doubled by 1939. On the other hand, as we saw in the case of cotton textiles, the per capita consumption of woollens had a notable decrease, though with major fluctuations owing to the volatility in imports. While the consumption per capita was around 0.2 kg in the 1920s, it fell to below 0.15 kg in the 1930s. The high volatility might in the first place have been due to the precarious import prices, since unlike cotton goods, the local consumption remained substantially dependent on imports. In the second place, the price elasticity of demand was likely to be higher than in the case

then it was turned into a weight series by taking the average carpet weight as 1.61 kg per $m^2$, which was the average figure between 1930 and 1940.

of cotton, since it was not an essential consumption good.

Finally, the resulting figures seem to be largely compatible with the only reliable and relatively precise estimate available, which was made for 1922/23. We approximate that the amount of woollen yarn spun in 1922 and 1923 was 404 and 261 tones respectively, which are rather close to the 228 tones referred to in the survey for 1922/23. However, since the exact timing of the survey is not known, it is hard to push the comparison. That said, the output jumps in 1931 and 1933 also seem on a par with the upward revised import duties, which will be discussed in the following chapter. It was stated in the consular reports that local production increased to supply third- and partly second-quality blankets for the domestic markets after the 1932 revision.[45]

### 6.3.3. Silk

What distinguished the Egyptian silk industry from other textiles is that it was almost totally dependent on imports of raw materials, that is, of artificial and natural silk yarn. Local looms manufactured the imported yarn into silk textiles or mixed it with other fibres, mainly cotton. Local cocoon production was extremely limited in scale and restricted to a small locality, in Menouef region, where only 35 tons of fresh cocoons were produced annually in the early 1930s.[46] Since the number of mulberry trees in the region did not change much between 1929 and 1939 – 600 in 1929 and 728 in 1939 – one can reckon that the local raw silk production remained fairly small over the whole period.[47] Similarly, artificial silk was not produced at all in Egypt.[48]

On the output side, there are sources suggesting that the number of silk looms were around 2,000 and the annual production of silk cloths was about 3 million square meters.[49] Since these figures were first cited for 1922/23, it seems that later sources just referred to the same original source in the absence of a better alternative. On the other hand, it was also observed that artificial silk consumption increased to a large extent in the 1930s, which is

[45] Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.97.
[46] Egypt, *Almanac.* Cairo: Government Press Publications Office, 1933, p.190.
[47] Egypt, Ministry of Agriculture, Agricultural Census 1929; Egypt, Ministry of Agriculture, Agricultural Census 1939.
[48] Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.75.
[49] Tignor, *State and Private Enterprise*, p.38; Soliman, *L'Industrialisation*, p.151; Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.116; and UK, *Egypt: Review of Commercial Conditions*, p.38.

Table 6.5.: Woollen Textiles in Egypt (Tons), 1918-1944

| | Greasy wool output | Exports of greasy wool | Exports of clean wool | Imports of woollen yarn | Greasy wool net of exports | Clean wool output | Local yarn output | Yarn consumption | Woollen fabric imports | Total fabric consumption | Consumption per capita (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1918 | 1854 | 533 | 267 | 71 | 1040 | | | | | | |
| 1919 | 1862 | 759 | 380 | 51 | 705 | 346 | 311 | 363 | 1111 | 1955 | 0.15 |
| 1920 | 1787 | 428 | 214 | 146 | 1135 | 418 | 376 | 522 | 2590 | 2381 | 0.18 |
| 1921 | 2140 | 327 | 163 | 152 | 1641 | 507 | 456 | 608 | 1875 | 2886 | 0.22 |
| 1922 | 2043 | 392 | 196 | 219 | 1446 | 449 | 404 | 624 | 2368 | 2874 | 0.21 |
| 1923 | 2088 | 939 | 470 | 228 | 656 | 290 | 261 | 489 | 2508 | 3030 | 0.22 |
| 1924 | 2354 | 1335 | 668 | 205 | 317 | 169 | 152 | 357 | 2746 | 3077 | 0.22 |
| 1925 | 2368 | 1266 | 633 | 218 | 437 | 204 | 183 | 401 | 2907 | 2995 | 0.21 |
| 1926 | 2482 | 1009 | 505 | 154 | 943 | 280 | 252 | 406 | 2128 | 2775 | 0.20 |
| 1927 | 2674 | 1129 | 565 | 162 | 952 | 317 | 285 | 447 | 2073 | 2790 | 0.20 |
| 1928 | 2560 | 1187 | 593 | 166 | 749 | 200 | 180 | 347 | 2828 | 3085 | 0.21 |
| 1929 | 2176 | 1447 | 724 | 182 | -31 | 256 | 230 | 412 | 3316 | 3292 | 0.23 |
| 1930 | 2450 | 707 | 313 | 136 | 1414 | 289 | 260 | 396 | 2494 | 2680 | 0.18 |
| 1931 | 2689 | 860 | 762 | 103 | 1028 | 533 | 480 | 582 | 1042 | 2160 | 0.14 |
| 1932 | 2917 | 341 | 549 | 133 | 2000 | 518 | 466 | 600 | 1198 | 1883 | 0.12 |
| 1933 | 2918 | 488 | 1088 | 223 | 1288 | 627 | 564 | 787 | 1610 | 2336 | 0.15 |
| 1934 | 3058 | 441 | 649 | 259 | 1936 | 523 | 470 | 730 | 1836 | 2518 | 0.16 |
| 1935 | 3102 | 673 | 1237 | 305 | 1130 | 492 | 443 | 748 | 1919 | 2730 | 0.17 |
| 1936 | 3246 | 483 | 1644 | 336 | 1036 | 358 | 322 | 658 | 2190 | 2838 | 0.18 |
| 1937 | 3347 | 734 | 1713 | 291 | 813 | 467 | 420 | 711 | 2430 | 2934 | 0.18 |
| 1938 | 3450 | 510 | 856 | 358 | 2042 | 484 | 435 | 793 | 2047 | 2900 | 0.18 |
| 1939 | 3557 | 426 | 1864 | 370 | 1175 | 693 | 624 | 994 | 1843 | 2623 | 0.16 |
| 1940 | 3126 | 113 | 432 | 144 | 2560 | 714 | 642 | 787 | 997 | 2027 | 0.12 |
| 1941 | 2695 | -224 | 675 | 193 | 2211 | 980 | 882 | 1075 | 882 | 2147 | 0.12 |
| 1942 | 2683 | -320 | -372 | 200 | 3393 | 1054 | 948 | 1148 | 1337 | 2004 | 0.11 |
| 1943 | 2671 | -227 | -264 | 77 | 3175 | 1186 | 1067 | 1144 | 347 | 1779 | 0.10 |
| 1944 | 2634 | -469 | -202 | 97 | 3315 | 1173 | 1056 | 1153 | 220 | 1436 | 0.08 |
| 1945 | 2598 | -424 | -253 | 141 | 3287 | | | | | | |

Notes: Column 5 =3-year MA of 0.6*(Column 1- Column 2 -1.05* Column 3). Column 6=Column 5*0.6. Column 7=0.9*Column 6. Column 8= Column 4+ Column 7. Column 10 is the sum of Column 8 and three-year moving average of Column 9. See the text for details.

was not obvious in the numbers of looms but could be clearly seen in the increasing amount of imported artificial silk.[50] Subsequently, World War II led to a dramatic change, whereby most of the looms were converted to cotton due to the foreign supplies being cut off. One study of the change in the local capacity points out that around 80 percent of domestic capacity was converted into cotton with the local silk weaving output being reduced to around 400 tons during the war.[51]

Mechanised weaving also made some progress. Bank Misr bought a factory in Damietta that had originally been founded in 1849. It imported the first power loom in 1920 and then became the Misr Silk Weaving Company in 1927. The factory started large-scale operations after the tariff reform in 1930, manufacturing both natural and artificial silk fabrics [52] Despite this moderate mechanisation in the 1930s, the industry remained predominantly small scale until the postwar years.

The present output estimate relies almost entirely on the imports of raw silk and silk yarns. The domestic raw silk output is fixed at 35 tons of fresh cocoons, as referred to above, which is equivalent to 5.8 tons of raw silk assuming 1/6 weight loss during the drying of fresh cocoons.[53] This figure is combined with the sum of raw silk and silk yarn, both natural and artificial, to arrive at total domestic yarn consumption. Note that import statistics do not report natural and artificial silk yarn before 1925, so we consulted the Italian foreign trade statistics to get the amount of artificial silk yarn imported into Egypt, since Italy was by far the principal exporter.[54]

To get the total consumption of silk goods, the local silk yarn consumed is then added to the silk yarn fabrics, as per usual. However, the silk fabric statistics are somewhat complicated. All the fabrics of natural and artificial silk fabrics were reported separately and in weight terms from mid-1932 onward. In the earlier period, only in 1924 and 1925 were the categories separately reported, but some goods were reported in length and others in weight terms. Therefore, since a reliable disaggregation between artificial and natural fab-

[50] Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.116.

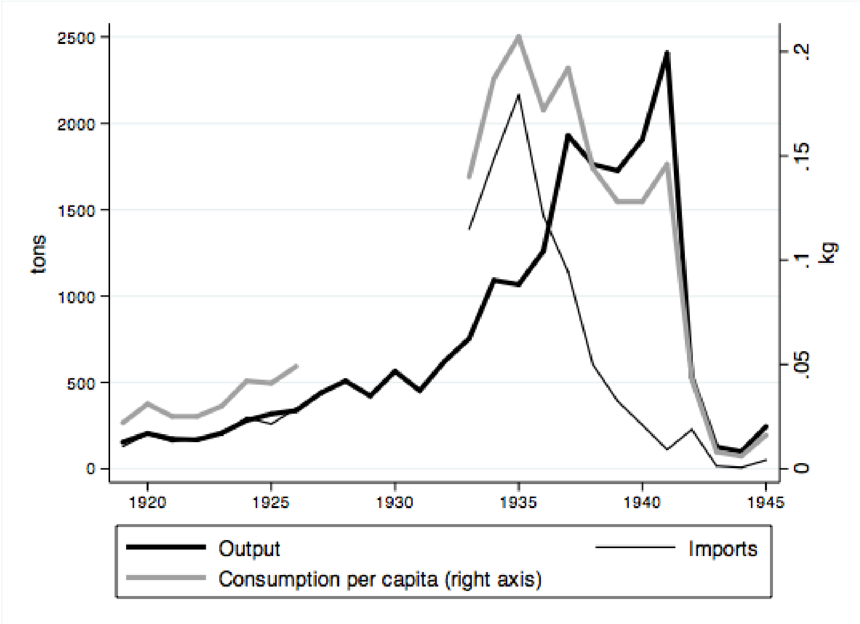
[51] UK, *Egypt: Review of Commercial Conditions*, p.38.

[52] In addition, Usines Textiles Alkashire S.A.E. had 350 looms and there were a few other smaller factories. Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.118; and Egypt, *Almanac*, p.190.

[53] For this coefficient, see the construction of the silk output in Turkey in Chapter 3.

[54] *Italy, Ministero Delle Finanze*, *Movimento Commerciale del Regno d'ItaliaItalia*. Roma: Ministero delle Finanze*,* 1924 and 1925.

Figure 6.3.: Silk Textiles in Egypt: Output, Imports and Consumption, 1918-1945




Source: See Table 6.6. All series represent the sum of natural and artificial silk.

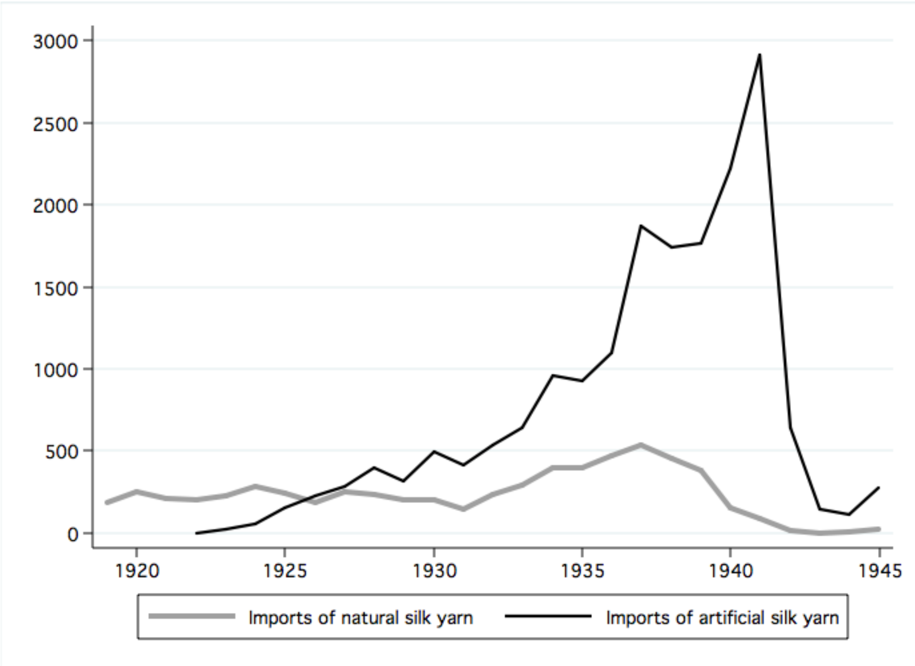
rics cannot be made for the years before 1932, we aggregate both natural and artificial silk goods for the period for which there is data on value and weight, that is, 1919-1925 and 1932-1945.[55]

Figure 6.3 shows that domestic output was smoothly increasing during the 1920s and the following decade gave a further stimulus to the ongoing trend. However, this massive growth was almost entirely due to the artificial silk yarn consumption, as seen in its accelerating growth (Figure 6.4). World War II then saw a phenomenal contraction in the imports of both types of yarn. On the consumption side, the pattern substantially differs from the cases of cotton and wool, in the way that both cloth imports and domestic output massively increased in the first half of the 1930s. It appears that the per capita consumption increased by around four times between 1925 and 1935, which came to a halt in the second half of the 1930s but still remained three times the 1925 level by 1939.

This unparalleled rise in silk goods consumption is particularly impressive if one considers, first, the depression of the early 1930s and, second, the

[55] Also for the pre-1932 period as a whole, the output estimates in weight are made by assuming that the average unit prices of the goods reported in length was the same as those for the goods reported in weight.

Figure 6.4.: Natural and Artificial Silk Yarn Consumption in Egypt (Tons), 1918-1945




Source: See the text.

decline in the per capita consumption of other textiles (cotton and woollens) in Egypt, as demonstrated in the preceding sections. However, this was the case far beyond Egypt because the world production of raw natural and artificial silk was on a par with the Egyptian trend: while natural silk output was rather stable, artificial silk output increased by almost six times between 1915 and 1936.[56] As for artificial silk final goods, world output made remarkable progress during the depression, with the US and Japan making the biggest leaps and some other developing countries like Greece and Romania following suit.[57] Taking notice of this worldwide expansion, in 1935 the League of Nations argued that "during recent years, artificial silk, benefiting by constant technical progress, reduced prices and the favour of consumers has tended to compete more and more with the older textiles – silk, cotton and wool – especially in the knitting branch of the industry".[58] Federico also shows that the growth in the world consumption of artificial silk by far exceeded that

[56]League of Nations, *World Production and Prices 1936/37*. Geneva, 1937, p.100.
[57]League of Nations, *World Production and Prices 1935/36*. Geneva, 1936.
[58]League of Nations, *World Production and Prices 1925-1934*. Geneva, 1935.

Table 6.6.: Silk Textiles in Egypt (Tons), 1919-1945

| | Domestic raw silk output | Natural silk yarn imports | Artificial silk yarn imports | Domestic total yarn consumption | Imports of silk fabrics | Total fabric consumption | Per capita fabric consumption (kg) |
|---|---|---|---|---|---|---|---|
| 1919 | 5.8 | 186.6 | 0 | 153.9 | 129.3 | 283.2 | 0.02 |
| 1920 | 5.8 | 249.1 | 0 | 203.9 | 200.8 | 404.7 | 0.03 |
| 1921 | 5.8 | 208.7 | 0 | 171.6 | 156.1 | 327.7 | 0.02 |
| 1922 | 5.8 | 200.1 | 2.5 | 166.8 | 177.3 | 344.1 | 0.03 |
| 1923 | 5.8 | 227.0 | 25.2 | 206.4 | 197.6 | 404.0 | 0.03 |
| 1924 | 5.8 | 283.2 | 59.2 | 278.6 | 296.2 | 574.8 | 0.04 |
| 1925 | 5.8 | 240.2 | 149.6 | 316.5 | 258.0 | 574.5 | 0.04 |
| 1926 | 5.8 | 187.2 | 227.5 | 336.4 | 348.4 | 684.8 | 0.05 |
| 1927 | 5.8 | 254.0 | 287.3 | 437.7 | | | |
| 1928 | 5.8 | 235.2 | 393.7 | 507.8 | | | |
| 1929 | 5.8 | 205.0 | 315.3 | 420.9 | | | |
| 1930 | 5.8 | 200.8 | 498.4 | 564.0 | | | |
| 1931 | 5.8 | 146.1 | 412.1 | 451.3 | | | |
| 1932 | 5.8 | 235.0 | 535.4 | 621.0 | | | |
| 1933 | 5.8 | 292.2 | 643.1 | 752.9 | 1386.5 | 2139.4 | 0.14 |
| 1934 | 5.8 | 396.0 | 961.0 | 1090.3 | 1791.5 | 2881.8 | 0.19 |
| 1935 | 5.8 | 399.1 | 928.4 | 1066.7 | 2164.3 | 3231.0 | 0.21 |
| 1936 | 5.8 | 469.1 | 1099.8 | 1259.8 | 1464.0 | 2723.9 | 0.17 |
| 1937 | 5.8 | 537.6 | 1867.9 | 1929.1 | 1138.9 | 3068.0 | 0.19 |
| 1938 | 5.8 | 454.3 | 1742.9 | 1762.4 | 603.2 | 2365.6 | 0.14 |
| 1939 | 5.8 | 381.0 | 1769.9 | 1725.5 | 391.3 | 2116.7 | 0.13 |
| 1940 | 5.8 | 155.1 | 2221.6 | 1906.0 | 252.7 | 2158.8 | 0.13 |
| 1941 | 5.8 | 88.7 | 2913.4 | 2406.3 | 110.0 | 2516.3 | 0.15 |
| 1942 | 5.8 | 14.6 | 641.1 | 529.3 | 226.6 | 755.9 | 0.04 |
| 1943 | 5.8 | 2.8 | 148.4 | 125.6 | 15.8 | 141.5 | 0.01 |
| 1944 | 5.8 | 4.1 | 113.8 | 99.0 | 6.5 | 105.5 | 0.01 |
| 1945 | 5.8 | 26.1 | 272.2 | 243.3 | 49.5 | 292.8 | 0.02 |

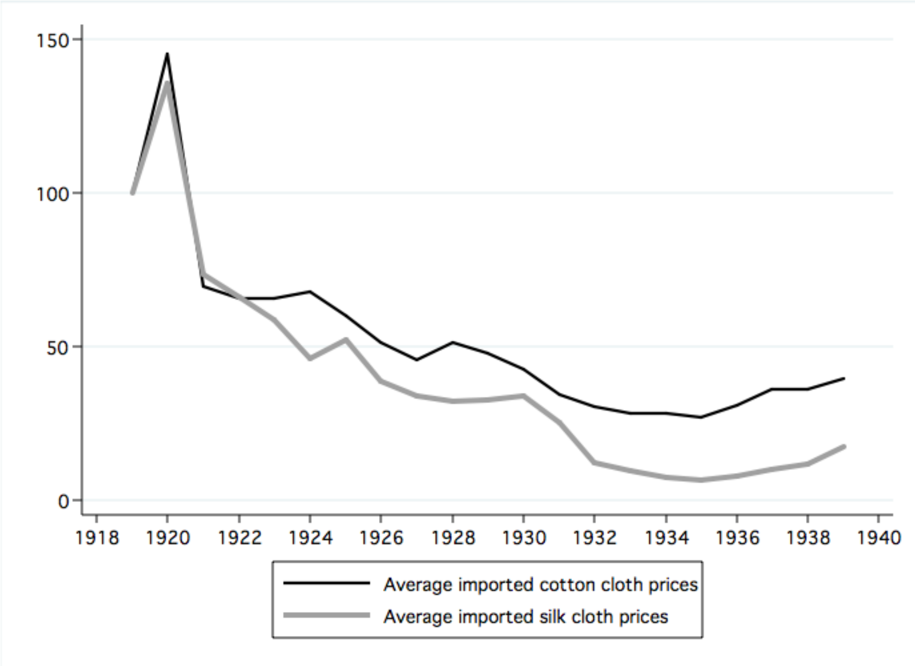
Notes: Column 4 is 0.8*(Columns 1+Column 2+Column 3). See the text for details. The import data, and thus estimates of consumption, is not available for 1927-1932 due to unclear classification in the foreign trade statistics.

of other fibres between 1913 and 1928.[59] All this is in line with Eman's argument that artificial silk came to compete with other fibres in the late 1930s in Egypt.[60]

The relative textile prices might be indicative of different consumption growth patterns of artificial silk and cotton: Figure 6.5 strikingly shows how

[59]Federico, *Economic History of Silk Industry*, p.44.
[60]Eman, *L'Industrie du Coton*, p.131.

Figure 6.5.: Cotton and Silk Cloth Price Indices for Egypt (1919=100), 1919-1939




Source: See the text.

the relative imports prices changed starting from the mid-1920s. The decline in prices was more pronounced in silk cloths in the second half of the 1920s and the relative prices moved against cotton even more markedly in the early 1930s, when silk consumption significantly increased.

## 6.3.4. Food Processing and Tobacco

Food-related industries by definition cover a wide array of activities related to the preparation and transformation of domestic or imported agricultural produce. Direct output is usually unobserved, except for in a few branches, such as sugar and tobacco. We therefore use the most apparent raw material consumption in other branches as a proxy for output. Dairy production is measured by the total milk output, which was estimated in the previous chapter.

### Milling

Grain milling output is measured by wheat and maize consumption. Direct output data is impossible to obtain due to the presence of a large number of mills of different sizes scattered throughout the country. The modern factories were built after protective tariffs were introduced in 1932, when the increasing amount of acreage came to be devoted to wheat to the effect that Egypt became almost self-sufficient.[61] Evidence for this comes from the way in which in 1932 Egypt stopped importing large amounts of flour, which had been typical of the earlier years.

Our annual proxy is thus the wheat and maize output net of the seeds required for the following year plus the net wheat and maize imports. When these figures are added to the net imports of wheat flour and divided by the total population, as the official index does, we obtain the per capita cereal consumption. Each *Annuaire Statistique* volume includes an estimate of annual wheat and maize consumption, based on crop output, foreign trade and seeding requirements. This official estimate assumes zero inventory change, which can be justified by the fact that the yearly changes in the public warehouses were so small in comparison with the aggregate consumption. The results appear to be consistent with the long-term decline in textile consumption: while around 200 kg wheat and maize per capita were consumed in the 1920s, the 1930s witnessed a small decline to around 160-170 kg. As for the domestic output, it went up from roughly 2.5 million tons to 3 millions by 1929 and then returned to the early 1920s level (Figure 6.6). What drove a wedge between consumption and output was the cereal imports in the 1920s, which came to an end in the 1930s.

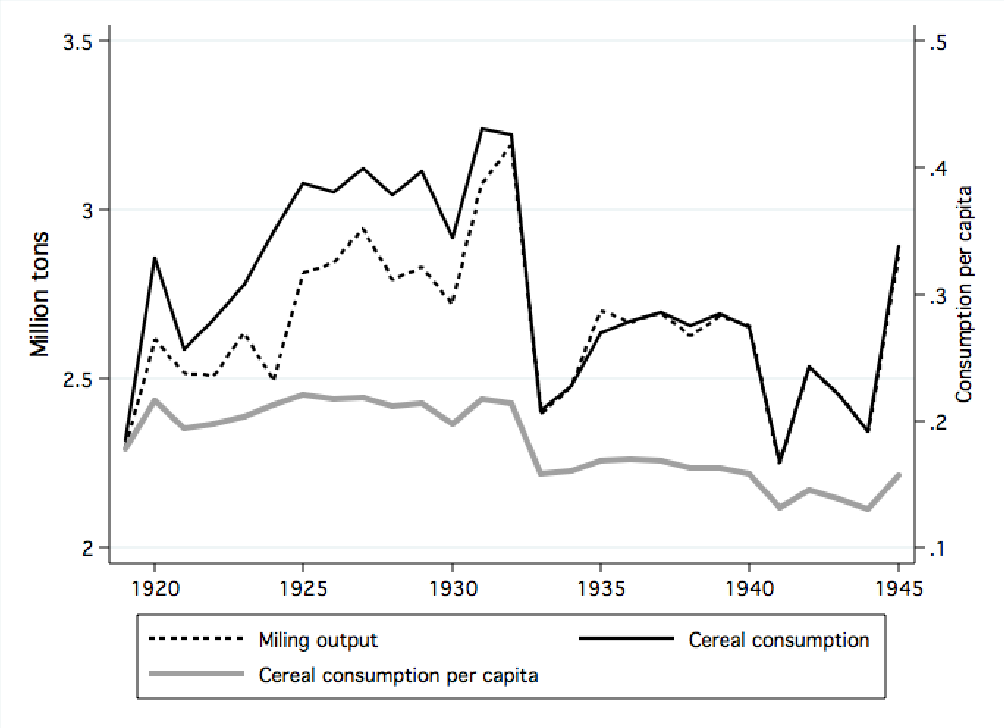
### Sugar

Sugarcane had been produced in Egypt since the Middle Ages, but the industry's development began in earnest in the 1860s when world cotton prices collapsed, which made Khedive Ismael look for alternative crops.[62] Following the subsequent downturn in the first decade of the 20th century, the industry was revitalised during World War I and the total area under sugarcane remained around 50,000 feddans during the 1920s. Afterwards, the upward revision of the import tariff in 1930 and 1932 and later World War

[61] Selous, *Report on the Economic and Commercial Conditions in Egypt*, pp.105-06. The report argues that the new mills on the one hand enjoyed tariff protection and on the other suffered from the stocks depreciated by the government from time to time.

[62] For a brief history of Egypt's sugar industry, see Hansen and Nashashibi, *Foreign Trade Regimes*, pp.228-29.

Figure 6.6.: Milling: Output and Consumption



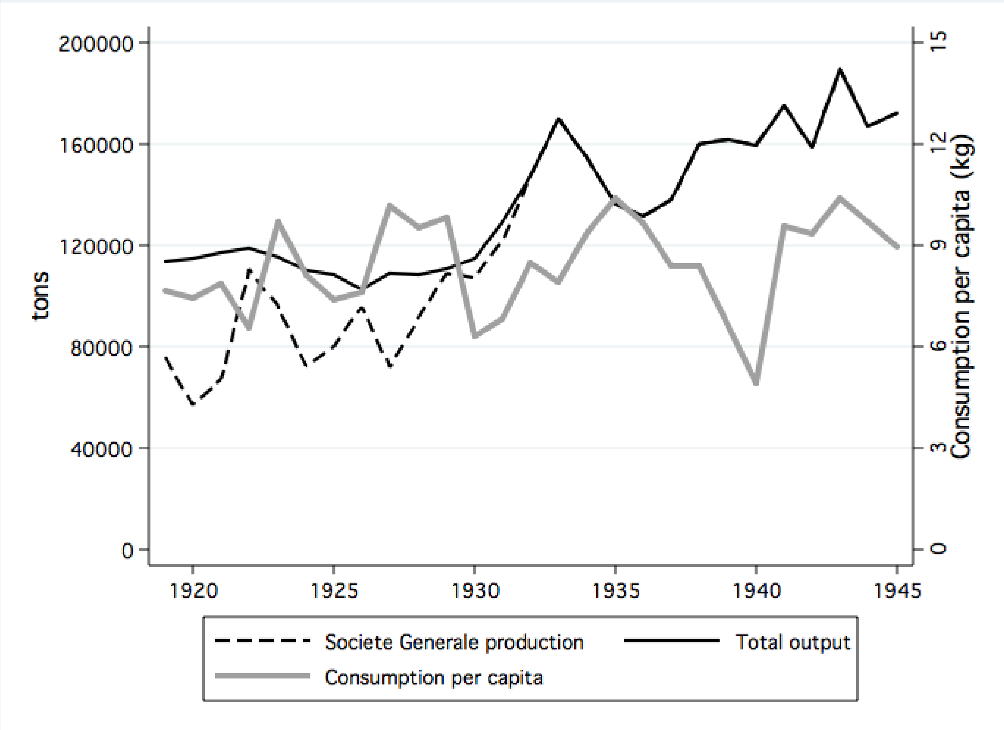

Source: Table 6.12.

II gave it further stimulus, which can be observed in the increasing acreage under sugar cane, particularly after the mid-1930s. Yet the most important development in the domestic market occurred in February 1931, when the government signed a convention with the Société Générale des Sucrecies et de la Raffinerie d'Egypte, which had been established in 1892 and was then the biggest producer. This convention reserved for the company the exclusive right to sell sugar for five years, which was later to be extended.[63] Thus, in 1931 the sugar market practically turned into a strongly protected quasi-monopoly. Furthermore, government supervision was most strongly felt in the sugar industry: next to import protection, the government was authorised to set the acreage under sugarcane, prices (both consumer and farm gate) and import quotas.[64]

Before 1931, then, refined sugar was produced in a few modern factories in Upper Egypt, while small local enterprises supplied molasses and brown sugar

[63]Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.112.
[64]Hansen and Nashashibi, *Foreign Trade Regimes*, p.228.

Figure 6.7.: Refined Sugar in Egypt: Output and Consumption, 1918-1945




Source: Table 6.13.

of low quality, mainly for the domestic market in various localities.[65] The total refined sugar and molasses produced by Société Générale were reported in each volume of *Annuaire Statistique*, yet the period before the convention was signed remains obscure due to the lack of data on the sugar and molasses produced by the smaller firms. For this reason, the production of Société Générale in the 1920s would underestimate the aggregate figure for that decade, leading to an overestimation of the output growth rate over the whole period. Instead, the most reasonable method to get a reliable output series is to use sugarcane consumption to proxy the change of output before 1931. To do this, the total sugar cane output is combined with the imports of raw sugarcane, since exports were negligible. This sugarcane consumption estimate turns out to be very well compatible with the the output of the Société Générale between 1931 and 1940 with the acceptable variation due to the neglect of stocks, making it a suitable proxy. Hence, the refined sugar output of Société Générale in 1932 is extrapolated backward with the three-year moving average of sugarcane consumption. This yields a more reasonable pattern

[65]Hansen, Income and Consumption, p.38.

where the output was stable around 100,000-120,000 tones prior to 1930, and the 1930s witnessed a moderate rise in output (Figure 6.7). Furthermore, we calculate the aggregate refined sugar consumption by taking into account the refined sugar imports and the inventory changes of Société Générale.[66] The resulting per capita consumption fluctuates between 6 and 10 kg per person with relatively high volatility, which might have been due to the high price elasticity of demand. Yet overall consumption had a small upward trend, thanks to the additional wartime demand in the 1940s.

### Vegetable Oils

In Egypt cotton not only provided the main textile fibre but was also the main source of vegetable oil. According to the available figures, 72 percent of domestic vegetable oil in 1938 and 92 percent in 1939 was produced from cotton seed, the rest was obtained from linseed, sesame and castor.[67] In addition, a large amount of olive, coconut, castor and linseed oil, among others, were imported to complement the insufficient local production.

The domestic cotton seed oil was partly exported and partly used for alimentary purposes and soap making.[68] By the late 1930s, all cotton seed was pressed in hydraulic presses and the yield was 20 percent oil, with the rest being the cotton seed cake, which was a valuable cattle food and mainly exported to Europe.[69] The direct output of cotton seed oil for 1925-29, 1931 and the post-1933 years is obtained from the British consular economic reports and the official statistics.[70] To estimate the data for missing years (1919-1924, 1930 and 1932), a separate index based on cotton seed consumption is constructed. This index is calculated as the sum of total cotton seed output and the stocks in Alexandria taken over from the previous year minus the seed used in sowing in the following year, exports and finally the stocks forwarded to the following year. For the years for which the data exists, except during wartime, this index behaves very similar to output data, so we complete the

[66]The year-end inventories were reported in *Annuaire Statistique*.

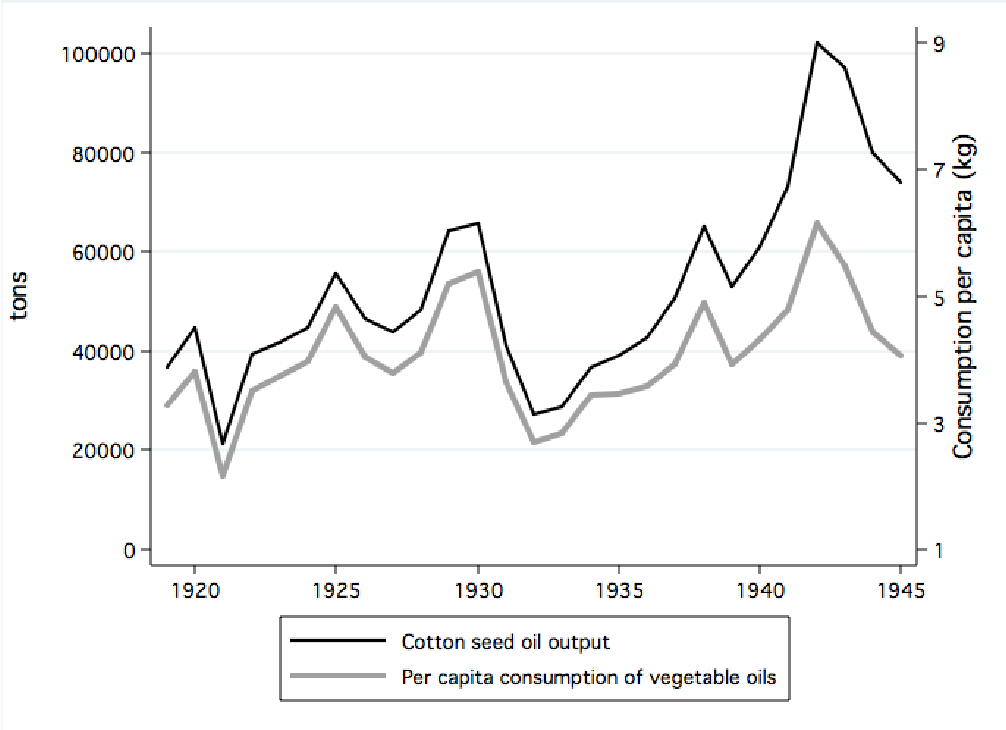
[67]Empson, *Report on the Economic and Commercial Conditions in Egypt*, p.51.

[68]In soap making, the cotton seed, coconut and palm oils were mixed with caustic soda and olive oil, which was almost entirely imported. Annual domestic olive oil production was as little as 100 tones because the Egyptian climate was not suitable for olive production.

[69]Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.119.

[70]Larkins, *Economic Conditions in Egypt*, Selous, *Report on the Economic and Commercial Conditions in Egypt*; Empson, *Report on the Economic and Commercial Conditions in Egypt*; and *Annuaire Statistique*, 1944/1945.

Figure 6.8.: Cotton Seed Oil in Egypt: Output and Consumption, 1919-1945




Source: Table 6.14.

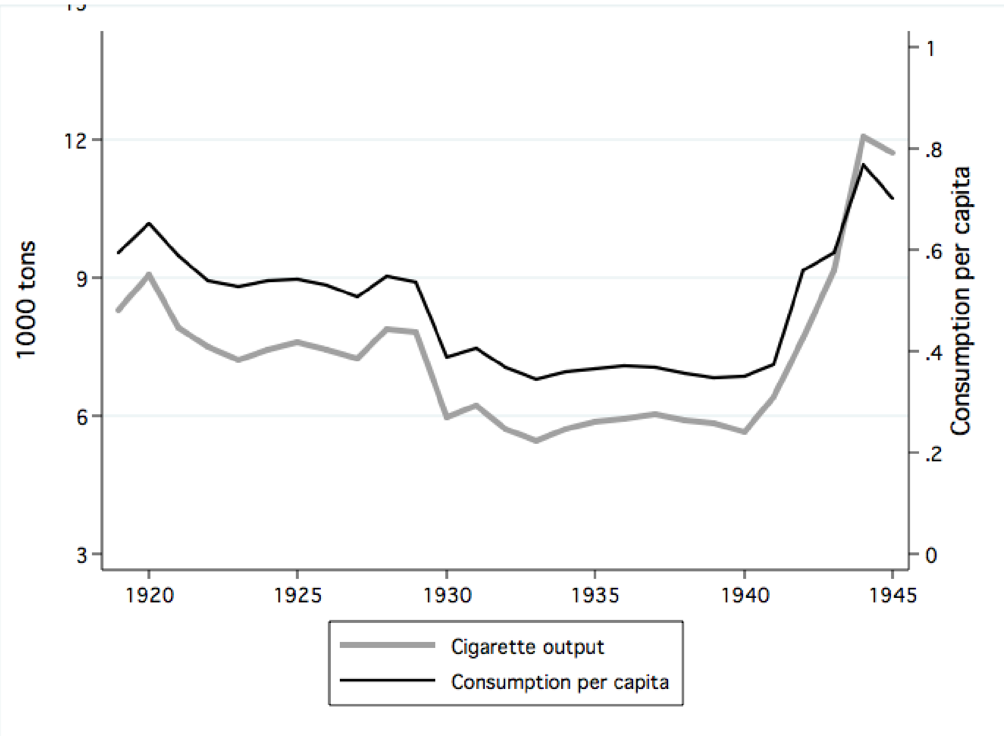
estimation by extrapolating the 1925 figure backward, and for 1930 and 1932 from 1930 forward with the index.

The resultant series suggests slightly expanding production over the 1920s (Figure ). Then it almost halved between 1930 and 1933 and recovered to the 1930 level by the end of decade. As for consumption, we add the imports of all kinds of vegetable oil (olive, coconut, linseed and the rest) and get the aggregate figures: it seems the per capita consumption moved much in parallel with domestic output. This was mainly because of the fact that, first, imports were small compared to local production and, second, there was not a significant contraction in imports in the years before World War II, unlike in the case of other commodities.

### Tobacco

Cigarette making in Egypt was perhaps the most well-established branch of manufacturing, which is reflected in the total capital invested, the number of workers and degree of mechanisation. Since tobacco cultivation was forbidden for fiscal reasons, the producers depended totally on tobacco imports, so the

Figure 6.9.: Tobacco Processing in Egypt: Output and Consumption, 1919-1945




Source: Table 6.15.

latter can serve as a perfect proxy for the output of the industry. The local factories, which were usually located in Cairo and Alexandria, mainly supplied the domestic market.[71] Modern facilities were installed in the factories, and the traditional way of manufacturing was restricted only to certain types of luxury brands.[72]

Here we measure the output by using the foreign trade data in the same way that Hansen does: all imported tobacco leaves and manufactured tobacco is taken to represent the production, without allowing for any weight difference between them.[73] Note that this sum perfectly moves with the withdrawals from the public warehouses, which are reported in *Annuaire Statistique*. This suggests that inventory changes were not likely to have been substantial. For consumption, the cigarette exports and the imports of cigars and cigarettes were deducted from the local output. In this way, we find that the annual

[71] Larkins, *Economic Conditions in Egypt*; and UK, *Report of the United Kingdom Trade Mission to Egypt*, p.53.

[72] Selous, *Report on the Economic and Commercial Conditions in Egypt*, pp.96-97.

[73] Hansen, Income and Consumption.

Table 6.7.: Consumption Per Capita in Egypt: Trend Growth Rates (%), 1919-1944

| | 1919-1939 | 1919-1944 |
|---|---|---|
| Cotton textiles | -0.2 | -0.5 |
| Woollen textiles | -1.1 | -2.6 |
| Refined sugar | 0.4 | 0.4 |
| Wheat and maize | -0.1 | -0.4 |
| Vegetable oils | 0.6 | 1.2 |
| Tobacco products | -3.2 | -0.7 |

Source: See the text for details. Log of consumption per capita figures are regressed over time trend.

output was around 8,000 tons during the 1920s, which thereafter diminished to 6,000 tones in the 1930s (Figure 6.9). As expected, it surged massively during World War II, up to 12,000 tones by the end of it. Since cigarette exports made up a small portion of production, around 2-5 percent, consumption behaved almost identically as production.

At this point, it would be reasonable to examine how the consumption of textiles and food products changed over time. Table 6.7 brings together the trend growth rates of per capita consumption of all the goods that have been estimated so far, for 1919-1939 and 1919-1944 separately. As seen in the table, the most widely consumed goods, that is, cotton and cereals (wheat and maize), had negative trends, -0.2 and -0.1 percent per year respectively, between 1919 and 1939. Tobacco and woollen consumption contracted more severely (-3.2 and -1.1 percent respectively). On the other hand, sugar and vegetable oil consumption had small positive trends. Overall, all the consumption curves moved within a narrow range, even though the resulting trend rates varied from one to another. Other than this, the estimated trends for the period extending up to 1944 show the impact of the war on consumption: textiles and cereals consumption declined even more during the war, whereas the trend in vegetable oils and tobacco consumption recovered slightly. Overall, it seems that these consumption figures more or less confirm the stagnant per capita income hypothesis put forward in the Egyptian economic historiography.

### 6.3.5. Other Industries

#### Minerals and Oil Processing

Mineral extraction did not occupy an exceptional place in Egyptian industry prior to World War II. The leading locally produced minerals were crude petroleum, phosphates and manganese ore.[74] The exploration and refining of petroleum were still in their infancy in the pre-World War II period and total output was lower than the country's consumption, so a large amount of oil derivatives, such as kerosene and benzine, were imported.[75]

The present mining output index is constructed by combining the output of three minerals, reported in *Annuaire Statistique*, with the fixed price relatives for 1938. The reason for not deriving a more suitable price-weighted output index is the absence of manganese ore prices. Accordingly, the average prices of phosphate, petroleum and manganese in 1937 are as follows: 0.8, 1.22 and 1.34 per unit.[76] Figure 6.10 shows the three output indices (in metric tons) and the resultant fixed-price output index. As is seen there, the aggregate index is dominated by the petroleum and, to a lesser degree, phosphates, due to their large shares, and particularly by petroleum because of its outstanding output growth rates and the associated slump in the others during World War II.

As for oil processing, the domestic and imported petroleum were refined in the two refineries and turned into derivatives, mainly benzine, kerosene, fuel oil and asphalt. The output figures of all of them are available in *Annuaire Statistique* for 1926-1945. These quantity series are combined with the corresponding import prices to produce a Laspeyres quantity index with the base year as 1937. For the pre-1926 period, this quantity index is extrapolated backward with total crude petroleum output, which is the only suitable proxy. It can be noted that all these except fuel oil seem to follow a common moderately upward increasing pattern. Also, the massive increase in petroleum production led to the huge increases in fuel oil output, in particular during World War II.

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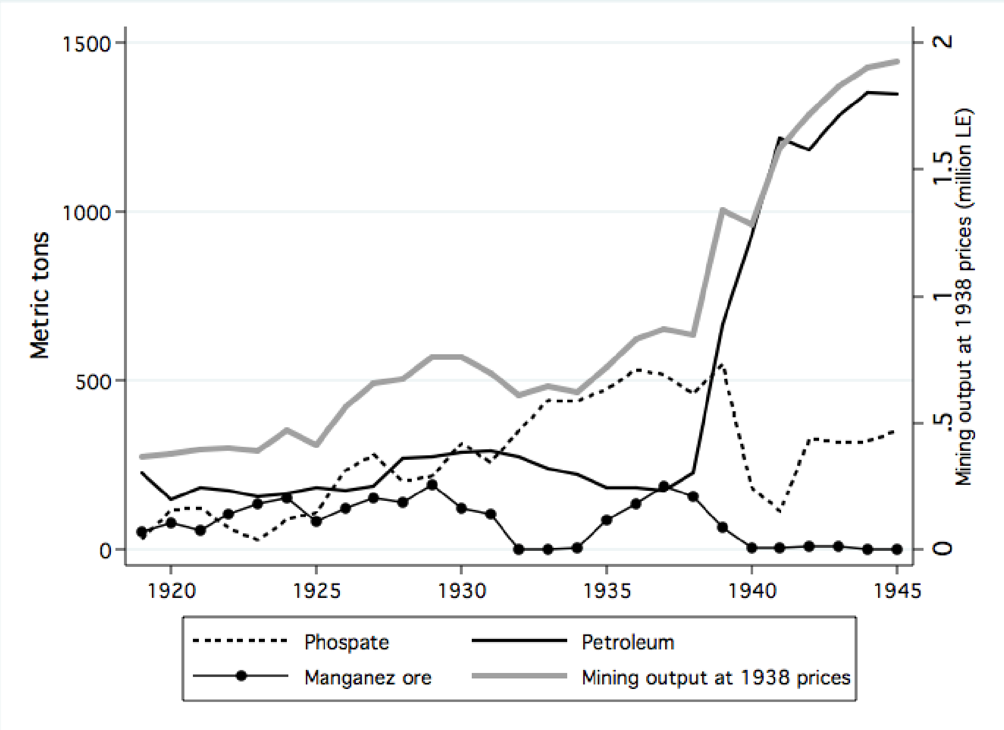
[74] These three created more than half of the total value of mining in 1938. Anis, A Study of National Income, p.378.

[75] Anglo-Egyptian Oilfields Limited owned the oil drills and one refinery in Suez, while another refinery was owned by the Egyptian government.

[76] Anis, A Study of National Income, p.378.

Figure 6.10.: Mining Output in Egypt, 1919-1945




Source: Tables 6.16 and 6.17.

## Construction

Construction activity is measured by an index of the consumption of iron, steel, cement and timber. The term construction here refers mainly to urban building activity and public works, such as irrigation and drainage works, where these products were basically consumed.[77] Egypt was at the time completely deficient in iron sources and lacked sufficient forests for building and industrial purposes, making the country almost entirely dependent on imports.[78] All of these items except for cement were mainly imported from abroad, so the import volumes give a direct measure of domestic activity.[79]

[77] Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.95.

[78] "Survey of material resources and industry in Egypt and Sudan", National Archives, FO/371 20898.

[79] The unit of imported timber changed in 1930 from volume ($m^3$) to weight (metric tons). To make the adjustment, we use the data of January-February 1930 with the older classification, and the rest of the 1930s with the new classification. First we make an estimate of timber imports in weight, based on the assumption that the average unit price was constant during the year, by dividing the total import value during January-February 1930 with the average prices per metric gross ton in the rest of the year. Then we obtain the volume-weight conversion for these two months by dividing the estimated weight by the import volume. This gives a coefficient of 0.41 metric ton/$m^3$, which we

As for cement, the local production was quite substantial and progressed substantially in the 1930s. The first factory was founded in 1895 by Société Anonyme des Ciments d'Egypte (a Belgian concern), and were joined by another owned by a Swiss group in 1927.[80] These firms merged in 1930 and created an oligopolistic structure with government aid.[81] Local output was around 24,000 tones during World War I and the figures for 1925 and after are obtained from various British consular reports.[82] Cement output saw a phenomenal expansion in the 1930s: it grew by around five times between 1929 and 1938 and kept increasing thereafter at a more moderate pace, all of which was accompanied by a decline in imports. Hansen and Nashashibi argues that the 15 percent duties placed on imported cement led to the disappearance of imports and it was complemented by an excise tax at the outset of the war. In the present estimate, the local output is added to cement imports, which yield total cement consumption.[83]

A Laspeyres quantity index is then constructed based on three consumption series (cement, iron and steel and timber) and the average import prices of the base year 1937.[84] The choice of import prices as weights is due to the fact that not much is known about the shares of value added of each raw material in the total value added of the whole of construction. Thus, for simplicity it is assumed that each item contributes to the total value added in proportion to their relative cost. Moreover, since stocks are not visible, we have used the three-year moving averages of the consumption figures to capture stock changes. The resulting index shows that total construction activity moved quite differently from the other branches of industry (Figure 6.11). Much of

use to convert import volumes into weight equivalents for all the earlier years.

[80]Larkins, *Economic Conditions in Egypt*, p.51

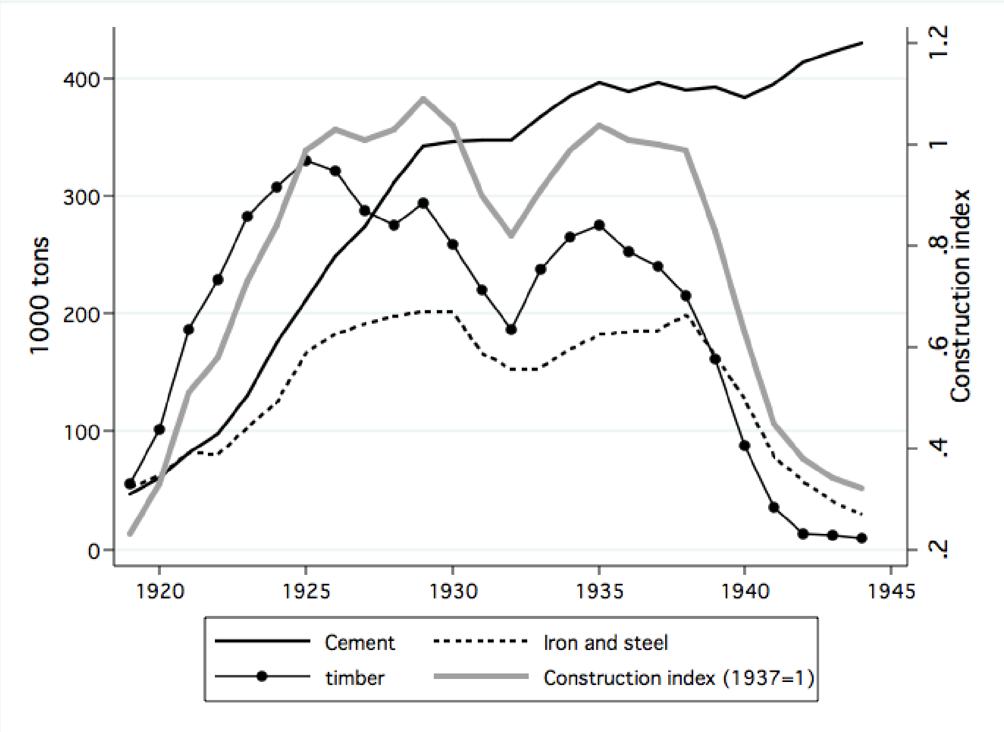
[81]For bibliographical information on the structure of the industry and selling arrangements, see el-Gritly, pp.233-37.

[82]1926-1929: UK, *Report of the United Kingdom Trade Mission to Egypt*, p.51; 1930-1934: G.H. Selous, *Economic Conditions in Egypt.* Department of Overseas Trade, UK, 1935, p.94; 1936: Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.95-96; 1937-38: Empson, *Report on the Economic and Commercial Conditions in Egypt*, p.48; and finally 1939-1945: *Annuaire Statistique*, 1944/45, pp.452-53. The 1935 figure is obtained by a simple interpolation and the 1919-1924 figures are obtained by a simple linear interpolation between World War I and 1925.

[83]Hansen and Nashashibi, *Foreign Trade Regimes*, p.243.

[84]The foreign trade data does not differentiate between iron and steel imports, so they are included in the same quantity and price series. In the trade classification the following items are grouped: bars, rails, sheets, tubes and pipes, structures and nails and screws. All items are made of iron or steel.

Figure 6.11.: Consumption of Cement, Timber, Iron and Steel in Egypt, 1919-1944




Source: Table 6.18

the progress seems to have been made in the 1920s rather than in the following period. The consumption of all items, and therefore the index, increased in the 1920s, while the 1930s saw more or less stable activity with ups and downs after 1930. During World War II, thanks to the domestic production, cement consumption continued to grow, while the imports of iron, steel and timber substantially dropped.

## 6.4. The Aggregate Output Index

Up to this point, we have set out the details of how the sectoral output series are constructed and now we need to combine them to get a single output index. The absence of annual indicative price series and value added estimates leaves constant share weighting the only plausible option. These shares are here first obtained from the 1944 industrial census and then we do the best to our capacity to derive the relevant shares for the 1930s and 1920s by using employment, price and output data.

In Egypt the first industrial census was carried out in 1944 and was repeated every three years thereafter.[85] Before that the most direct sources on industrial activities are the industrial and commercial censuses, carried out in 1927 and 1937.[86] Prior to that, the population censuses provide the basic employment figures from 1907 onwards every ten years, so sectoral employment data can, in principal, be traced back to 1907. The classifications in these censuses are not, however, compatible to an acceptable degree, so making them compatible requires a considerable degree of guesswork. As for the additional data on output, costs, salaries, et cetera, the relatively reliable data starts from 1944. Thus, we begin with the 1944 industrial census, which contains the value added data reported at a broadly-defined 41 categories. Unlike the 1927 and 1937 censuses, this census left out the repair shops, thereby eliminating a large number of enterprises. As in similar censuses at the time, there may also have been underreporting, although there is no way of checking its extent, so we have to assume that the degree of bias in the reporting of output value and production costs were more or less similar.

To obtain the shares of the undocumented industries, we follow a two-stage procedure. First, the observed food processing series (milling, sugar, cotton seed oil and dairy) and textile series (cotton weaving and spinning, wool and silk) represent the whole broad food processing and textile categories. When this is done, our output series appears to account all together for 74 percent of total industrial value added. The remaining undocumented industries are chemicals, leather, mechanical engineering, utilities and so on. In the second stage, the available series represent the remaining ones in proportion to their share in the total of the documented sectors. The value added is calculated as the output value net of the costs of raw materials, energy and depreciation of buildings and machines.

The value added distribution in 1944 turns out to be quite reasonable for a traditional industrial structure: textiles, which does include cotton ginning and pressing, were responsible for around 28 percent of all value added.

[85]Egypt, Ministry of Finance and Economy, Statistical Department, *Census of Industrial Production, 1944*. Government Press, 1947; Egypt, Ministry of Finance and Economy, Statistical Department, *Census of Industrial Production*. Government Press, 1952.

[86]Egypt, Statistical and Census Department, Ministry of Finance, *Industrial and Commercial Census, 1927*. Cairo: Government Press, 1931; Egypt, Ministry of Finance and Economy, Statistical Department, *Industrial and Commercial Census, 1947*. Cairo: Government Press, 1955.

Food-processing sectors, meanwhile, had a rather large share (40 percent) and cigarette making was 12 percent, which makes sense since it was really one of the most developed sectors in Egypt. However, the value added figures for the sub-sectors in textiles and food processing are not available. To find the share of each sub-industry, we calculate the approximate value added by looking at the share of each sub-sector within textiles and food processing output value, assuming that the value added was proportional to the total output value. To approximate the cotton weaving and spinning, woollen and silk output values, we rely on our own estimation of yarn and fabric output and average import prices. For food processing, the domestic retail prices in Cairo of flour, cotton seed oil, sugar and milk are multiplied with the corresponding output figures obtained above.

Obviously, the sectoral composition might have changed during World War II due to wartime dislocations. A very striking example of this was the decline in the silk industry. As a result, using the same shares for the pre-war period would be wrong. To adjust sectoral shares for the 1930s, the method employed here is to project the 1944 value added figures back to 1937. To do so, the employment figures from the 1937 census are matched with a few modifications (see Table 6.11). Then the value added per worker in each broad category (see the first column of Table 6.8) is taken back to 1937 by multiplying it with the number of workers, which gives the value added at 1944 prices. Here we just assume that worker productivity at constant prices did not change between 1937 and 1944. After obtaining the value added in broad categories, we employ the same method as with the 1944 data to get the value added in each sub-industry, that is, assuming the value added distribution was the same as the output value distribution. For this, we use the estimated output values and prices referred to above: the average cloth import prices and the domestic retail prices of the relevant commodities (wheat flour, sugar, cotton seed oil and milk).

As for the 1920s, the employment data provided by the 1927 census cannot be reliably compared to 1937 or 1944 because both the classifications and the category definitions changed and it is hard to make them compatible without a lot of guesswork. We therefore prefer to modify the estimated 1937 shares using output and price information. Keeping an eye on output and price changes between 1927 and 1937, the value added at 1944 prices are extended back to 1927 in proportion to the change of total output value, which is based

Table 6.8.: Value-Added Shares in Egyptian Industry in 1927, 1937 and 1944 (%)

| **Broad sectors** | **Sub-industries** | 1927 | 1937 | 1944 |
|---|---|---|---|---|
| Cotton ginning and pressing | | 11.4 | 8.0 | 8.5 |
| Textiles | Cotton fabrics | 4.5 | 12.1 | 14.8 |
| | Cotton yarn | 3.1 | 9.8 | 13.4 |
| | Silk | 3.5 | 2.8 | 0.1 |
| | Woollens | 2.0 | 2.2 | 1.0 |
| Food processing | Milling and bakery | 32.4 | 28.0 | 20.2 |
| | Sugar | 5.1 | 8.0 | 7.7 |
| | Vegetable oils | 3.7 | 2.9 | 4.7 |
| | Dairy | 3.8 | 2.6 | 7.7 |
| Mineral extraction | | 1.9 | 2.8 | 2.9 |
| Construction | | 8.6 | 8.5 | 4.1 |
| Fuel-connected | | 1.9 | 3.7 | 3.1 |
| Tobacco | | 18.1 | 8.7 | 11.8 |
| | Total | 100.0 | **100.0** | **100.0** |

Source: See the text.

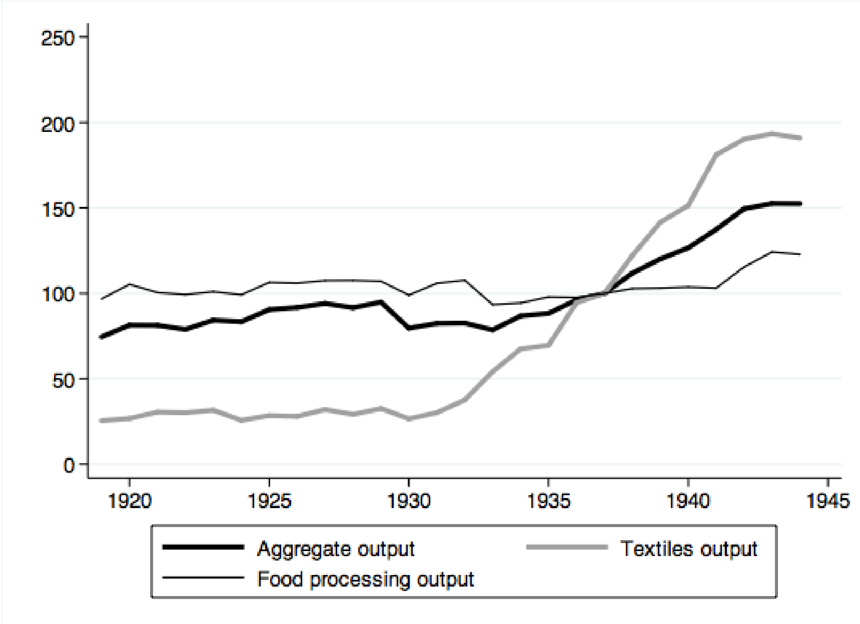
on the assumption that value added moved in parallel with output value. Again, the output and prices represent the apparent output in each sector.

Taken together, a number of points stand out from the estimated shares for 1927, 1937 and 1944 presented in the Table 6.8. First, these clearly confirm the increasing importance of cotton-related industries all over the period and particularly in the 1930s. The relatively high share of cotton ginning and pressing should be viewed in the context of Egypt's position in the world cotton market and its huge cotton production and exports, as the overwhelming proportion of the local raw cotton was ginned and pressed in local factories and then exported. Second, cigarette making clearly had a special place, though its share moved with the general trend in consumption, that is, it declined in the 1930s and picked up during World War II. Third, the decline of silk during the war and the stagnation and then decline in cereal milling are clearly reflected in the estimated shares.

Figure 6.12 shows the resulting aggregate output index, along with the food and textile indices separately (Table 6.19). All of them are constant-weight indices, with three different weighting schemes used for the 1920s, the 1930s and 1939-1944, as was explained above.[87] More generally, three phases

[87] It should not come as a surprise that the 1937-based index underestimates the fast-growing industries in the 1920s and 1940s. Precisely for this reason, weights are adjusted

Figure 6.12.: Final Output Indices for Egyptian Industry: Aggregate, textile and food processing (1937=100), 1919-1944




Note: All are linked indices with different weighting schemes used for 1919-1929, 1930-1938 and 1939-1944. See Table 6.19.

of industrial development can be detected from these estimates. The slight improvement in the 1920s, the small downturn at the beginning of the 1930s and the relentless positive trend thereafter up to mid-World War II. The trend growth of the aggregate index was 1.3 and 2.4 percent per annum over 1919-1939 and 1919-1944 respectively, whereas the output grew more rapidly during the 1930s with 4.5 percent per annum (Table 6.9). Nevertheless, this aggregate picture hides the huge variation in growth rates between textiles and food-processing industries. The food processing suffered from a long-term stagnation. In sharp contrast, textiles saw a very strong expansion starting immediately at the beginning of the 1930s: the trend growth was 7.9 percent between 1919-1939, and 9.4 percent if the period is extended to cover World War II. Thus it becomes clear that the industrial expansion of the 1930s was overwhelmingly due to the textile expansion, while it slightly spread to the other sectors during the 1930s and World War II. On the other hand, it should be repeated that this phenomenal rise in textiles was simultaneously accompanied by the stagnant, if not declining, consumption of manufactures.

to avoid that underestimation.

Table 6.9.: Trend Growth Rates in Egyptian Industry: Aggregate, Textiles and Food-Processing, 1919-1944

| Period | Aggregate output | Textile output | Food-processing output |
|---|---|---|---|
| 1929-1939 | 4.5 | 17.3 | -0.3 |
| 1919-1939 | 1.3 | 7.9 | 0.0 |
| 1919-1944 | 2.4 | 9.4 | 0.3 |

Note: These figures are found by regressing the natural logarithm of the output index on the time trend and constant.

Table 6.10.: Output Estimates Egyptian Industry, 1938-1945

| | I Anis (1950) | II Raafat (1949) | III Mead (1967) | IV Hansen& Marzouk (1965) | V Mabro& Radwan (1976) | VI Own estimates |
|---|---|---|---|---|---|---|
| 1938 | | 89 | | | 87 | 93 |
| 1939 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1940 | 115 | 106 | | | 102 | 105 |
| 1941 | 141 | 115 | | | 113 | 114 |
| 1942 | 151 | 121 | | | 119 | 124 |
| 1943 | 150 | 122 | | | 124 | 127 |
| 1944 | 154 | 121 | | | 127 | 127 |
| 1945 | 138 | 119 | 195 | 135 | 135 | |

Sources: (I), (II), (III), (IV) from Mabro and Radwan, *Industrialisation of Egypt*, p.245; (V) from Mabro and Radwan, *Industrialisation of Egypt*, p.83.

As discussed earlier, there is not any other alternative estimate of aggregate industrial activity to compare our findings with. But for the World War II period, at least, there are a couple of alternatives, all of which are presented in comparison with the present findings in Table 6.10. In particular, Raafat, Mabro and Radwan and the present estimates are pretty close to each other and point out 20-30 percent growth between 1939 and 1944. On the other hand, Mead's estimate of 95 percent growth between 1939 and 1945 is overly exaggerated. As for Anis' 54 percent growth between 1939 and 1944, it is possibly biased due to the fact that he uses an employment proxy to extrapolate the 1945 output level backwards, instead of physical output series.

## 6.5. Conclusion

Charles Issawi once argued that "in the absence of statistics on output, or of accurate figures on employment, it is difficult to judge the extent of industrial advance" in Egypt before World War II.[88] Since then, this absence has remained the most significant barrier to putting the interwar Egyptian industrialisation in a historical perspective. Indeed, the data shortage for industry stands in sharp contrast to the existence of high quality and abundant statistical evidence on agriculture, foreign trade, transportation and so on, which go back as far as the late nineteenth century. The origins of this unbalanced statistical development goes beyond the confines this study, but it should definitely be viewed in relation to the process of state formation in Egypt, which was characterised by British rule until the early 1920s and gradual decolonisation thereafter up to the post-war years.

This chapter aimed to fill this empirical gap by constructing the first long-term output estimates at both aggregate and sectoral level for the major Egyptian industries. The final aggregate output index is based on 12 individual series, which are all produced through a careful examination of each branch of industry. These individual series are first combined with the fixed value added shares for 1944 and then these shares are adjusted for 1927 and 1937. Three sets of fixed weights are thus used to combine all the series for the 1920s, 1930s and the wartime period (Table 6.8).

Until now, the conventional interpretation has viewed the 1930s as the starting point of Egypt's industrialisation, based largely on fragmentary evidence that consists of some output data, import statistics and various conjectures. Our estimates largely confirm this hypothesis: while the aggregate industrial output grew by 1.7 percent per year in the 1920s, the annual trend growth rate reached 4.3 percent between 1930 and 1944. Moreover, the trends during the 1930s and early phase of World War II were quite similar. The small incremental improvement in the aggregate activity in the 1920s was followed by a moderate downturn after 1929 for a few years and then there began a strong upward trend in the mid-1930s, which was intensified in the first half of the war. Thus, the present estimates provide a more accurate and nuanced view of industrial growth.

Furthermore, and perhaps equally importantly, these estimates point to a very striking phenomenon: the disaggregated indices show the huge variation within Egyptian industry, as the expansion of the post-1930 period turns out to be predominantly due to textiles growth, which grew by 14.3 percent per

[88] Issawi, *Egypt at Mid-Century*, p.141.

year during 1930-1944. Thus, textiles outperformed by far all other branches, even though most of them also witnessed moderate growth rates. Over the course of the same period, the food-connected industries, including cigarette making, grew by only 1.2 percent per year. One should remember that cotton goods made up a high proportion of textiles output, leading to the fact that overall industrial growth would have been much slower without the performance of the cotton sector. It should be noted that, as el-Gritly has pointed out and as was mentioned earlier, the cotton industry became increasingly concentrated, as only a few highly capitalised businesses monopolised the whole sector, mostly at the expense of handicrafts and imports.[89] As will be discussed in the next chapter, import duties would become increasingly restrictive as a result of the lobbying of these powerful interests.

On the other hand, one might question the plausibility of these findings. To this end, we have estimated the per capita final consumption of textiles and other goods, all presented in Table 6.7, and they appear to a large extent consistent with the existing literature: although there is some variation among the consumption trends of different goods, they have either small negative (as in the case of cotton textiles, cereals and tobacco) or small positive (as in the case of vegetable oils and sugar) trends, which in all likelihood support the received wisdom that the per capita Egyptian income remained stagnant in the interwar years. Given that the stagnant income hypothesis was also in accordance with our farm income estimates, the consistency of our estimated consumption figures with the hypothesis reinforces the plausibility of our output estimates.

[89] el-Gritly, Structure of Modern Industry.

# 6.6. Data Appendix

Table 6.11.: Industrial Employment in Egypt in 1937

| Number | Groups | Number of employees | Derived categories | Groups combined |
|---|---|---|---|---|
| 1 | Vegetable food connected | 47785 | Food processing | 1,2 |
| 2 | Animal food connected | 3644 | Tobacco | 4 |
| 3 | Connected with drinks | 1853 | Textiles | 13, 14, 15 |
| 4 | Tobacco manufacturing | 9058 | Fuel connected | 5, 21 |
| 5 | Extraction of oils and fats | 3628 | Construction | 19, 23, 24 |
| 6 | Chemical industries | 3370 | Mineral extraction | 26, 27 |
| 7 | Manufacture of paper and articles in paper | 2703 | | |
| 8 | Printing, book binding and photography | 8584 | | |
| 9 | Manufacture of rubber | 130 | | |
| 10 | Manufacture of scientific instrument | 2261 | | |
| 11 | Miscellaneous manufactures | 5937 | | |
| 12 | Manufacture of leather and furs | 2205 | | |
| 13 | Textile industries | 48637 | | |
| 14 | Manufacture of clothing | 30575 | | |
| 15 | Manufacture of misc articles of cloths | 2253 | | |
| 16 | Cleaning of clothes | 6254 | | |
| 17 | Metallurgy and manufacture of metal articles | 17793 | | |
| 18 | Manufacture of machine and machine tools | 3824 | | |
| 19 | Wood working, working in canes and corks | 13060 | | |
| 20 | Manufacture of transport means | 17670 | | |
| 21 | Mineral fuel connected | 192 | | |
| 22 | Generation and distribution of power | 11891 | | |
| 23 | Preparation of materials of construction | 9928 | | |
| 24 | Contractors of buildings | 7158 | | |
| 25 | Contractors of public works | 295 | | |
| 26 | Exploitation of mines | 987 | | |
| 27 | Exploitation of quarries | 2379 | | |
| 28 | Exploitation of salines | 2734 | | |
| 29 | Hairdressing and beautifying | 6369 | | |
| | Total | 273157 | | 179284 |

Source: 1937 Industrial and Commercial Census. The share of cotton and ginning within textiles is determined according to the the share in its employment in 1944.

Table 6.12.: Flour Milling in Egypt, 1919-1945

| | Wheat output 1000 ardebs | Wheat used for seeding 1000 ardebs | Net wheat imports tons | Wheat consumption 1000 tons | Maize output 1000 ardebs | Maize used for seeding 1000 ardebs | Net maize imports tons | Maize consumption tons | Total cereal consumption 1000 tons | Per capita consumption tons |
|---|---|---|---|---|---|---|---|---|---|---|
| 1919 | 5468 | 617 | -2800 | 725 | 11881 | 432 | -4639 | 1598 | 2315 | 0.18 |
| 1920 | 5753 | 754 | 132868 | 883 | 11608 | 467 | 10700 | 1570 | 2858 | 0.22 |
| 1921 | 6715 | 785 | -9619 | 880 | 12804 | 502 | 10586 | 1733 | 2585 | 0.19 |
| 1922 | 6619 | 795 | 732 | 874 | 12186 | 490 | -2389 | 1635 | 2673 | 0.20 |
| 1923 | 7376 | 733 | 575 | 997 | 12058 | 449 | 9030 | 1634 | 2780 | 0.20 |
| 1924 | 6203 | 714 | 14465 | 838 | 12175 | 452 | -3719 | 1637 | 2934 | 0.21 |
| 1925 | 6562 | 792 | 50875 | 916 | 12260 | 500 | 7403 | 1654 | 3078 | 0.22 |
| 1926 | 6751 | 856 | 299 | 884 | 14003 | 521 | 7396 | 1895 | 3055 | 0.22 |
| 1927 | 8046 | 820 | -8237 | 1076 | 14621 | 521 | -16794 | 1957 | 3121 | 0.22 |
| 1928 | 6767 | 834 | 36737 | 927 | 14862 | 513 | -139585 | 1869 | 3043 | 0.21 |
| 1929 | 8206 | 788 | 220 | 1113 | 14213 | 462 | -58309 | 1867 | 3116 | 0.21 |
| 1930 | 7213 | 788 | 42988 | 1007 | 12603 | 457 | 16000 | 1716 | 2918 | 0.20 |
| 1931 | 8359 | 911 | 42088 | 1159 | 12680 | 528 | 13096 | 1714 | 3242 | 0.22 |
| 1932 | 9541 | 739 | 6635 | 1327 | 14189 | 492 | 1054 | 1919 | 3225 | 0.21 |
| 1933 | 7249 | 747 | -406 | 975 | 13799 | 395 | -9275 | 1867 | 2402 | 0.16 |
| 1934 | 6763 | 758 | 54104 | 955 | 10542 | 393 | 810 | 1422 | 2478 | 0.16 |
| 1935 | 7842 | 758 | -70 | 1062 | 11227 | 394 | 1809 | 1519 | 2634 | 0.17 |
| 1936 | 8292 | 735 | -6178 | 1127 | 12064 | 380 | 2180 | 1638 | 2669 | 0.17 |
| 1937 | 8233 | 761 | -30122 | 1091 | 11395 | 390 | -1580 | 1539 | 2696 | 0.17 |
| 1938 | 8334 | 777 | 3132 | 1137 | 11794 | 374 | 5878 | 1605 | 2658 | 0.16 |
| 1939 | 8892 | 808 | 944 | 1214 | 11009 | 387 | 1223 | 1488 | 2690 | 0.16 |
| 1940 | 9071 | 805 | -60842 | 1179 | 10888 | 385 | 846 | 1471 | 2654 | 0.16 |
| 1941 | 7492 | 847 | 15122 | 1012 | 10925 | 382 | 885 | 1477 | 2249 | 0.13 |
| 1942 | 8411 | 1031 | 40506 | 1147 | 9158 | 496 | 21661 | 1234 | 2534 | 0.15 |
| 1943 | 8611 | 825 | -25990 | 1142 | 10369 | 488 | 18 | 1383 | 2452 | 0.14 |
| 1944 | 6307 | 892 | 37630 | 850 | 9836 | 473 | -491 | 1310 | 2342 | 0.13 |
| 1945 | 7881 | 851 | 170293 | 1225 | 12123 | 413 | -1719 | 1638 | 2891 | 0.16 |

Source: See the text.

Table 6.13.: Sugar Processing in Egypt, 1918-1945

| | Societe General Refined sugar output | Sugar cane output | Sugar cane imports | Total sugar cane consumption | Final refined sugar output | Refined sugar net imports | End-year stocks of refined sugar | Refined sugar consumption | Per capita consumption (kg) |
|---|---|---|---|---|---|---|---|---|---|
| 1918 | 79.5 | 1824.7 | 18.5 | 1843 | 120.4 | -17.1 | 17.5 | | |
| 1919 | 75.9 | 1727.5 | 12.5 | 1740 | 113.6 | -12.7 | 18.4 | 100.2 | 7.7 |
| 1920 | 56.9 | 1608.7 | 37.4 | 1646 | 107.5 | -13.8 | 20.8 | 98.6 | 7.5 |
| 1921 | 67.0 | 1873.6 | 8.1 | 1882 | 122.9 | -7.4 | 25.4 | 105.1 | 7.9 |
| 1922 | 110.7 | 1850.0 | 0.0 | 1850 | 120.8 | 0.1 | 55.3 | 88.9 | 6.6 |
| 1923 | 96.0 | 1719.8 | 2.8 | 1723 | 112.5 | 0.4 | 38.5 | 132.7 | 9.7 |
| 1924 | 72.2 | 1699.1 | 28.9 | 1728 | 112.9 | -12.3 | 23.9 | 112.5 | 8.1 |
| 1925 | 80.0 | 1586.9 | 21.3 | 1608 | 105.0 | 13.6 | 42.5 | 103.4 | 7.4 |
| 1926 | 95.9 | 1643.7 | 0.0 | 1644 | 107.4 | 2.1 | 39.9 | 107.3 | 7.6 |
| 1927 | 71.6 | 1460.3 | 2.0 | 1462 | 95.5 | 20.2 | 24.2 | 145.2 | 10.2 |
| 1928 | 91.4 | 1911.8 | 0.0 | 1912 | 124.9 | 32.2 | 27.6 | 137.2 | 9.5 |
| 1929 | 109.0 | 1609.9 | 0.0 | 1610 | 105.2 | 52.9 | 47.3 | 143.8 | 9.8 |
| 1930 | 107.4 | 1561.4 | 0.0 | 1561 | 102.0 | 6.5 | 75.7 | 93.3 | 6.3 |
| 1931 | 121.8 | 2115.9 | 0.0 | 2116 | 138.2 | 4.3 | 107.1 | 102.1 | 6.8 |
| 1932 | 147.4 | 2256.7 | 0.0 | 2257 | 147.4 | 0.3 | 126.4 | 128.4 | 8.5 |
| 1933 | 170.3 | 2308.0 | 0.0 | 2308 | 170.3 | -21.9 | 154.0 | 120.9 | 7.9 |
| 1934 | 154.5 | 2120.2 | 0.0 | 2120 | 154.5 | -34.8 | 128.7 | 144.9 | 9.4 |
| 1935 | 136.5 | 2077.1 | 4.7 | 2082 | 136.5 | -41.9 | 60.9 | 162.4 | 10.4 |
| 1936 | 131.9 | 2117.2 | 37.3 | 2154 | 131.9 | 0.6 | 40.5 | 152.9 | 9.7 |
| 1937 | 137.9 | 2387.6 | 32.5 | 2420 | 137.9 | 0.5 | 44.2 | 134.7 | 8.4 |
| 1938 | 160.2 | 2293.0 | 108.7 | 2402 | 160.2 | -16.8 | 50.3 | 137.4 | 8.4 |
| 1939 | 162.1 | 2453.7 | 94.7 | 2548 | 162.1 | -55.7 | 46.9 | 109.8 | 6.6 |
| 1940 | 159.8 | 2501.3 | 67.2 | 2568 | 159.8 | -70.3 | 53.4 | 83.1 | 4.9 |
| 1941 | 175.0 | 2374.5 | 14.6 | 2389 | 175.0 | -25.2 | 38.3 | 164.9 | 9.6 |
| 1942 | 158.9 | 2501.1 | 2.6 | 2504 | 158.9 | -3.8 | 30.5 | 162.9 | 9.3 |
| 1943 | 189.9 | 2175.8 | 0.0 | 2176 | 189.9 | 0.2 | 35.2 | 185.5 | 10.4 |
| 1944 | 167.1 | 2603.5 | 0.0 | 2604 | 167.1 | 0.1 | 26.4 | 175.9 | 9.7 |
| 1945 | 172.5 | 2633.7 | 0.1 | 2634 | 172.5 | 0.1 | 33.7 | 165.3 | 9.0 |

Notes: Column 4=Column 2+Column 3. Column 8=Column 5+Column 6+net change in Column 7. See the text for details.

Table 6.14.: Vegetable Oil Output in Egypt, 1918-1945

| | Cotton seed oil | Cotton seed stocks taken from previous year | Cotton seeds output | Cotton seed exports | Seeds used kept for next year | Cotton seed consumption | Vegetable oil imports | Total consumption | Per capita consumption |
|---|---|---|---|---|---|---|---|---|---|
| | tons | 1000 ardebs | 1000 ardebs | 1000 ardebs | 1000 ardebs | tons | tons | tons | kg |
| 1918 | 23919 | 70 | 3693 | 2062 | 498 | 144360 | 7455 | 31374 | 2.43 |
| 1919 | 36624 | 77 | 4269 | 1925 | 579 | 221040 | 6158 | 42782 | 3.27 |
| 1920 | 44517 | 295 | 4629 | 2277 | 408 | 268680 | 5721 | 50238 | 3.80 |
| 1921 | 21235 | 240 | 3339 | 1941 | 570 | 128160 | 7431 | 28665 | 2.14 |
| 1922 | 39169 | 282 | 5148 | 2917 | 543 | 236400 | 8038 | 47207 | 3.49 |
| 1923 | 41555 | 115 | 5005 | 2464 | 566 | 250800 | 9476 | 51031 | 3.73 |
| 1924 | 44657 | 21 | 5533 | 2699 | 609 | 269520 | 10112 | 54769 | 3.97 |
| 1925 | 55612 | 96 | 6077 | 2811 | 565 | 335640 | 11825 | 67437 | 4.83 |
| 1926 | 46540 | 198 | 5832 | 3091 | 480 | 295080 | 10399 | 56939 | 4.03 |
| 1927 | 43864 | 214 | 4622 | 1988 | 551 | 275640 | 10150 | 54014 | 3.78 |
| 1928 | 48134 | 532 | 6110 | 3190 | 583 | 344280 | 10977 | 59111 | 4.09 |
| 1929 | 64202 | 71 | 6462 | 2684 | 659 | 382800 | 11734 | 75936 | 5.20 |
| 1930 | 65671 | 124 | 6256 | 2584 | 533 | 391560 | 14010 | 79681 | 5.40 |
| 1931 | 41000 | 233 | 4799 | 2202 | 346 | 298080 | 13246 | 54246 | 3.63 |
| 1932 | 27201 | 166 | 3745 | 1692 | 571 | 197760 | 13498 | 40699 | 2.69 |
| 1933 | 28500 | 150 | 6458 | 3262 | 548 | 335760 | 14519 | 43019 | 2.82 |
| 1934 | 36500 | 110 | 5690 | 2635 | 529 | 316320 | 16491 | 52991 | 3.43 |
| 1935 | 39000 | 19 | 6350 | 2976 | 543 | 342000 | 15077 | 54077 | 3.46 |
| 1936 | 42500 | 6 | 6842 | 2726 | 626 | 419520 | 13758 | 56258 | 3.56 |
| 1937 | 50500 | 47 | 7325 | 3387 | 565 | 410400 | 12282 | 62782 | 3.92 |
| 1938 | 65000 | 42 | 5641 | 2182 | 515 | 358320 | 15295 | 80295 | 4.90 |
| 1939 | 53000 | 220 | 5847 | 1859 | 534 | 440880 | 12017 | 65017 | 3.92 |
| 1940 | 61000 | 468 | 6151 | 801 | 520 | 635760 | 11934 | 72934 | 4.32 |
| 1941 | 73000 | 2164 | 5593 | 641 | 223 | 827160 | 9336 | 82336 | 4.79 |
| 1942 | 102000 | 350 | 2819 | 0 | 226 | 353160 | 5246 | 107246 | 6.15 |
| 1943 | 97000 | 177 | 2442 | 0 | 270 | 281880 | 613 | 97613 | 5.48 |
| 1945 | 74000 | 178 | 3181 | 0 | | | 879 | 74879 | 4.06 |

Source: See the text.

Table 6.15.: Cigarette Making in Egypt, 1918-1945

| | Imports of raw tobacco | Withdrawals from public warehouses | Net imports of manufactured tobacco | Total consumption | Per capita consumption |
|---|---|---|---|---|---|
| | tons | tons | tons | tons | kg |
| 1918 | 6965 | 6916 | -349 | 6616 | 0.60 |
| 1919 | 8303 | 8766 | -515 | 7788 | 0.65 |
| 1920 | 9048 | 8798 | -402 | 8646 | 0.59 |
| 1921 | 7919 | 7864 | -61 | 7858 | 0.54 |
| 1922 | 7485 | 7655 | -206 | 7279 | 0.53 |
| 1923 | 7207 | 6863 | 8 | 7214 | 0.54 |
| 1924 | 7437 | 7638 | 17 | 7454 | 0.54 |
| 1925 | 7594 | 7886 | -10 | 7584 | 0.53 |
| 1926 | 7442 | 7746 | 37 | 7479 | 0.51 |
| 1927 | 7241 | 7425 | 13 | 7253 | 0.55 |
| 1928 | 7881 | 7978 | 18 | 7899 | 0.54 |
| 1929 | 7811 | 7946 | 12 | 7822 | 0.39 |
| 1930 | 5956 | 7346 | -205 | 5751 | 0.41 |
| 1931 | 6219 | 6246 | -167 | 6052 | 0.37 |
| 1932 | 5702 | 5797 | -167 | 5535 | 0.34 |
| 1933 | 5461 | 5560 | -219 | 5242 | 0.36 |
| 1934 | 5694 | 5726 | -168 | 5526 | 0.36 |
| 1935 | 5878 | 5917 | -196 | 5682 | 0.37 |
| 1936 | 5943 | 5969 | -83 | 5861 | 0.37 |
| 1937 | 6038 | 6117 | -157 | 5881 | 0.36 |
| 1938 | 5908 | 5995 | -87 | 5821 | 0.35 |
| 1939 | 5823 | 6045 | -74 | 5749 | 0.35 |
| 1940 | 5644 | 5598 | 273 | 5917 | 0.37 |
| 1941 | 6418 | 6093 | 8 | 6426 | 0.56 |
| 1942 | 7701 | 7423 | 2088 | 9788 | 0.59 |
| 1943 | 9163 | 8993 | 1407 | 10570 | 0.77 |
| 1945 | 11714 | 11282 | 1263 | 12977 | 0.70 |

Source: See the text.

Table 6.16.: Minerals Extraction in Egypt, 1918-1945

| | Phosphate rock<br>Metric tones | Crude petroleum<br>Metric tones | Manganese ore<br>Metric tones | Total output<br>LE Million at 1938 prices |
|---|---|---|---|---|
| 1918 | 31147 | 281885 | 27498 | 0.41 |
| 1919 | 29365 | 224300 | 48734 | 0.36 |
| 1920 | 114813 | 147950 | 77562 | 0.38 |
| 1921 | 122024 | 182668 | 55065 | 0.39 |
| 1922 | 60220 | 172878 | 104143 | 0.40 |
| 1923 | 25370 | 153402 | 132384 | 0.38 |
| 1924 | 87869 | 163341 | 150194 | 0.47 |
| 1925 | 106808 | 179651 | 80589 | 0.41 |
| 1926 | 232008 | 172952 | 121868 | 0.56 |
| 1927 | 279389 | 184556 | 152845 | 0.65 |
| 1928 | 200563 | 268323 | 137502 | 0.67 |
| 1929 | 215311 | 272114 | 191477 | 0.76 |
| 1930 | 313478 | 285088 | 121211 | 0.76 |
| 1931 | 257011 | 289419 | 101781 | 0.70 |
| 1932 | 349780 | 270792 | 327 | 0.61 |
| 1933 | 440632 | 237725 | 187 | 0.64 |
| 1934 | 437933 | 221028 | 959 | 0.62 |
| 1935 | 473896 | 182103 | 87303 | 0.72 |
| 1936 | 531031 | 182521 | 134972 | 0.83 |
| 1937 | 517002 | 170860 | 186320 | 0.87 |
| 1938 | 458404 | 225736 | 153112 | 0.85 |
| 1939 | 547538 | 666419 | 64912 | 1.34 |
| 1940 | 183464 | 928957 | 2637 | 1.28 |
| 1941 | 111708 | 1220557 | 2175 | 1.58 |
| 1942 | 328440 | 1181810 | 8169 | 1.72 |
| 1943 | 315566 | 1284966 | 7079 | 1.83 |
| 1944 | 318186 | 1352943 | 30 | 1.91 |
| 1945 | 349374 | 1349473 | 47 | 1.93 |

Note: The output is obtained by combining the individual output figures with 1938 average prices, which are from Anis, A Study of National Income, p.378.

Table 6.17.: Petroleum Processing Output in Egypt, 1926-1945

| | Output | | | | Import prices | | | | Laspeyres quantity index ( 1937=1) |
|---|---|---|---|---|---|---|---|---|---|
| | Kerosene Metric tons | Benzin Metric tons | Mazout Metric tons | Asphalt Metric tons | Kerosene LE/metric tons | Benzin LE/metric tons | Mazout LE/metric tons | Asphalt LE/metric tons | |
| 1926 | 5028 | 17458 | 133541 | 5007 | 4.1 | 12.8 | 3.1 | 5.9 | 0.5 |
| 1927 | 11100 | 18279 | 119511 | 13506 | 4.1 | 10.6 | 3.1 | 5.1 | 0.6 |
| 1928 | 17359 | 29622 | 162800 | 52545 | 4.3 | 8.3 | 2.7 | 5.6 | 1.0 |
| 1929 | 10756 | 34012 | 161089 | 63063 | 3.8 | 8.5 | 2.0 | 4.4 | 1.0 |
| 1930 | 9061 | 56513 | 137050 | 65847 | 3.0 | 7.0 | 1.9 | 5.4 | 1.1 |
| 1931 | 8491 | 66857 | 152020 | 40124 | 1.7 | 4.2 | 1.5 | 5.3 | 1.1 |
| 1932 | 2394 | 68709 | 119874 | 58175 | 2.7 | 5.0 | 1.4 | 1.9 | 1.1 |
| 1933 | 2118 | 64209 | 91345 | 48307 | 2.8 | 4.8 | 1.5 | 0.6 | 0.9 |
| 1934 | 11866 | 57254 | 70498 | 58135 | 2.7 | 4.2 | 1.6 | 5.4 | 0.9 |
| 1935 | 10015 | 48822 | 46534 | 54610 | 2.8 | 5.4 | 1.7 | 4.7 | 0.8 |
| 1936 | 13849 | 57180 | 39965 | 59047 | 2.5 | 5.1 | 1.5 | 2.4 | 0.8 |
| 1937 | 4762 | 49080 | 133060 | 60074 | 4.1 | 5.6 | 2.4 | 4.2 | 1.0 |
| 1938 | 17636 | 95201 | 167733 | 137176 | 3.7 | 5.0 | 2.8 | 4.5 | 1.8 |
| 1939 | 52212 | 104835 | 387116 | 170371 | 4.4 | 6.1 | 3.5 | 4.2 | 2.8 |
| 1940 | 70676 | 129911 | 519470 | 174495 | 6.9 | 8.0 | 5.3 | 6.9 | 3.5 |
| 1941 | 60952 | 156863 | 799687 | 121378 | 6.9 | 9.5 | 6.7 | 6.0 | 4.1 |
| 1942 | 57930 | 166710 | 712687 | 152780 | 6.5 | 8.7 | 5.9 | 8.6 | 4.1 |
| 1943 | 61337 | 169624 | 724879 | 148032 | 6.7 | 8.3 | 5.9 | 11.3 | 4.1 |
| 1944 | 65449 | 185514 | 845413 | 177843 | 6.7 | 8.2 | 5.9 | 13.9 | 4.7 |
| 1945 | 67925 | 183706 | 815896 | 172828 | 6.6 | 8.2 | 5.7 | 16.6 | 4.6 |

Note: For the years before 1926, the quantity index is extrapolated with crude petroleum output. See the text for details.

Table 6.18.: Construction Output in Egypt, 1919-1945

| | Local cement output | Cement net imports | Total cement consumption | Timber imports | Iron-steel imports | Import prices (LE/tons) | | | Laspeyres quantity index |
|---|---|---|---|---|---|---|---|---|---|
| | tons | tons | tons | tons | tons | Cement | Timber | Iron-steel | 1937=1 |
| 1919 | 27200 | 8302 | 46992 | 469 | 52690 | 7.97 | 19.47 | 21.31 | 0.23 |
| 1920 | 30399 | 41308 | 59989 | 2688 | 62485 | 6.62 | 34.44 | 18.98 | 0.33 |
| 1921 | 33599 | 39160 | 81179 | 1591 | 82337 | 5.05 | 26.46 | 11.27 | 0.51 |
| 1922 | 36798 | 62273 | 98419 | 1674 | 79887 | 2.92 | 13.59 | 6.06 | 0.58 |
| 1923 | 39998 | 83431 | 129871 | 1675 | 103651 | 2.39 | 13.87 | 6.19 | 0.73 |
| 1924 | 43197 | 123917 | 175790 | 1751 | 124531 | 2.08 | 12.22 | 5.82 | 0.84 |
| 1925 | 46397 | 190430 | 211000 | 1923 | 166461 | 2.24 | 10.76 | 5.48 | 0.99 |
| 1926 | 49596 | 179462 | 249325 | 1820 | 182562 | 2.07 | 9.79 | 5.37 | 1.03 |
| 1927 | 57275 | 224816 | 274206 | 1460 | 190992 | 2.10 | 9.34 | 5.38 | 1.01 |
| 1928 | 60550 | 250918 | 310515 | 1494 | 197206 | 2.04 | 10.04 | 5.97 | 1.03 |
| 1929 | 68362 | 269624 | 341673 | 1799 | 201585 | 2.04 | 9.51 | 5.97 | 1.09 |
| 1930 | 188000 | 187566 | 345341 | 1871 | 201385 | 2.05 | 8.95 | 5.71 | 1.04 |
| 1931 | 241000 | 81470 | 347561 | 785 | 167114 | 2.02 | 8.60 | 5.32 | 0.90 |
| 1932 | 239000 | 105647 | 347050 | 758 | 152439 | 1.92 | 8.62 | 4.09 | 0.82 |
| 1933 | 288000 | 86033 | 366936 | 854 | 153369 | 1.58 | 8.29 | 3.75 | 0.91 |
| 1934 | 297000 | 85128 | 384315 | 1129 | 169155 | 1.42 | 8.02 | 3.74 | 0.99 |
| 1935 | 334500 | 62284 | 395159 | 1049 | 182228 | 1.50 | 8.75 | 3.93 | 1.04 |
| 1936 | 372000 | 34566 | 388325 | 994 | 184425 | 1.52 | 8.97 | 3.89 | 1.01 |
| 1937 | 322184 | 39440 | 395948 | 1227 | 185636 | 1.91 | 8.15 | 5.20 | 1.00 |
| 1938 | 375000 | 44654 | 390014 | 1220 | 198938 | 1.85 | 13.04 | 5.31 | 0.99 |
| 1939 | 353000 | 35764 | 392496 | 967 | 164155 | 1.84 | 11.86 | 5.39 | 0.83 |
| 1940 | 365000 | 4069 | 383707 | 722 | 126613 | 3.34 | 22.71 | 9.48 | 0.63 |
| 1941 | 392000 | 1289 | 394812 | 151 | 78385 | 7.50 | 36.83 | 14.99 | 0.45 |
| 1942 | 422000 | 78 | 412868 | 356 | 57521 | 8.13 | 40.93 | 18.18 | 0.38 |
| 1943 | 423000 | 236 | 421459 | 221 | 40280 | 3.98 | 43.90 | 20.52 | 0.34 |
| 1944 | 419000 | 62 | 428812 | 277 | 29606 | 11.69 | 34.48 | 47.08 | 0.32 |
| 1945 | 444000 | 137 | | 857 | | | | | |

Source: See the text.

Table 6.19.: Final Output Indices for Egyptian Industry: Aggregate, Textiles and Food-Processing (1937=100), 1919-1945

| | Aggregate | Textiles | Food-Processing | Industrial Value added at 1937 prices (LE Million) |
|---|---|---|---|---|
| 1919 | 74.5 | 25.5 | 96.8 | 10.3 |
| 1920 | 81.4 | 26.8 | 105.3 | 11.0 |
| 1921 | 81.3 | 30.5 | 100.5 | 11.2 |
| 1922 | 78.9 | 30.2 | 99.3 | 11.0 |
| 1923 | 84.3 | 31.6 | 101.0 | 11.8 |
| 1924 | 83.4 | 25.7 | 99.2 | 11.6 |
| 1925 | 90.5 | 28.5 | 106.4 | 12.6 |
| 1926 | 91.7 | 28.0 | 106.0 | 12.8 |
| 1927 | 94.1 | 32.0 | 107.5 | 13.1 |
| 1928 | 91.6 | 29.2 | 107.6 | 13.0 |
| 1929 | 94.9 | 32.6 | 107.1 | 13.6 |
| 1930 | 79.6 | 26.6 | 99.0 | 13.1 |
| 1931 | 82.4 | 30.2 | 105.9 | 13.5 |
| 1932 | 82.6 | 37.6 | 107.7 | 13.6 |
| 1933 | 78.6 | 54.2 | 93.4 | 12.9 |
| 1934 | 86.8 | 67.5 | 94.4 | 14.2 |
| 1935 | 88.3 | 69.6 | 97.9 | 14.5 |
| 1936 | 96.2 | 94.5 | 97.6 | 15.8 |
| 1937 | 100.0 | 100.0 | 100.0 | 16.4 |
| 1938 | 111.8 | 122.1 | 102.8 | 18.4 |
| 1939 | 120.1 | 141.6 | 103.1 | 19.3 |
| 1940 | 126.6 | 151.4 | 103.7 | 20.1 |
| 1941 | 137.4 | 181.1 | 103.1 | 21.4 |
| 1942 | 149.5 | 190.2 | 115.4 | 22.5 |
| 1943 | 152.6 | 193.4 | 124.2 | 22.7 |
| 1944 | 152.5 | 190.9 | 122.8 | 22.6 |
| 1945 | | | | 24.8 |

Notes: All are linked indices as explained in the text. To derive the value added for 1945, the aggregate output is assumed to have moved in line with the change in the observed indices, that is, all except the output of cotton fabrics, tobacco and construction. See the text for details.

# 7. Protection and Industrial Growth in Egypt: the Case of Textiles

The preceding chapter provided the first estimates of industrial output in Egypt during the interwar period and in doing so showed that the 1930s witnessed the beginning of Egypt's industrialisation. It was also shown that industrialisation was mainly a textiles-driven process, although moderate progress was made in other branches as well. This chapter therefore aims to identify the sources of manufacturing growth by looking at the case of textiles. This is important because the extent to which the manufacturing growth was achieved due to import protection or other favourable developments has never been closely examined. To answer this question, the case of textiles is appropriate not only because it grew fastest but also because textiles, particularly the cotton industry, was at the heart of the protectionist policies during this period.

In what follows, we first briefly discuss trade policy choices in the interwar years in Egypt. Then we apply the same theoretical and empirical framework employed in the corresponding chapter on Turkey to the case of Egyptian textiles, by first describing the data in detail and then setting out the results of the empirical analysis.

## 7.1. The Shift Towards Protectionism

As mentioned in the Introduction, the history of trade policy in Egypt can be classified into two historical eras: before and after the 1930 tariff reform. Muhammed Ali's attempt to build a modern industrial sector in the first half of the 19th century was doomed to fail for many reasons, one of which was that the Ottoman Empire gave foreigners full freedom of trade due to the 1838 trade agreement with Britain, which also applied to Egypt because she was a dependency.[1] The convention limited import duties at 5 and export duties at 12 percent. Subsequently, the Franco-Turkish Treaty of 1861 raised the uniform import duty up to 8 percent and lowered the export rate further down to 1 percent.[2] Only a few changes to these rates were made between 1915 and 1921, although a 2 percent excise tax was imposed on a large number of imported goods.[3] Until 1930, these rates prevailed with only a few exceptions such as the imports of tobacco, alcohol, sugar, timber, petroleum and live animals, which became taxed more heavily. What is more, the controversial excise tax on mechanically produced cotton piece goods, which was discussed in the previous chapter, was introduced in 1901 by Lord Cromer and it was only abrogated in 1926. Apart from tariffs, other means of trade control were nonexistent, with the only exception being that raw cotton imports were prohibited after 1916.[4] Moreover, the application of the unconditional most favoured nation treatment to all countries made it impossible for the government to take discriminatory actions.[5] Thus, it is clear that tariff policy was far from protectionist and probably purely fiscal in character and that the Egyptian economy operated under almost free trade conditions between 1838 and 1930, lacking any means of protection for domestic manufacturing activities against foreign competition.[6]

Towards the end of this long era, particularly after World War I, the concerns about the lack of protection gained great currency in policy circles, in line with the growing nationalism of the time. For instance, the oft-cited economic report published by the Commission of Commerce and Industry in 1918 called for protection for domestic goods that could be competitive with state support and the reduction in duties on the raw material imports necessary for industry and agriculture.[7] However, the realisation of such hopes

[1] Hansen and Nashashibi, *Foreign Trade Regimes*, p.3.
[2] Mabro and Radwan, *Industrialisation of Egypt*, p.50.
[3] Hansen, *Egypt and Turkey*, p.87.
[4] Hansen and Nashashibi, *Foreign Trade Regimes*, p.4.
[5] el-Gritly, Structure of Modern Industry, p.317.
[6] Since some domestic industries enjoyed a certain degree of natural protection due to transportation costs or local tastes, even low import rates might have given some protection. For instance, vegetable oil and soap consumption were to a large degree dependent on cotton seed oil due to local preferences, so a small degree of tariffs might have greatly benefited the local oil and soap producers.
[7] Egypt, *Rapport*.

and plans had to be postponed until February 1930, when Egypt gained tariff autonomy, as the trade agreement with Italy, which was the last of the bilateral the agreements that had been signed with various countries between 1884 and 1909, expired.[8]

In the second half of the 1920s, some initial proposals as to the new tariff scheme had been drafted and negotiated between different parties.[9] The final version was issued as a law on 17 February 1930. The main architect of the reform was J.G. Levi, then the General Secretary of the Egyptian Federation of Industries, which had been formed in 1922 and was the chief supporter of industrial interests. Tignor maintains that the main idea of the tariffs was to forge an alliance between industrialists and landowners, as he believes that import-substituting industrialists and export-oriented cotton cultivators could be akin to the "wheat-steel amalgam" erected in Germany in the late 19th century.[10] Considering these groups as separate entities is controversial, given that many landowners also invested in industrial activities, while it is notable that the new scheme did indeed favour both interests.

The new classification introduced a three-tier scheme, mostly consisting of specific tariffs. The ad valorem equivalent on raw materials, fuel and machinery was set at 4 percent (lower than before), while most semi-manufactured goods were rated at 6-10 percent and manufactures at 15-30 percent. Thus, while most manufactures were granted a moderate though significant degree of protection, the scheme effectively lowered the rates on the main inputs used in cotton cultivation, such as fertilisers and fuel. Furthermore, the duties on wheat and flour were heightened, which probably increased wage costs in industry, while, importantly, securing the cereal market for landowners at a time of erratic and persistently low cotton prices.[11] Nevertheless, the reform was not without objections: leaving aside the weak opposition from the labour movement, the French and British Chambers of Commerce raised their disapproval, as the former was concerned about the high duties on luxury items in which French exporters were specialised, while the British expressed their uneasiness on the ground that the living costs for the poorer segments of the society would be threatened due to the likely increases in the prices

[8] Mabro and Radwan, *Industrialisation of Egypt*, p.50.
[9] For a brief history of these preliminary tariff schedules, see el-Gritly, Structure of Modern Industry, pp.319-20.
[10] Tignor, *State and Private Enterprise*, p.110.
[11] Tignor, *State and Private Enterprise*, p.111.

of textiles and foodstuff.[12] However, these objections did not amount to a serious conflict, since the new rates remained fairly moderate.

Before and after World War II, these rates were revised a number of times. For instance, the duty on sugar was increased between 1930 and 1932, that on cotton piece goods underwent revisions in 1931, 1933 and 1938, as will be explained later on, and silk goods were taxed increasingly more heavily. In addition to the specific tariffs, a supplementary uniform 1 percent tax on the import value was introduced in 1932 and it was doubled in 1936. An extra excise tax of 20-30 percent was imposed on luxury items and some other goods such as cigarettes, alcoholic drinks and perfumes.[13] Moreover a stipulation imposed an extra levy, called the Wharfage Duty, at 10 percent of the duty paid on all imports and exports except tobacco. These subsequent changes in the tariff schedule had different motivations. First, as Hansen argued, highly flexible tariffs were placed on wheat, flour and sugar to stabilise prices at a high level.[14] Second, fiscal motives led to revisions in the cases of the supplementary ad valorem taxes and Wharfage duty. For instance, the reduction and finally elimination of the cotton tax in the first half of the 1930s required something to make up for the revenue loss, which led to the occasional increases of duties on certain products.[15] Last and more importantly, the rates on goods such as textiles, cement and footwear were intended to grant protection to the local producers, regardless of their actual consequences.

In addition, a supplementary provision that the 1930 tariff law introduced was used effectively. It allowed an equalisation tariff to be imposed on imports from a country that promoted its exports through subsidies, devaluation or dumping.[16] In 1935 the depreciated currency surtax of 40 percent on the imports of cotton and rayon piece goods from Japan was the first instance of the application of this provision. The same provision was also used for some goods of Chinese origin in the same year, but Japan was the main

[12] Tignor, *State and Private Enterprise*, p.109.
[13] Mabro and Radwan, *Industrialisation of Egypt*, p.51.
[14] Hansen, *Egypt and Turkey*, p.87.
[15] "Abolition of Octroi ax and increase in import duties on tobacco" and "Increase of certain Egyptian import and excise duties", National Archives, FO/371 15416.
[16] Another provision was that an additional duty could be imposed on goods originating from countries which did not enjoy preferential treatment through bilateral agreements. This was applied to the Soviet Union in 1930-31 and Romania in 1935. Mabro and Radwan, *Industrialisation of Egypt*, p.50.

target, since cheap Japanese cotton and rayon textiles had flooded Egypt very heavily in the first half of the 1930s.[17] Increases in tariff rates could not stop the inflow, but in the event the surtax effectively decreased Japanese imports after 1936. el-Gritly argues that the surtax on Japanese imports aimed to placate Lancashire interests,[18] yet while it is true that such a discriminatory action could in no way hurt British imports, it was the locally produced heavy and grey cotton goods that eventually replaced the decline in Japanese imports, as the surtax proved to be not particularly beneficial for the British in the medium term.[19]

In this way, Egyptian trade policy became undisputedly protectionist to a considerable degree after 1930. However, compared to some popular policy instruments in other developing countries at the time, in Egypt protectionism was relatively simple and straightforward. el-Gritly considers the preference for local goods in government contracts as the most widely used tool, next to tariff protection.[20] This had begun in the early 1920s when the purchase of foreign goods that could be satisfied by local production was discouraged, in an effort to stop discrimination against local goods. In the 1930s this policy was intensified, as, for instance, a minimum 10 percent preference in government contracts was to be given to local producers, irrespective of quality.[21]

In addition, a few more protectionist policy tools were also used: railway rebates were provided for the transportation of raw materials; machinery and spare parts were exempted from import taxes; monopolies of sugar and alcohol were granted; and direct subsidies were given in a few certain instances – in 1931, for instance, a subsidy was granted to large cotton mills when a large

[17]For the Japanese penetration in cotton textiles market in Egypt, see G.H. Selous and L.B.S. Larkins, *Economic Conditions in Egypt.* Department of Overseas Trade, UK, 1933, pp.58-59; and Selous, *Report on the Economic and Commercial Conditions in Egypt*, pp.56-59. The former argues that "apart from a certain output by the local mills alluded to above, practically the entire business in the heavier qualities of grey cloth is now in the hands of the Japanese [...]. The United Kingdom, however, still remains the largest supplier in the lighter qualities and particularly in the finer counts".

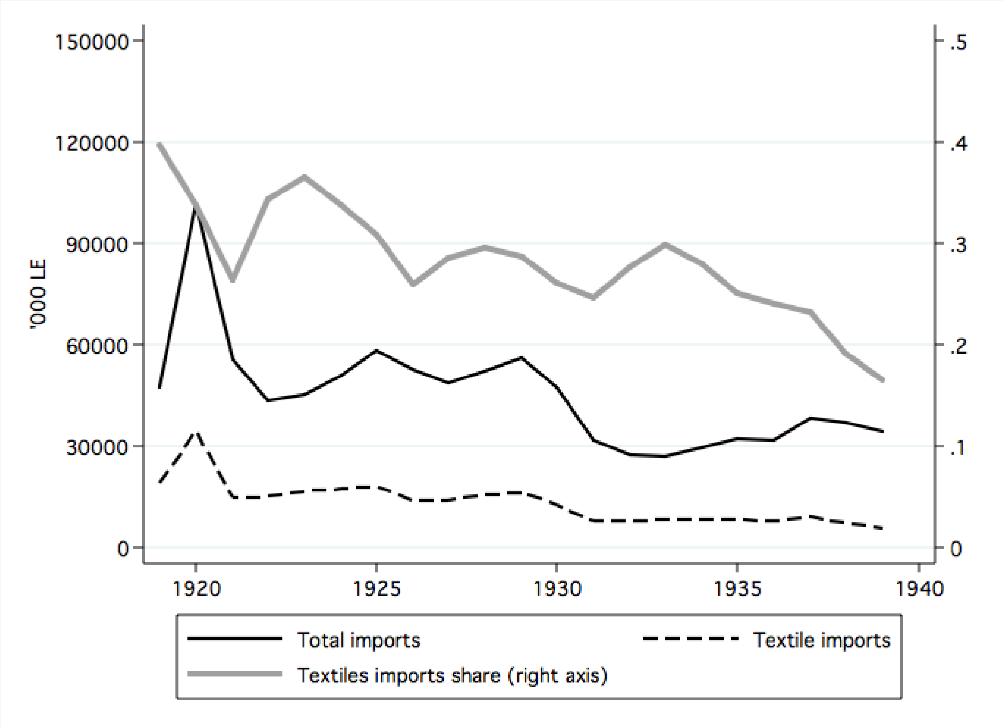
[18]el-Gritly, Structure of Modern Industry, p.323.

[19]It is not clear how the British supported the decision of the Egyptian government to put a surtax on the Japanese textiles, since they actually favoured the introduction of a quota system based on the imports of 1929-1931 due to the concern that a unilateral action against Japan would cause a further depreciation of the Japanese Yen. See "Commercial negotiations between Egypt and Japan", National Archives, FO/371 19050.

[20]el-Gritly, Structure of Modern Industry, p.338.

[21]Selous and Larkins, *Economic Conditions in Egypt*, p.53.

Figure 7.1.: Total and Textile Imports of Egypt (Current Prices), 1919-1939



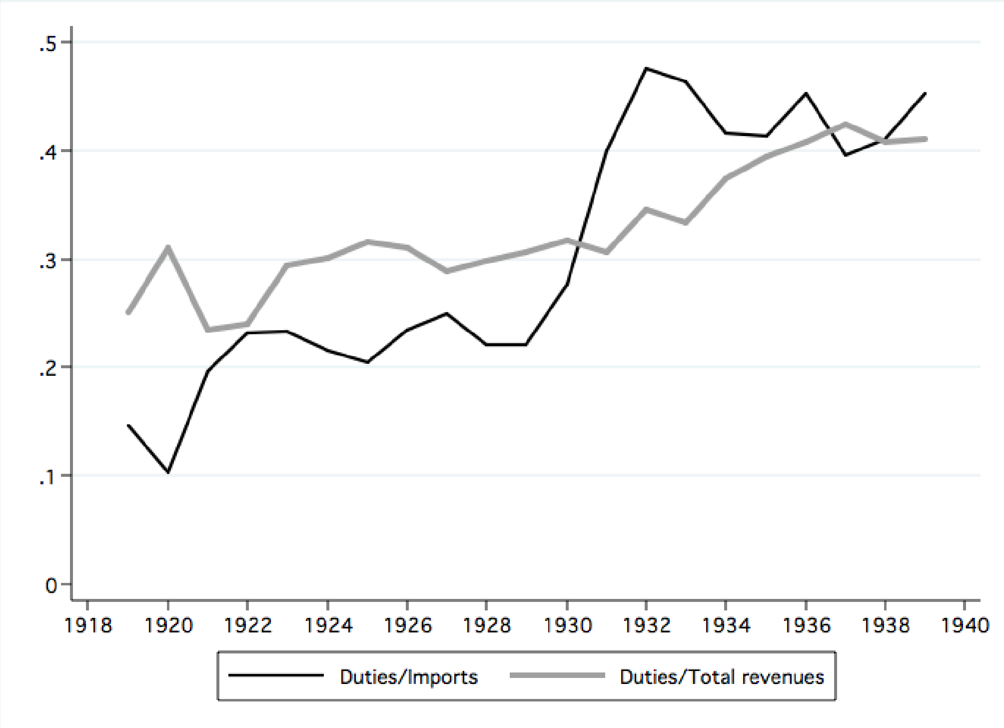

Source: Egypt, Ministere des Finances (various issues). Table 7.3.

quantity of cotton was sold to them on an extended credit.[22] On the other hand, import licensing and export taxes were not used until after World War II.[23] Direct quantitative controls were discussed as a possibility at times during the 1930s but never realised, as in many other countries in the British trade network. And even when import quotas were discussed, it was related to the concerns about the massive Japanese textile imports before 1935 and later to British economic diplomacy to secure its exports rather than the Egyptian government's desire to protect local industry.[24]

It follows that the protection for domestic industries was overwhelmingly due to import duties during the 1930s, which were complemented by other means, most importantly the preferences in government contracts. As seen in the Figure 7.1, total imports were slightly less than LE 60 million in the 1920s, declined by almost half between 1919 and 1932 and remained around that level until World War II. It can also be seen that textiles were around

[22]el-Gritly, Structure of Modern Industry, p.335-36.
[23]Hansen and Marzouk, *Development and Economic Policy*, p.151.
[24]"Increase in Egyptian customs duties on the cotton goods and yarns: Proposed establishment of quota system", National Archives, FO/371 21954.

Figure 7.2.: Tariff Revenues as a Ratio of Total Imports and Government Revenues in Egypt, 1919-1939




Source: Egypt, Ministere des Finances, Annuaire Statistique (various issues). Table 7.4.

30 percent of imports until 1933 and gradually declined thereafter. Three main factors were responsible for the import contraction in value terms: the decline in incomes due to the depression, the decline in import prices and tariff protection. The change of import composition in favour of raw materials and semi-manufactured goods due to import substitution in manufactured goods also contributed to the this decline in import value, since the prices of raw materials decreased more than final goods (Figure 7.6).

Looking at the nominal protection rate, measured by the duties/imports ratio, it remained slightly above 20 percent in the 1920s, more or less doubled between 1929 and 1932 and remained at that level for the rest of the 1930s (Figure 7.2). Besides that, import taxes made up around 30 percent of total government revenues until 1930, then progressively increased up to 40 percent during the 1930s. That was because, first, the tariffs never reached prohibitive levels and, second, the Egyptian government had to get rid of the cotton tax to alleviate the difficulties due to the decline in cotton prices.

There can be no doubt that the increasing tariff protection contributed to the growth of manufacturing output, yet existing studies have not gone beyond pointing out this concurrence and have not assessed the actual impact of protection on local output. The widely-held view is limited to vague statements, such as "behind the tariff walls, a few industries expanded and a number of new ones were established"[25]; "the new tariff, while predominantly fiscal in character, afforded some protection to certain sectors";[26] and this time from a contemporary observer, "a policy of moderate protection was adopted designed to encourage the development of local industry. As a result, since 1930, there has been very considerable industrial development".[27] For support, such statements can point toward the import substitution that took place, as it is believed that the branches that expanded the most were the ones where local output came to replace imports. Hence, a widely quoted source estimates the percentage of local production in total consumption by the eve of the World War II to be more than 90 percent of the domestic consumption of sugar, alcohol, flour, cement, soap and footwear, 65 percent of beer, 60 percent of vegetable oils and 40 percent of cotton cloth.[28]

However, Hansen and Nashashibi rightly maintain that there was also another key development operating in favour of domestic industries in the 1930s: the low profitability of agricultural investment and the relative fall in agricultural prices.[29] Furthermore, some decline in imports can be attributed to the decline in real income. And the increase in nominal tariff rates is, in any case, not an appropriate indicator of protection, since the effect of higher rates depends on various supply and demand elasticities for each product, so a given tariff can be high for a certain good while being low for another, in terms of its protective effect.[30] For that matter el-Gritly argues that the coarser, and thus cheaper, types of cotton cloth, soap, cement, blankets and footwear responded to the increasing tariffs more quickly and positively than others. His insight sounds true, yet needs more elaboration.[31]

As a result, this chapter attempts to show the degree of causation between tariff protection and output growth by looking at the case of textiles. The

[25]Hansen and Nashashibi, *Foreign Trade Regimes*, p.4.
[26]el-Gritly, Structure of Modern Industry, p.320.
[27]Crouchley, *Economic Development*, p.227.
[28]UK, *Egypt: Review of Commercial Conditions*, p.22.
[29]Hansen and Nashashibi, *Foreign Trade Regimes*, p.4.
[30]el-Gritly, Structure of Modern Industry, p.321.
[31]el-Gritly, Structure of Modern Industry, p.331.

choice of textiles is justified on three grounds. First, the local consumption of cotton, silk and woollen goods had been mostly supplied by imports in the 1920s, while a significant degree of import substitution happened in the 1930s. Second, the output growth rates were much higher than in other branches, as demonstrated in the previous chapter. And last, the protective nature of tariff policy can be best and most clearly observed in textiles in view of the motivations of the policy makers. That said, a clarification is in order: this study is not interested in other aspects of import protection, such as the welfare costs of tariffs, how living costs were affected for different sections of the population or the long-term feasibility and consequences of protectionism. For instance, textiles became a highly concentrated industry in Egypt in the 1930s, unlike in Turkey, and this must have combined with tariffs to lead to the artificial price increases in the domestic market. So while the question of how a more competitive domestic industry would have changed output growth may be an interesting research topic, it is beyond the scope of the present study.

## 7.2. Exploring the Sources of Textile Growth

It was earlier argued in Chapter 4 that the partial equilibrium model developed by Irwin and Davis and Irwin and Temin is suitable to analyse the effect of tariff protection on domestic output for three reasons. First, it does not impose any restrictions on domestic final good prices.[32] It is empirically and theoretically true that higher tariffs should have increased domestic prices to the extent that domestic production became competitive with imports, yet the extent of such an increase is unknown due to the lack of data.[33] Second, the reduced form output growth equation allows us to estimate the effects of explanatory variables on final output growth without estimating all the demand and supply equations. And last, it is based on a sound theoretical model incorporating the supply and demand equations. Added to these reasons is that while the import-restricting policies were more complicated in Turkey due to the use of quotas and exchange controls, they were mostly based on tariffs in Egypt, which makes the model even more relevant.

[32]Irwin and Davis, Antebellum US Iron Industry; and Irwin and Temin, Antebellum US Cotton Industry.
[33]For Egypt, the domestic prices of cotton and silk textiles are only available after 1935.

To recap, the details of the solution of the partial equilibrium model are shown in Appendix B and the reduced form output equation takes the following form:

$$lnQ = \beta_0 + \beta_1 t + \beta_2 ln\left[\frac{p^*(1+\tau)}{p_c}\right] + \beta_3 ln(\frac{p_a}{p_c}) + \beta_4 ln(\frac{p_c}{w}) + \beta_5 lnY + \epsilon \tag{7.1}$$

where $Q$ is final output, $p^*$ average imported fabric prices, $\tau$ average nominal tariff rates, $p_a$ the aggregate price level, $p_c$ input prices and finally w and Y denote manufacturing wages and real income.

This model is originally estimated from time series data, but since the scope of analysis is here expanded to account for the all textiles, we need to consider the substitution effects between cotton, woollen and silk goods. Such effects must be given due attention, since there is anecdotal evidence, as discussed earlier, that artificial silk textiles in Egypt in the 1930s might have replaced the existing fabric varieties to a certain extent, particularly natural silk and, to a lesser degree, cotton textiles. In this respect, the original demand equation is revised to include the relative substitute textile prices ($\frac{p_s}{p}$) as an independent variable – $p_s$ and $p$ denoting the substitute prices and aggregate prices respectively. Thus, the reduced form equation takes a slightly different form, as explained further in Appendix B:

$$\begin{aligned} lnQ = \beta_0 + \beta_1 t + \beta_2 ln\left[\frac{p^*(1+\tau)}{p_c}\right] + \beta_3 ln(\frac{p_a}{p_c}) + \beta_4 ln(\frac{p_s}{p_c}) \\ + \beta_5 ln(\frac{p_c}{w}) + \beta_6 lnY + \epsilon \end{aligned} \tag{7.2}$$

As argued in Chapter 4, the signs of all coefficients are expected to be positive, based on reasonable parameter values, which is explained in Appendix B. The downside of panel data estimation in comparison with time series is that it produces an average value of parameters across the range of different textiles. If the supply elasticities vary, say, from cotton to silk, or vice versa, the model will fail to capture the degree of individual parameters. For instance, if cotton production is more elastic to the import prices than silk or woollens, then the estimated coefficients will only reflect its average impact on output growth. On the other hand, the fact that all the textile branches grew massively in the 1930s in Egypt means that the difference between the actual individual elasticities and the estimated average ones can be supposed to be relatively small. This is also why the present model specifically focuses on the fast-growing textiles, instead of covering other manufacturing branches, such as food processing, which grew much more slowly.

## 7.2.1. Data

The analysis considers cotton, woollen, natural and artificial silk production. We here discuss the construction of the variables in the main specification outlined above for each textile branch: the nominal protection rates, import prices, input prices, substitute prices, aggregate price index, wages and the real domestic income.

### Nominal protection rates ($\tau$)

In February 1930 the new tariff law placed specific tariffs on imports of cotton piece goods.[34] Their average ad valorem equivalent for all cloth types was 18 percent in 1930. Then in February 1931 the duties on all piece goods weighing more than 70 grams per $m^2$ were slightly increased.[35] Due to this last revision and the ongoing decline in import prices the nominal rate turned out to be 25 percent in 1931 and 29 percent in 1932. However, these revisions did not stop the inflow of cheap Japanese cotton goods, which were mostly of coarser types, so another revision was made in May 1933, which targeted the piece goods weighing between 110-140 grams per $m^2$ by increasing specific rates by 30 percent.[36] However, Japanese competition was so strong that the British were worried about it rather than the high duties per se.[37] Yet this move failed to stop the imports from Japan and the government decided to put a 40 percent surtax on the cotton and rayon piece goods from Japan in

[34] See statistical code 499 and its sub-positions in the 1930 tariff schedule. Egypt, *Customs Tariff*. Ministry of Finance, Egypt, 1931.
[35] *Journal Officiel*, 16 February 1931, Numero Extraordinaire, no. 18.
[36] *Journal Officiel*, 15 May 1931, no. 44. In the tariff schedule, the piece goods heavier than 140 grams per $m^2$ are classified as "heavy" and those lighter than 140 grams per $m^2$ as "light". The heavy and light goods are further classified according to their weights and for each weight category and the imports in weight and value were reported according to the type of cloth: grey (unbleached), bleached, dyed and printed. ("Dyed" was divided into "dyed in the yarn" and "dyed in the cloth" thereafter.)
[37] Selous and Larkins, *Economic Conditions in Egypt*, p.53.

September 1935.[38] In the meantime, as mentioned above, in June 1932 an additional 1 percent ad valorem tax was introduced for fiscal purposes and subsequently it was increased to 2 percent in 1936.[39]

Up to this point, tariff policy aimed at protecting the local production of the heavier piece goods, so much so that a British consular report stated that by the last quarter of 1936 "local industries have practically acquired a monopoly in heavy grey, formerly supplied by Japan and hand loom weavers have registered better sales for their drills etc. following [the] decline of Japanese competition".[40] Yet the dyed, printed goods and, in general, lighter goods continued to be imported from countries such as Britain and Italy. [41] And during this whole time, a series of negotiations between Egyptian authorities and the Manchester Chamber of Commerce were held as to the introduction of import quotas on cotton goods, which the British expected would have secured their share, yet these negotiations did not bear fruit.[42] Instead, the Egyptian government extended the scope of high tariffs to the finer piece goods in June 1938 by increasing the rates on heavy goods by 100 percent and those on light goods by 70 percent.[43] In fact, the increase in the rates on certain types even exceeded 100 percent. This led to widespread protests on the part of Lancashire since the new rates greatly threatened their position in the textile trade. The Egyptian government justified this revision on the grounds that foreign producers were not operating on the same cost schedule because the domestic factories had to use expensive Egyptian cotton due to the prohibition on cotton imports, while the imported goods were made of cheaper raw cotton of American or Indian origin. [44] The following months

[38]Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.14.

[39]*Journal Officiel*, 12 May 1932, Numero Extraordinaire, no. 42; and Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.14. For the changes in the uniform rate during World War II, see Mabro and Radwan, *Industrialisation of Egypt*, p.58.

[40]Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.57.

[41]Italy and India replaced Japan as strong competitors against Britain in the second half of the 1930s. Empson, *Report on the Economic and Commercial Conditions in Egypt*, pp.22-23.

[42]Empson, *Report on the Economic and Commercial Conditions in Egypt*, p.24.

[43]*Journal Officiel*, 10 April 1938, no. 44. The rates on the goods lighter than 50 grams per $m^2$ remained unchanged.

[44]Egyptian cotton tariffs: Lancashire's trade. *The Manchester Guardian*, 29 April 1938; and New Egyptian Duties: British protests. *The Manchester Guardian*, 14 April 1938. The higher duties on dyed and printed goods, which had not been produced in Egypt, were probably related to the projected plant of the Bradford Dyer's Association. See Big blow to Lancashire. *The Manchester Guardian.* 12 April 1938.

witnessed the attempts of Lancashire to put pressure on the Egyptian government to make concessions, such as the introduction of a quota system. But such attempts faced the Egyptian industrialists' counter-campaign in favour of the new tariffs.[45] In the end, the new tariffs remained unchanged.

The present estimate of the ad valorem equivalents of specific duties is calculated as the total duties collected based on the specific tariffs given in tariff schedules and subsequent laws, the additional ad valorem tax, the Wharfage tax (10 percent of import duties) and finally the Japanese surtax, applied after September 1935.[46] However, the coverage of the estimate is restricted to the grey (unbleached) and cotton piece goods weighing more than 110 grams per $m^2$, since domestic production was actually competing with this group, at least until mid-1938. Also note that since some changes in the tariff schedule were made in the middle of a year, we assume a uniform distribution of imports across months for simplicity.[47] Figure 7.3 indicates that the nominal protection rate for heavy grey piece goods increased from 18 percent in 1930 to 37 percent in 1932 and stabilised around it until 1935. Then the Japanese surtax increased it up to 55 percent in one year, yet in the following years due to the recovery in import prices, the nominal rate fluctuated between 35 and 55 percent.[48]

For silk products, the 1930 reform introduced the new ad valorem rates on all silk piece goods without differentiating between natural and artificial silk. The new rates were set at 18 percent for all types, except 20 percent for embroidery and tapestry. In June 1932, the rates on finished goods were increased up to 20 percent and those on piece goods were converted into specific terms.[49] In addition, the natural-artificial silk distinction was put into force in the trade statistics at the same time. Then in 1933 and September 1934 further minor revisions to the rates on natural silk goods were made and the tariff classification was elaborated further.[50] The 1935 depreciated

[45] Bourse appeal to egypt: Tariffs too high. *The Manchester Guardian*, 3 June 1938.

[46] Egypt, Ministry of Finance, Statistical Department, *Annual Statement of Foreign Trade*; Egypt, Customs Administration, Statistical Office, *Monthly Summary of the Foreign Trade of Egypt*. Cairo: Government Press, 1910-1946.

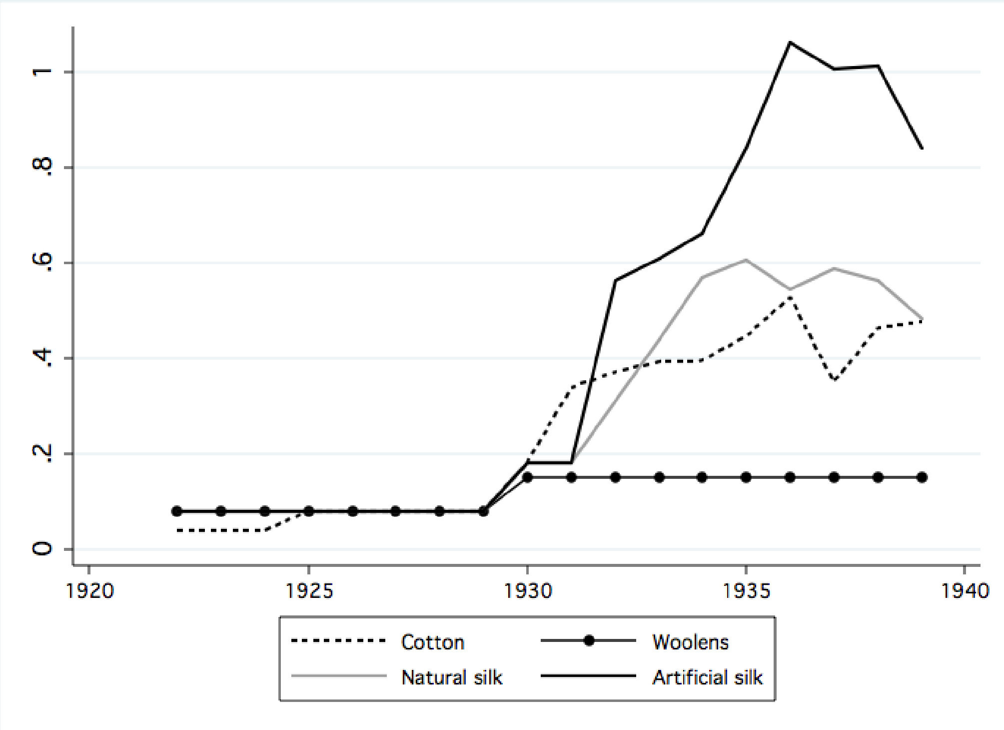
[47] This is not the case for 1930, as imports during the January-February of 1930 were counted separately.

[48] Note that a 4 percent tax on the domestic cotton textile production was abandoned in February 1925.

[49] *Journal Officiel*, 2 June 1932, no. 48.

[50] *Journal Officiel*, 30 May 1933, no. 49; and 3 September 1934, no. 76.

Figure 7.3.: Ad Valorem Tariff Rates for Egyptian Textiles, 1922-1939




Source: Table 7.5

currency surtax on imports from Japan was applied to artificial silk fabrics as well, which made Japanese imports decline. Finally, the most decisive revision was in April 1936, when the rates on artificial silk piece goods were increased by around 150 percent.[51] On the other hand, silk yarn was much less heavily taxed in the 1930 schedule and only two modifications were made subsequently to its rates: the rate on one type of artificial silk yarn ("crepe, dyed") was increased by six times in July 1938 and changes of a similar size on the other types ("not dyed" and "beaded and looped") followed suit at the end of the same year.[52] All this contributed to the increasing local fabric output, mainly of simple types, since technical backwardness limited the scope for producing finer goods.[53] The method of calculation of ad valorem equivalents for silk piece goods is the same as employed for cotton: it is based on all piece goods and the distribution of imports during a year was assumed uniform for

[51] *Journal Officiel*, 29 April 1936, no. 47.

[52] *Journal Officiel*, 11 July 1938, no. 84; and 13 December 1938, Numero Extraordinaire, no. 137.

[53] Selous, *Report on the Economic and Commercial Conditions in Egypt*, p.76.

simplicity whenever necessary.[54] The nominal rates were estimated for natural and artificial silk goods separately. Figure 7.3 clearly shows the extraordinary increase in the nominal rates, particularly on artificial silk, which reached 100 percent by the end of the decade, while natural silk textiles were rated at 60 percent in the second half of the 1930s.

Compared to cotton and silk, woollen cloths represent a more straightforward case in terms of the nature of tariffs. The 1930 tariff law set the ad valorem rate at 15 percent for all woollen cloths and carpets and rugs.[55] Only a few minor revisions were subsequently made. In September 1935 the rate on wool-dominated mixed textiles was converted into specific terms, then increased in December 1937.[56] Meanwhile, the rates on piece goods except carpets and rugs were converted into specific tariffs.[57] Here we limit out attention to the rates on carpets and rugs, since the local Egyptian industry was oriented towards these goods due to the low quality local wools, as mentioned in the previous chapter. Therefore, the nominal protection rate is taken as 15 percent for all years after 1930.

### Prices

Average import prices ($p*$) are directly calculated from the import statistics. For cotton, the price series is based on the grey piece goods heavier than 110 grams per m$^2$, so the tariff-inclusive import prices are the prices of the heavy grey piece goods plus the ad valorem duty rates. The same applies to woollen goods but we only consider the import prices of carpets and rugs.

For natural and artificial silk goods, the import prices between 1933 and 1939 are calculated the same way. However, a different procedure is followed for the earlier years, since the import classification underwent a number of changes that make it difficult to get consistent and comparable figures. The main difficulty lies, first, in the fact that no distinction was made between natural and artificial silk and, second, in that during 1927-1929 the mixed cloths made of cotton and silk were reported separately, which was not the case

[54]Statistical Code 479 and its sub-codes in the 1930 tariff schedule cover silk piece goods, both natural and artificial; and code 475 and its sub-codes list silk yarn, both natural and artificial. Egypt, *Customs Tariff 1931*.

[55]The statistical codes of woollens were 486 and 487-491. Egypt, *Customs Tariff 1931*.

[56]*Journal Officiel*, 29 September 1935; and 1 December 1937. The rate on woollen yarns was increased at the same time.

[57]*Journal Officiel*, 29 April 1936, Numero Extraordinaire, no. 47.

for other years. Considering such difficulties, we prefer to extract the average export prices from Italian and French foreign trade data, that is, the two main silk good exporters to Egypt.[58] Although Japan supplied a significant share of silk goods between 1930 and 1932, Italian and French export prices can be considered representative because they remained important exporters. Thus, we first calculate the total amount and export value of natural and artificial silk goods exported to Egypt from these countries and then correct the average export prices with the corresponding exchange rates.[59] The 1933 average silk good import prices are then extrapolated backwards with these export price indices.

Figure 7.4 illustrates the calculated average import prices for all fabrics. Except woollens, all price levels nearly halved throughout the period under consideration, yet the decline in prices was well under way even before 1929. While this downward trend mostly happened in the mid-1920s in the case of artificial silk, it was perpetuated thereafter for cotton and natural silk goods. Also, in line with the international trends, the prices began to recover in the second half of the 1930s.

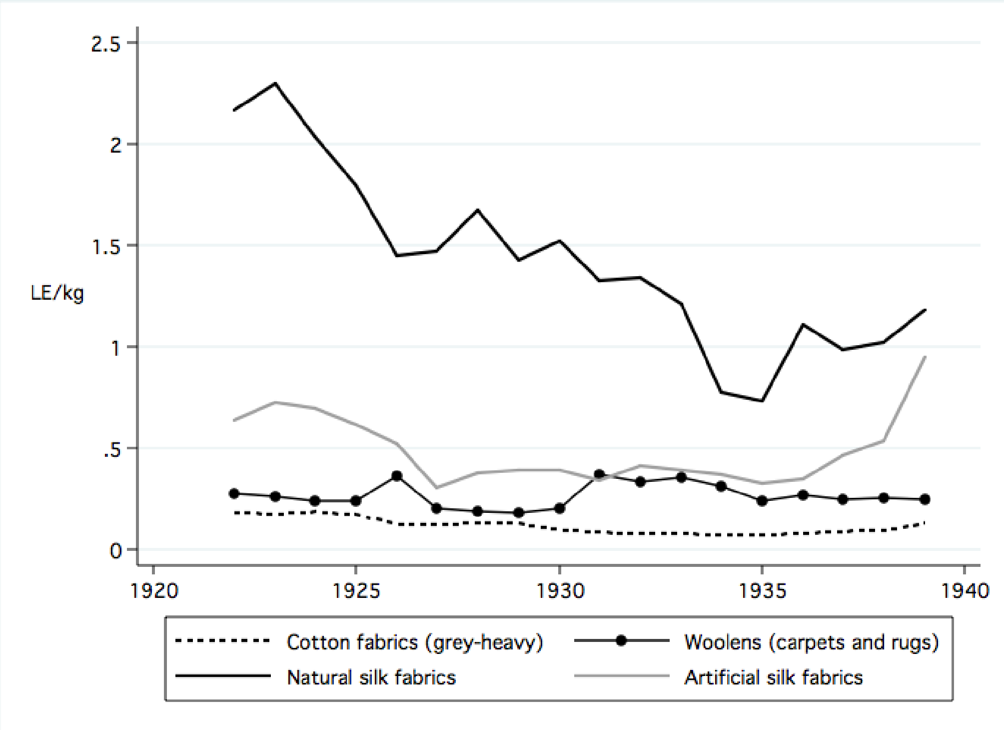
Egyptian cotton prices are used as the raw material prices ($p_c$) for the cotton industry. As a matter of fact, domestic production was equally dependent on Egyptian raw cotton and imported cotton yarn before the early 1930s but almost entirely on domestic raw cotton thereafter: the share of imported cotton yarn in domestic consumption was around 50-70 percent in the 1920s, but this rapidly declined to less than 5 percent by the end of the 1930s. Therefore, using Egyptian cotton price series for the 1920s might seem problematic, but until 1931 local raw cotton prices moved in a highly correlated manner with the yarn import prices, so they can be taken as representative of raw material prices.[60] As for silk weaving, the average import prices of imported natural and artificial silk yarn are the straightforward choice, since almost all the raw material was imported. These import prices are then inflated with import duties, which were 8 percent before 1930 and remained in the range of

[58] Italian exports are obtained from *Italy, Ministero Delle Finanze*, *Movimento Commerciale*; and French exports from *France. Direction Générale des Douanes*, Tableau Général du Commerce et de la Navigation..

[59] The Egyptian pound was tied to the British pound at a fixed parity and the value of the British pound against the Italian Lire and French Franc are taken from Global Financial Data: https://www.globalfinancialdata.com/index.html.

[60] The correlation coefficient between the average wholesale prices of Egyptian cotton and imported yarn is 0.92 between 1919 and 1931.

Figure 7.4.: Average Prices of Textile Imports in Egypt, 1922-1939




Source: Table 7.6.

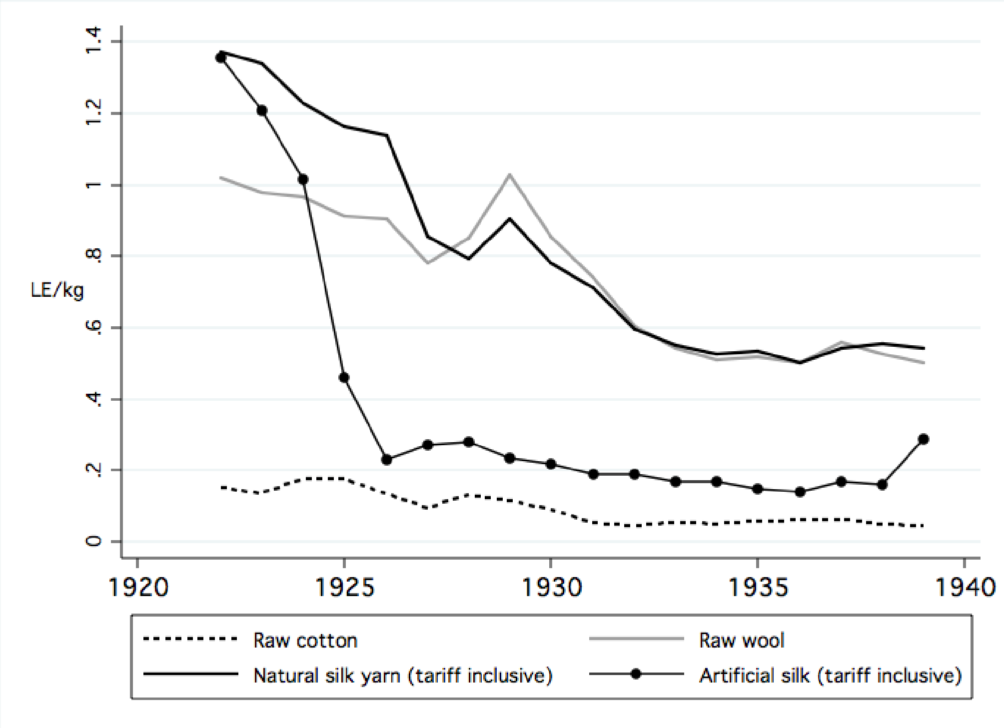
10-16 percent for natural silk and around 10 percent for artificial silk during the 1930s. Note that the difference between the ad valorem rates on the yarn and piece goods progressively and rapidly increased during the 1930s, so the effective protection rates substantially increased over the course of the decade.

As seen in Figure 7.5, the decline in the raw material prices was no less pronounced than the average import prices. This decline reached spectacular levels in the case of artificial silk yarn due to the fast technical change in the interwar years, as the prices decreased by around 6 times between 1922 and 1926 and continued to go down, though more slowly, in the rest of this period. Other prices also almost progressively halved.

The aggregate price indicator ($p_a$) used here is the only available official aggregate index based on the wholesale prices of 26 commodities with 39 varieties in Cairo, all reported in each *Annuaire Statistique* volume.[61] The

[61] The full list of commodities covered by the index is: cotton (Good-Fair Sakel), domestic wheat, beans, lentils (two types), domestic barley, maize, sorghum, fenugreek, sesame, sugar, molasses, flour (of wheat and maize), peanuts, onions, banana, dates, oil, eggs, butter, rice, soap, alcohol, fuel and coal. See the explanatory note in Egypt, Ministere des Finances, Annuaire Statistique, 1936/37, pp.489-93.

Figure 7.5.: Average Raw Material Prices for Egyptian Textiles, 1922-1939




Source: Table 7.7.

index mainly covered agricultural and food products (except soap, fuel and coal), which were all consumed on a major scale in Egypt. It was calculated as the geometric mean of the percentage changes in each individual index relative to the 1913-1914 average, so its shortcoming is that it does not reflect the relative contribution of each item either in the total sales or in the production value. Subsequently, since the coverage of this old index became insufficient in view of the growing range of goods consumed and produced in the country over time, the Statistics Department expanded the scope of commodities to 87 articles with 278 varieties and began to publish the new individual price indices every year after 1935 relative to the annual average of 1935.[62] The new index was superior in two ways: first, the commodity coverage was much larger and, second, it gave different weights to the different products according to the size of domestic sales. However, this study uses the old index, since it is impossible to extend the later index backward with the same kind of data.

Lastly, in the absence of long-term data on domestic textile prices, the substitute prices are constructed by the backward extrapolation of the domestic

[62]Egypt, Ministere des Finances, Annuaire Statistique, 1936/37, pp.489-93.

textile prices of 1935-1939 with the tariff-inclusive fabric import prices. This can be justified on the grounds that domestic textiles basically competed with the imported goods before 1935, and the duties placed on imports might have been captured by local producers to a certain degree. We suppose on the basis of anecdotal evidence that artificial silk competed with cotton and natural silk goods, and cotton goods competed with woollens.[63]

### Real Incomes and Wages

As mentioned earlier, national income estimates are not available for the pre-Word War II years. Nonetheless, it is worth mentioning two attempts. First, Hansen made an effort to estimate rural and urban value added indices.[64] The former is taken as the crop output minus the "purchased inputs", with the assumption that rural income was more or less close to agricultural income. As we showed earlier, although this was not precisely true, the bias of the assumption was relatively small. On the other hand, the urban value added index was rather tenuous, since the index of exports and imports was taken to represent the value added in trade, the railways represented transportation and finally the urban and rural population shares were used as weights to combine these two value added indices. Due to the large level of crudeness of this direct estimate, Hansen compares this direct index with the alternative income indices derived from the consumption of some major commodities, such as cereals, tobacco and sugar, in order to check the plausibility of the earlier direct estimate. In this exercise, he uses several possible values of price and income elasticities, relying on the development literature and all the results are presented in his study for some benchmark years: 1886, 1898, 1905, 1912, 1920, 1929 and 1937. Although these indirect indices derived from individual consumption levels exhibit a considerable degree of variation, a broad consistency is also shown: the simple average of the indirect income indices shows a 13 percent decline in per capita income between 1912 and

[63]In the post-1935 domestic price data in *Annuaire Statistique*, natural silk (yarn and cloth) and artificial silk (yarn and cloth) were reported separately without the disaggregation between yarn and fabrics. Here we simply take them as indicating fabric prices. On the other hand, there are five separate series for cotton textiles: bleached (2), grey (2), printed (1), coloured (1) and *castor* (1). To get a representative cotton textile price index, these series are combined with the weights in the parentheses that the Statistical Department used. Egypt, Ministere des Finances, Annuaire Statistique, 1936/37, pp.489-93.

[64]Hansen, Income and Consumption.

1920, and this was almost totally corrected by a recovery during the 1920s. Then the 1930s witnessed a 20 percent decrease again. The direct estimate of per capita income shows similar trends, but the extent of cycles is less severe than in the indirect indices. All in all, these results are consistent with the conventional view of the long-term movement of Egyptian national income before World War II.

The second attempt mentioned above was made by Yousef, who estimated nominal and real GDP growth rates for the period 1886-1945.[65] Yousef employs a heterodox money-based co-integration method, counting on a measure of broad money and the relationship between Egyptian and British monetary variables. However, there are a number of serious inconsistencies between his and Hansen's indices. First of all, for the entire period that Hansen and Yousef consider, i.e. 1886-1937, Yousef's estimate of the average growth rate (1.42 percent per annum) is considerably larger than the 0.47 percent that Hansen arrived at. Second, combined with the GDP estimates of Anis for the World War II period, Hansen finds an almost complete stagnation from the beginning of the first half of the 20th century up to 1945, whereas Yousef predicts a 0.41 percent average annual growth rate.[66] And last and most strikingly, for the two crisis periods (1898-1912 and 1930-1937), Hansen's negative annual growth rates of the real per capita income contrasts with Yousef's prediction of significant improvement.[67] Thus, Yousef's money-based approach produces quite controversial results as to both the overall growth performance and for the 1930s as well.

In the absence of proper comprehensive national income estimates, the present suggested methodology is to derive the real income from the quite reliable agricultural consumption figures. In the economic history literature, an early example of this was suggested by Crafts, who calculated the change of English agricultural output from some income measures, using the income and price elasticities taken from the development economics literature.[68] The method was thereafter developed by Allen using consumer theory and later

[65] Yousef, Egypt's Growth Record.

[66] Anis, A Study of National Income.

[67] For 1898-1912, while Hansen's average annual growth rate of per capita income is -0.17, Yousef finds 1.44 per capita growth. Similarly, for 1929-1937, Hansen's estimate is -0.76 per year, while the growth rate was 0.52 percent according to Yousef. Yousef, Egypt's Growth Record, p.572.

[68] N.F.R. Crafts, *British Economic Growth During the Industrial Revolution*. Oxford: Oxford University Press, 1985.

applied to estimate the long-term agricultural output of India and Japan by Broadberry and Gupta and Broadberry et al..[69] According to this methodology, real agricultural consumption is viewed as a function of the own-price of the agricultural goods in real terms ($p_a/p$), the price of non-agricultural goods in real terms ($p_{na}/p$) and real income as follows:

$$C = (p_a/p)^{\alpha_1}(p_{na}/p)^{\alpha_2}Y^{\alpha_3}$$

where $\alpha_1$ is the own price elasticity of demand, $\alpha_2$ the cross price elasticity and $\alpha_3$ income elasticity. Consumer theory requires that price elasticities and income elasticity should add up to zero.[70] In fact, this method is a more consistent version of the method used in the indirect income estimates of Hansen.[71] While the latter derived several separate income indices from the consumption of various commodities and took a simple average of all these individual indices, we consider the whole net agricultural consumption, thereby getting rid of the variation resulting from different demand elasticities for different commodities. We then also introduce the cross price elasticity, allowing for the possible shifts between agricultural and non-agricultural consumption over time due to changes in relative prices.

Here, agricultural consumption is taken as the net agricultural output (crop and livestock) plus the net import of agricultural and livestock products.[72] Then the nominal consumption figures are deflated with the agricultural price index to obtain the real consumption. The agricultural price index is obtained from the wholesale prices of a number of agricultural commodities, whose prices were reported in *Annuaire Statistique*.[73] The non-agricultural

[69] Robert Allen, Economic Structure and Agricultural Productivity in Europe, 1300-1800. *European Review of Economic History*, 3 2000; S.N. Broadberry and B. Gupta, India and the Great Divergence: An Anglo-Indian Comparison of GDP per capita, 1600-1871. *University of Warwick* 2010; and S.N. Broadberry et al., Japan and Great Divergence, 730-1870. *University of Warwick* 2011.

[70] Broadberry and Gupta, India and the Great Depression, p.8.

[71] Hansen, Income and Consumption.

[72] In the import classification, the first category ("cereals, flour and agricultural produce") and the second ("animal products") are combined with cotton exports to arrive at the aggregate net imports. Remember that the net agricultural output was calculated in Chapter 4.

[73] The relative prices of the following goods are combined with the shares in parentheses: Cotton- Sakel Fully Good (29), wheat(15), beans (4), lentils (1), barley (2), maize (16), sorghum (4), fenugreek (1), sesame (1), peanuts (1), onions (2), bananas (1), dates (1), eggs (2) and rice (4). These weights reflect the relative sales in the market and were employed in the construction of the new wholesale price index developed by the

price index is constructed based on the available wholesale prices of the non-agricultural goods in Cairo, which were mostly semi-manufactured and manufactured goods.[74] As for the aggregate price index, the Statistical Department produced two price indices for Cairo for the years before and after 1935, so they are here linked to generate a long-term index.

The three price indices – aggregate, agricultural and non-agricultural – that are produced here are shown in Figure 7.6. The contrast between the movement of the agricultural and non-agricultural prices appeared very strikingly in the 1930s, when a consistent gap between them came into view after 1929. Until then, the price trends were very much in parallel.

Finally, we work with two possible sets of elasticities. Relying on the statistical analysis carried out on a large sample size in 1958-1959, Hansen uses the following elasticities for the cereals, starches and dry beans: own price elasticity is -0.75 and the income elasticity 0.5.[75] But since our agricultural consumption estimates have a wider coverage, including more income- and own-price elastic goods, we slightly adjust these figures up: -0.8 own price and 0.6 income elasticity and allow 0.2 for the cross elasticity. In the second scenario, we directly employ the elasticities Allen (2000) assumes for early modern Britain: the own price elasticity -0.6, cross price 0.1 and income elasticity 0.5.[76] Note that these income elasticity figures are broadly in line with developing country experience, where a comprehensive review shows the food expenditure elasticities change roughly between 0.5 and 0.7.[77] Some ex-

Statistical Department. Egypt, Ministere des Finances, Annuaire Statistique, 1936/37, pp.489-93.

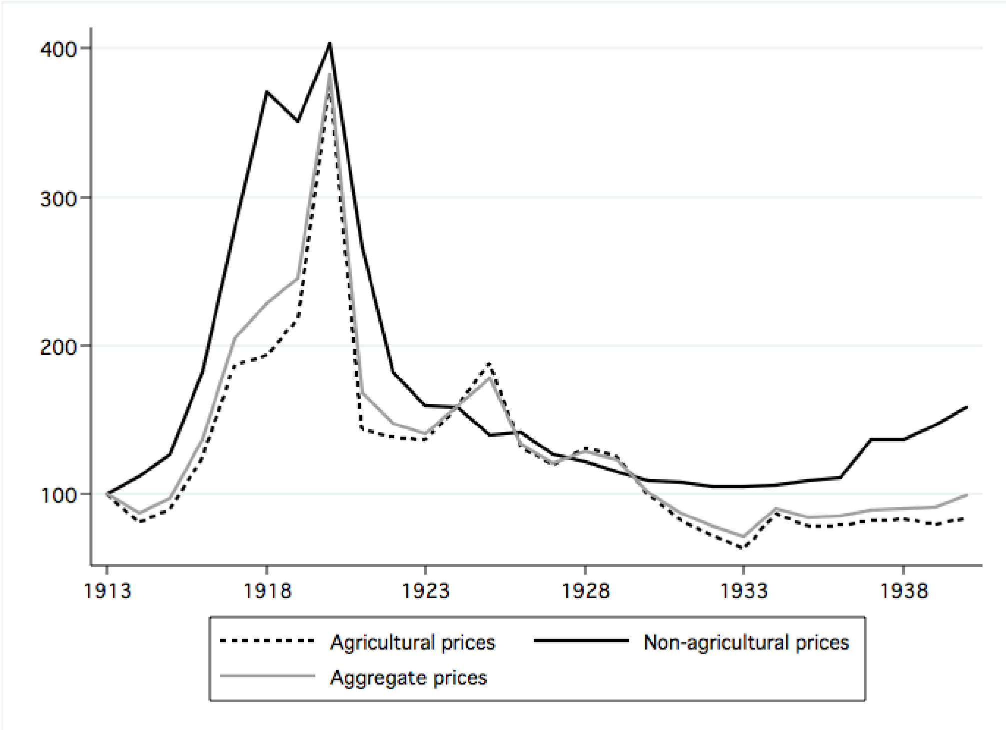
[74]For the years before 1935, the basket is as follows: Sugar (5), molasses (1), wheat flour (1), vegetable oils (2), butter(3), soap(2), alcohol (1), fuel (3) and coal (3). After 1935, the coverage significantly expanded: Steel (1), alcohol (1), benzine (2), timber (2), bricks (2), coal (3), cement (1), copper (1), tin (1), iron (3), flour (1), cotton yarn (3), oils (2), wool (1), flax (1), molasses (1), nickel (1), nitrate (2), paper (1), skins (1), oil derivatives (3), stones (1), lead (1), soap (2), salt (1), silk (2), caustic soda (1), sugar (5), sulphate (1), phosphate (1), tobacco (1), tea (1), cotton fabrics (7), glass (1) and zinc (1). The numbers in parentheses represent the weights, which were introduced by the Statistical Department after 1935. The two indices for the periods before and after 1935 are spliced.

[75]Hansen, Income and Consumption. For the original percentage expenditure elasticities see Mostafa Mostafa and Moharram Mahmoud, Analytical Study of the Relationships Between Consumption Expenditure on Different Groups of Commodities and Total Annual Consumption Expenditures. *Institute of Planning, UAR* Memo no. 597 1964.

[76]Allen, Economic Structure and Agricultural Productivity.

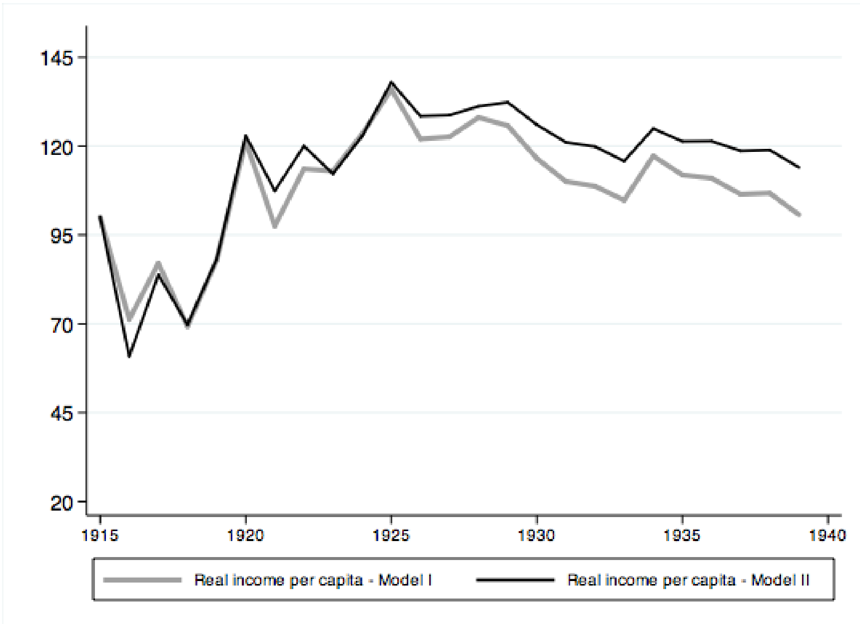
[77]H. Houthakker, An International Comparison of Household Expenditure Patterns Commemorating the Centenary of Engel's Law. *Econometrica*, 25 1957, pp.541-42.

Figure 7.6.: Price Indices for Egypt: Aggregate, Agricultural and Non-Agricultural (1913=100), 1913-1940




Source: Table 7.8

Figure 7.7.: New Estimates of Real Income Per Capita (1915=100), 1915-1939




Source: Table 7.9

Table 7.1.: Comparison of Estimates of Egyptian Real Income Per Capita, 2930-2937

| | Hansen (1979) Direct estimates | Hansen (1979) Derived Estimates | Yousef (2002) | Own estimates Model 1 | Own estimates Model 2 |
|---|---|---|---|---|---|
| 1920 | 100 | 100 | 100 | 100 | 100 |
| 1929 | 112 | 114 | 117 | 106 | 107 |
| 1937 | 102 | 93 | 122 | 91 | 99 |

Notes: For comparison, the indices are referenced so that 1920 equals 100. The second column is the simple average of the derived per capita income indices from the consumption of cereals and pulses, coffee, tobacco, sugar and passenger kilometres. Own estimate (Model 1): own price elasticity is -0.8, cross price elasticity 0.2 and income elasticity 0.6. Own estimate (Model 2): own price elasticity is -0.6, cross price elasticity 0.1 and income elasticity 0.5.

perimentation over the possible other values do not lead to significant changes on the estimated per capita income growth rates and the two possible models, presented in Figure 7.7, show similar trends: a quick recovery after World War I, an upward trend in the 1920s and a fall in the 1930s, whose degree depends on the assumptions about price and income elasticities.

Thus, Table 7.1 compares the present estimates with the earlier attempts. As can be clearly seen, the estimated trends for the 1920s and 1930s are similar in Hansen's two indices (first and second column) and in the present estimation (last two columns). Yousef significantly differs from all others by pointing toward positive growth rates during 1930-1937.

As for wage data, it is, in terms of empirical evidence, perhaps the most problematic area in Egypt's historiography for the pre-war period due to the fact that systematic official data only started to be published as late as 1942 and we only have relatively reliable estimates for 1937-1941.[78] Therefore, the best that we can do is to approximate it with the best possible indicator. To do so, we consider wheat and maize prices, since they were the most important consumption goods in Egypt. Two pieces of evidence reinforce our choice. First, the data for 1937-1945 shows a large correlation between the available wage series and wheat and maize prices. And second, cereal prices tended to move with rural wages in the interwar years.[79] We therefore use the geometric mean of wheat and maize prices to approximate the change in

[78]Anis, A Study of National Income, p.396.

[79]Bent Hansen, Marginal Productivity Wage Theory and Subsistence Wage Theory in Egyptian Agriculture. *Journal of Development Studies*, 4 1966; and Richards, *Egypt's Agricultural Development*.

industrial wages.

### 7.2.2. Estimation Results

Our panel dataset thus covers cotton, woollen, natural and artificial silk output and the other relevant variables for the period 1922-1939. We begin by estimating the main reduced form output equation without the substitute textile prices. We expect positive elasticity of output with respect to the tariff-inclusive import prices: high import prices relative to input prices should lead to positive growth in domestic output.[80] The same applies to the relative aggregate prices and real income, meaning the relatively cheaper input prices and higher real income should induce positive domestic growth. The trend may take positive or negative values, depending on the context, as it reflects the combined effect of technological change, capital growth and exogenous demand shifts. On the other hand, the input price ratio $(p_c/w)$ may have a positive or negative effect.

Table 7.2 presents all the estimation results. At this stage, we need to determine if the sector-specific disturbances in the error term are correlated with the explanatory variables, in which case the fixed effects model should be used and the random effects model otherwise. To do so, we run the conventional Hausman test, which confirms the presence of fixed effects. As explained in the corresponding analysis on Turkish textiles, this is rather intuitive, due to the industry level data. Thus, the pooled OLS coefficients on the column 1 of Table 7.2 are biased and random effects are not efficient. Thus we consider the fixed effects model, presented in the columns 3-5.

The base model without the substitute prices is shown in column 3. In this model, the relative tariff-inclusive import prices and the relative aggregate prices turn out to be significant at the 90 percent significance level. The estimated coefficients imply that a 10 percent increase in the relative tariff-inclusive import prices leads to a 9.6 percent increase in domestic output.[81]

[80] The expected signs are explained in a technical manner in the Appendix.

[81] Standard errors are corrected for heteroskedasticity and serial autocorrelation. The cross sectional dependence might be an issue with the macro panels, yet in this case, the Pesaran test does not show its presence. Likewise, an F-test for the null hypothesis that all coefficients of time effects are different from zero fails to reject the null hypothesis. Also, as explained in the Appendix, the estimated coefficient of the input price ratio should be lower than the sum of the coefficients of the relative import prices and the relative aggregate prices, that is, $\alpha_4 < \alpha_2 + \alpha_2$. This condition holds in the base model

Table 7.2.: Sources of Textile Output Growth: Estimation Results

Dependent variable: log of output growth

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| VARIABLES | Pooled OLS | Random | Within | Within | Within |
| P*(1+t)/Pc | 1.995 | 1.995** | 0.958* | 0.956* | 0.929** |
| | (0.935) | (0.935) | (0.356) | (0.340) | (0.264) |
| Pa/Pc | 0.637 | 0.637 | 1.424* | 1.395* | 1.700 |
| | (0.909) | (0.909) | (0.534) | (0.531) | (0.781) |
| Pc/w | -0.881 | -0.881 | 0.268 | 0.232 | 0.253 |
| | (0.717) | (0.717) | (0.580) | (0.548) | (0.512) |
| Real income 1 | -0.386 | -0.386 | -0.202 | | |
| | (0.526) | (0.526) | (0.251) | | |
| trend | -0.100 | -0.100 | 0.0164 | 0.0192 | 0.0380 |
| | (0.0615) | (0.0615) | (0.0105) | (0.0113) | (0.0305) |
| Real income 2 | | | | -0.231 | -0.340 |
| | | | | (0.212) | (0.266) |
| Ps/Pc | | | | | -0.316 |
| | | | | | (0.304) |
| Constant | 11.74 | 11.74 | 7.036 | 9.207 | 12.66 |
| | (10.75) | (10.75) | (7.338) | (7.634) | (9.443) |
| Observations | 72 | 72 | 72 | 72 | 72 |
| R-squared | 0.416 | | 0.789 | 0.790 | 0.798 |
| Number of pr | | 4 | 4 | 4 | 4 |

Robust standard errors in parentheses. All variables in logs except trend

** $p<0.05$, * $p<0.10$

And an increase in the relative aggregate prices of the same size cause an even larger impact (14 percent increase). These results are robust when the second real income estimates, which, as mentioned above, were based on different income and price elasticities, are used (column 4). All other variables turn out to be insignificant in both models. On the other hand, the inclusion of the relative substitute prices makes the relative aggregate prices insignificant and the impact of the tariff-inclusive import prices even stronger (Column 5). However, this might be due to measurement error, since we can only observe domestic prices after 1935 and have only poorly approximated the prices of the earlier years.

In all the three fixed effects estimations, the coefficient of the relative tariff-inclusive import prices is significant and around 0.95. One can interpret this as quite expected: as the import prices that the domestic output competes against increase more and more relative to the raw material prices, then the domestic producers increase their output. Then, when the base model is considered (column 3), the larger decline in the raw material prices compared to the aggregate prices had a positive impact on the domestic output, probably by increasing profit rates. Therefore, the perceived import prices appear a significant driver, yet they also combined with relative prices to determine the course of domestic textile growth. What is equally important is the fact that the stagnation in real income in the 1930s seems to have checked domestic output. And this stagnation was mainly due to the stagnant agricultural output, so it follows that although the domestic output replaced imported textiles to a significant degree, it was limited by stagnant real incomes.

At this point, one may ask to what extent tariff protection accounts for output growth. To answer this question, we will conduct a counterfactual simulation by fixing the ad valorem rates at a moderate level and assuming the estimated output growth elasticities used in the base model. This exercise is conducted in the following way. First, we take the predicted growth rates estimated by the model based on historical values of nominal protection rates and then separately calculate the counterfactual rates based on counterfactual values. For cotton, natural silk and artificial silk textiles, the ad valorem rate is fixed at 18 percent, which was the one that prevailed immediately after the 1930 tariff reform. As known, these values progressively increased over the

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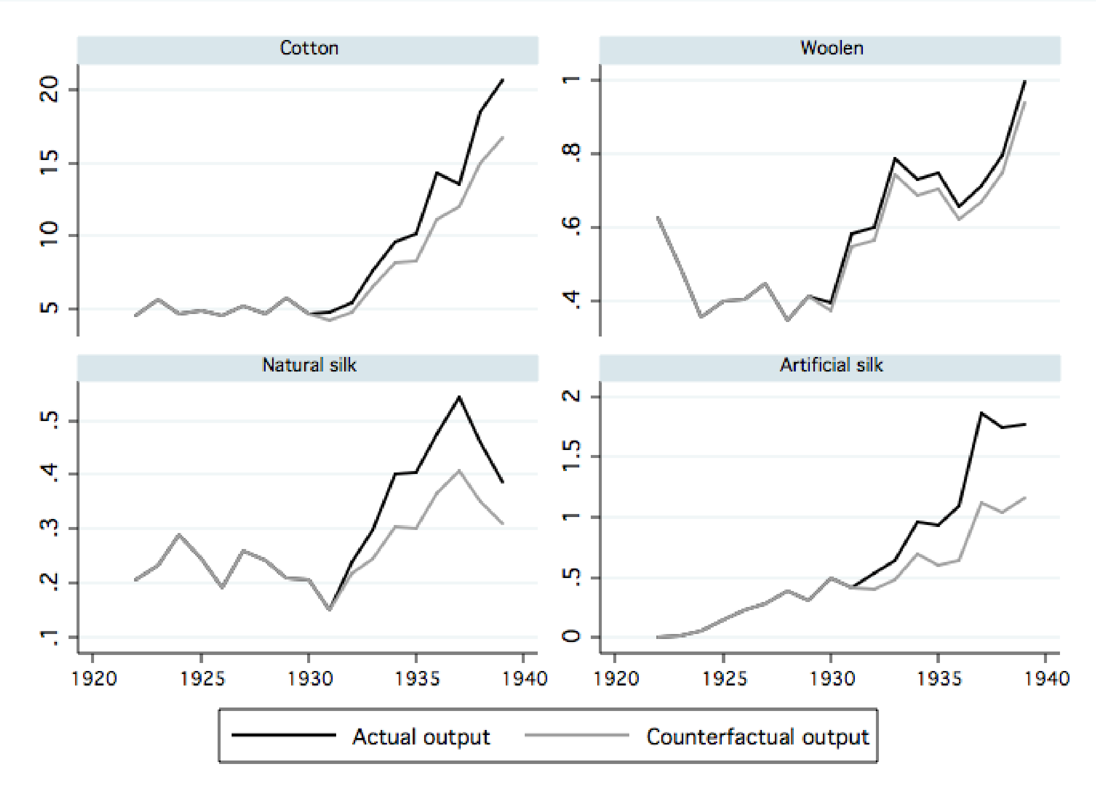
and its extension (see columns 3 and 4 of Table 7.2).

Figure 7.8.: Actual and Counterfactual Textile Output Levels in Egypt (1,000 Tons), 1923-1939




Source: See the text.

course of the 1930s, up to around 50 percent in the case of cotton and natural silk and almost 100 percent for artificial silk goods. For woollens, the level of protection was already moderate in the 1930s at 15 percent, so in this exercise it was fixed at 8 percent, which was the pre-reform level.

Then the difference between the predicted growth rates and counterfactual ones is deducted from the actual growth rates to obtain the final counterfactual growth rates. The results are presented for each textile branch in Figure 7.8. The effect of the protection is most obviously seen in the much smaller counterfactual output levels of silk goods: while the average annual growth rate of the natural silk goods in the 1930s was 10.6 percent, the counterfactual level decreases to 7.5 percent. In other words, 30 percent of growth in natural silk output in the 1930s is accounted for by the high tariff rates. The disparity turns out to be slightly more pronounced in the case of artificial silk: the growth rate declines from 18.2 percent to 12.3 percent in the counterfactual case. That is, one third of the growth in artificial silk textiles was due to the high tariffs. On the other hand, for cotton, around 15 percent of the growth is accounted for by the excessive tariffs and lastly there is a very small effect of the tariffs (less than 10 percent) for the output of woollen goods. In short, in each case, the wedge between the import prices and input prices turns out to be a more decisive factor for output growth than the nominal tariff rates per se.

## 7.3. Conclusion

The aim of this chapter has been to identify the sources of manufacturing growth in the interwar period by looking at the case of textiles, which was the fastest-growing branch of manufacturing. The estimated coefficients based on a partial equilibrium model leads to three conclusions.

To begin with, the relative tariff-inclusive import prices appears to be the most significant driver of domestic output growth: on average, a 10 percent increase in the cost of imported textiles relative to raw material prices results in around a 9.5 percent increase in domestic output. This finding is far from striking, considering the protectionist import policies of Egypt in the 1930s and the concomitant manufacturing revival. However, as demonstrated in the counterfactual simulation built around more moderate tariff rates, the increasingly high tariff rates do not turn out to have been responsible for the output growth, since if the nominal tariffs had remained only moderately high (around 18 percent in each case after 1929), the resulting average output growth would have been 15-33 percent less than actual levels. What explains this is the fact that the wedge between the average import prices and raw material prices already operated in favour of domestic producers, so even moderate tariffs could still have granted the local producers sufficient protection to compete with imports.

On the other hand, the limitation of this study is that the effects of the preference in government contracts for domestic producers remain unknown. If this boosted the competitive position of domestic firms, as suggested by el-Gritly, then this might explain the implication that the excessive tariffs accounted for a relatively small part of the output growth.[82]

[82]el-Gritly, Structure of Modern Industry, p.338. The other measures to protect the domestic producers, such as railway rebates and the tax exemptions for imports of machinery, are considered to have had a minimal effect, as argued above.

Second, the gap between the aggregate prices and raw material prices was another, and perhaps more important, determinant of output growth. Although we are unable to observe the domestic prices, this disparity might be indicative of the high domestic textile prices, relative to the input prices and thus necessarily higher profitability. Hansen and Nashashibi's argument about the relative fall in the prices of agricultural goods is extremely valid in this connection.[83] Third, the real income and trend variables appear statistically insignificant. The stagnation in domestic income in the 1930s due to the agricultural stagnation was clearly an impediment to domestic growth, as it put a check on domestic demand. And the lack of trend moreover signifies the absence of exogenous technological change and capital growth.

[83]Hansen and Nashashibi, *Foreign Trade Regimes*, p.4.

# 7.4. Data Appendix

Table 7.3.: Total and Textile Imports of Egypt, 1914-1939

| | Total imports LE million | Textile imports LE million | Share of textile imports % |
|---|---|---|---|
| 1914 | 21.7 | 5.5 | 25.2 |
| 1915 | 19.4 | 5.7 | 29.4 |
| 1916 | 31.1 | 9.6 | 31.0 |
| 1917 | 33.2 | 11.7 | 35.3 |
| 1918 | 51.2 | 22.2 | 43.4 |
| 1919 | 47.4 | 18.8 | 39.8 |
| 1920 | 101.9 | 34.4 | 33.8 |
| 1921 | 55.5 | 14.7 | 26.5 |
| 1922 | 43.3 | 14.9 | 34.3 |
| 1923 | 45.3 | 16.5 | 36.5 |
| 1924 | 50.7 | 17.1 | 33.7 |
| 1925 | 58.2 | 18.0 | 30.9 |
| 1926 | 52.4 | 13.6 | 26.0 |
| 1927 | 48.7 | 13.9 | 28.6 |
| 1928 | 52.0 | 15.4 | 29.7 |
| 1929 | 56.1 | 16.1 | 28.7 |
| 1930 | 47.5 | 12.4 | 26.2 |
| 1931 | 31.5 | 7.8 | 24.7 |
| 1932 | 27.4 | 7.6 | 27.7 |
| 1933 | 26.8 | 8.0 | 29.9 |
| 1934 | 29.3 | 8.2 | 28.0 |
| 1935 | 32.2 | 8.1 | 25.1 |
| 1936 | 31.5 | 7.6 | 24.1 |
| 1937 | 38.0 | 8.8 | 23.2 |
| 1938 | 36.9 | 7.0 | 19.1 |
| 1939 | 34.1 | 5.6 | 16.5 |

Source: Egypt, Ministry of Finance, Statistical Department, *Annual Statement of Foreign Trade*.

Table 7.4.: Import Duties and Government Revenues in Egypt, 1914/15-1938/39.

| | Import duties | Government revenues | Duties/Total imports | Import duties/Government revenues |
|---|---|---|---|---|
| | LE million | LE million | % | % |
| 1914/15 | 3.1 | 15.4 | 16.04 | 20.18 |
| 1915/16 | 3.8 | 17.8 | 12.30 | 21.57 |
| 1916/17 | 4.8 | 19.9 | 14.59 | 24.29 |
| 1917/18 | 5.0 | 23.2 | 9.72 | 21.45 |
| 1918/19 | 6.9 | 27.7 | 14.61 | 25.04 |
| 1919/20 | 10.5 | 33.7 | 10.26 | 31.04 |
| 1920/21 | 10.9 | 46.4 | 19.65 | 23.48 |
| 1921/22 | 10.1 | 41.8 | 23.22 | 24.07 |
| 1922/23 | 10.5 | 35.8 | 23.26 | 29.44 |
| 1923/24 | 10.9 | 36.3 | 21.53 | 30.14 |
| 1924/25 | 11.9 | 37.7 | 20.44 | 31.57 |
| 1925/26 | 12.3 | 39.6 | 23.47 | 31.07 |
| 1926/27 | 12.1 | 41.9 | 24.93 | 28.94 |
| 1927/28 | 11.5 | 38.6 | 22.13 | 29.86 |
| 1928/29 | 12.4 | 40.4 | 22.05 | 30.64 |
| 1929/30 | 13.1 | 41.4 | 27.65 | 31.72 |
| 1930/31 | 12.6 | 41.2 | 40.02 | 30.61 |
| 1931/32 | 13.1 | 37.8 | 47.59 | 34.55 |
| 1932/33 | 12.4 | 37.1 | 46.34 | 33.40 |
| 1933/34 | 12.2 | 32.6 | 41.64 | 37.39 |
| 1934/35 | 13.3 | 33.7 | 41.35 | 39.50 |
| 1935/36 | 14.3 | 35.0 | 45.30 | 40.80 |
| 1936/37 | 15.1 | 35.5 | 39.66 | 42.50 |
| 1937/38 | 15.2 | 37.1 | 41.05 | 40.81 |
| 1938/39 | 15.5 | 37.6 | 45.32 | 41.07 |

Source: Egypt, Ministry of Finance, Statistical Department, *Annual Statement of Foreign Trade*; Egypt, Ministere des Finances, Annuaire Statistique.

Table 7.5.: Ad Valorem Import Protection Rates for Egyptian Textiles (%), 1929-1939

| | Cotton | Woollens | Natural silk | Artificial silk |
|---|---|---|---|---|
| 1929 | 8.0 | 8.0 | 8.0 | 8.0 |
| 1930 | 18.2 | 15.0 | 18.0 | 18.0 |
| 1931 | 33.8 | 15.0 | 18.0 | 18.0 |
| 1932 | 37.1 | 15.0 | 31.0 | 56.2 |
| 1933 | 39.3 | 15.0 | 44.0 | 61.0 |
| 1934 | 39.5 | 15.0 | 57.1 | 66.3 |
| 1935 | 44.7 | 15.0 | 60.5 | 83.9 |
| 1936 | 52.8 | 15.0 | 54.5 | 106.1 |
| 1937 | 35.0 | 15.0 | 58.9 | 100.7 |
| 1938 | 46.3 | 15.0 | 56.3 | 101.2 |
| 1939 | 47.7 | 15.0 | 48.4 | 84.0 |

Note: Cotton figures represent heavy grey cotton textiles and woollen figures are for carpets and rugs. See the text for details.

Table 7.6.: Average Prices of Textile Imports in Egypt (LE/kg), 1922-1939

| | Cotton | Woollens | Natural silk | Artificial silk |
|---|---|---|---|---|
| 1922 | 0.18 | 0.28 | 2.17 | 0.63 |
| 1923 | 0.17 | 0.25 | 2.30 | 0.72 |
| 1924 | 0.18 | 0.24 | 2.04 | 0.70 |
| 1925 | 0.17 | 0.23 | 1.80 | 0.61 |
| 1926 | 0.12 | 0.36 | 1.45 | 0.52 |
| 1927 | 0.12 | 0.20 | 1.47 | 0.31 |
| 1928 | 0.13 | 0.19 | 1.68 | 0.38 |
| 1929 | 0.12 | 0.17 | 1.43 | 0.39 |
| 1930 | 0.09 | 0.20 | 1.52 | 0.39 |
| 1931 | 0.08 | 0.36 | 1.32 | 0.34 |
| 1932 | 0.08 | 0.33 | 1.34 | 0.41 |
| 1933 | 0.07 | 0.35 | 1.21 | 0.39 |
| 1934 | 0.07 | 0.31 | 0.77 | 0.37 |
| 1935 | 0.07 | 0.24 | 0.73 | 0.32 |
| 1936 | 0.08 | 0.26 | 1.11 | 0.35 |
| 1937 | 0.09 | 0.25 | 0.98 | 0.46 |
| 1938 | 0.09 | 0.25 | 1.02 | 0.54 |
| 1939 | 0.13 | 0.24 | 1.18 | 0.95 |

Note: Cotton figures represent heavy grey cotton textiles and woollen figures are for carpets and rugs. See the text for details.

Table 7.7.: Raw Material Prices for Egyptian Textiles (LE/kg), 1922-1939

| | Raw Cotton | Raw wool | Natural silk yarn | Artificial silk yarn |
|---|---|---|---|---|
| 1922 | 0.15 | 1.02 | 1.37 | 1.36 |
| 1923 | 0.14 | 0.98 | 1.34 | 1.21 |
| 1924 | 0.18 | 0.96 | 1.23 | 1.02 |
| 1925 | 0.18 | 0.91 | 1.16 | 0.46 |
| 1926 | 0.14 | 0.91 | 1.14 | 0.23 |
| 1927 | 0.10 | 0.78 | 0.85 | 0.27 |
| 1928 | 0.13 | 0.85 | 0.79 | 0.28 |
| 1929 | 0.12 | 1.03 | 0.91 | 0.24 |
| 1930 | 0.09 | 0.86 | 0.78 | 0.22 |
| 1931 | 0.05 | 0.74 | 0.71 | 0.19 |
| 1932 | 0.04 | 0.61 | 0.60 | 0.19 |
| 1933 | 0.05 | 0.54 | 0.55 | 0.17 |
| 1934 | 0.05 | 0.51 | 0.53 | 0.17 |
| 1935 | 0.06 | 0.52 | 0.53 | 0.15 |
| 1936 | 0.06 | 0.50 | 0.50 | 0.14 |
| 1937 | 0.06 | 0.56 | 0.54 | 0.17 |
| 1938 | 0.05 | 0.53 | 0.56 | 0.16 |
| 1939 | 0.05 | 0.50 | 0.54 | 0.29 |

Source: See the text.

Table 7.8.: Price Indices: Aggregate, Agricultural and Non-agricultural (1913=100), 1913-1939.

| | Agricultural | Non-agricultural | Aggregate |
|---|---|---|---|
| 1913 | 100.0 | 100.0 | 100.0 |
| 1914 | 80.6 | 112.3 | 87.0 |
| 1915 | 90.0 | 126.3 | 97.3 |
| 1916 | 125.3 | 182.1 | 136.7 |
| 1917 | 186.9 | 278.4 | 205.2 |
| 1918 | 193.5 | 370.9 | 228.9 |
| 1919 | 218.2 | 351.2 | 244.8 |
| 1920 | 377.4 | 403.0 | 382.5 |
| 1921 | 143.2 | 266.3 | 167.8 |
| 1922 | 138.2 | 182.4 | 147.1 |
| 1923 | 136.3 | 159.0 | 140.9 |
| 1924 | 159.2 | 158.5 | 159.0 |
| 1925 | 188.0 | 139.3 | 178.3 |
| 1926 | 131.8 | 141.3 | 133.7 |
| 1927 | 119.4 | 126.4 | 120.8 |
| 1928 | 130.9 | 121.9 | 129.1 |
| 1929 | 125.0 | 114.4 | 122.9 |
| 1930 | 99.5 | 108.5 | 101.3 |
| 1931 | 82.2 | 107.4 | 87.3 |
| 1932 | 71.9 | 104.8 | 78.5 |
| 1933 | 62.8 | 105.0 | 71.2 |
| 1934 | 86.7 | 105.6 | 90.5 |
| 1935 | 78.0 | 108.7 | 84.1 |
| 1936 | 78.8 | 110.7 | 84.9 |
| 1937 | 81.9 | 136.2 | 88.8 |
| 1938 | 82.9 | 136.2 | 89.7 |
| 1939 | 79.5 | 146.7 | 91.0 |

Source: See the text. Main data source is Egypt, Ministere des Finances, Annuaire Statistique.

Table 7.9.: Estimates of Real Income Per Capita in Egypt, 1915-1939

| | (I) Net agricultural output | (II) Total net agricultural imports | (III)=(I)+(II) Agricultural consumption | (IV) Agricultural consumption at 1938 prices | (V) Income per capita at 1938 prices Model I | (VI) Income per capita at 1938 prices Model II |
|---|---|---|---|---|---|---|
| | LE million | LE million | LE million | LE million | 1915=100 | 1015=100 |
| 1915 | 46.8 | -21.6 | 25.2 | 28.1 | 100.0 | 100.0 |
| 1916 | 58.7 | -32.3 | 26.4 | 21.8 | 71.3 | 60.8 |
| 1917 | 89.7 | -34.2 | 55.5 | 25.2 | 87.0 | 83.8 |
| 1918 | 116.2 | -38.2 | 78.0 | 25.2 | 69.3 | 69.8 |
| 1919 | 112.7 | -66.7 | 46.0 | 26.8 | 87.8 | 88.1 |
| 1920 | 200.1 | -65.3 | 134.8 | 33.3 | 121.3 | 122.9 |
| 1921 | 115.4 | -24.3 | 91.1 | 37.1 | 97.6 | 107.4 |
| 1922 | 89.7 | -41.2 | 48.5 | 37.3 | 113.6 | 120.0 |
| 1923 | 98.2 | -49.0 | 49.2 | 29.5 | 113.0 | 112.2 |
| 1924 | 113.1 | -56.6 | 56.5 | 31.6 | 123.4 | 122.8 |
| 1925 | 128.4 | -48.0 | 80.4 | 39.5 | 135.9 | 138.0 |
| 1926 | 116.3 | -31.0 | 85.3 | 41.6 | 122.0 | 128.4 |
| 1927 | 90.9 | -39.3 | 51.6 | 41.0 | 122.6 | 128.7 |
| 1928 | 100.0 | -46.9 | 53.1 | 37.6 | 128.1 | 131.2 |
| 1929 | 106.0 | -40.7 | 65.3 | 46.0 | 125.8 | 132.3 |
| 1930 | 93.9 | -20.7 | 73.3 | 53.4 | 116.5 | 126.0 |
| 1931 | 74.0 | -18.6 | 55.4 | 55.9 | 110.0 | 121.1 |
| 1932 | 61.6 | -17.6 | 44.0 | 50.6 | 108.7 | 119.9 |
| 1933 | 55.1 | -21.0 | 34.2 | 43.9 | 104.8 | 115.8 |
| 1934 | 62.0 | -24.5 | 37.5 | 42.1 | 117.2 | 124.9 |
| 1935 | 68.6 | -25.9 | 42.7 | 44.0 | 111.9 | 121.3 |
| 1936 | 72.1 | -24.0 | 48.1 | 47.9 | 111.0 | 121.4 |
| 1937 | 75.3 | -28.3 | 47.1 | 51.3 | 106.5 | 118.7 |
| 1938 | 75.3 | -19.7 | 55.6 | 51.4 | 106.8 | 118.9 |
| 1939 | 72.4 | -23.4 | 49.0 | 55.1 | 100.7 | 114.0 |

Notes: (IV) is the 3-year moving average of (III), which is deflated by the agricultural price index. See the text for the assumed elasticities in the real income per capita models I and II.

# 8. Explaining the Sources of Economic Divergence Between Egypt and Turkey: New Insights

"We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time."
T.S. Elliot

The preceding chapters have attempted to pin down the extent and sources of agricultural and industrial growth in interwar Egypt and Turkey. In doing so, they have served two purposes. The first is to provide consistent output estimates of agricultural and industrial growth, given that the existing quantitative evidence is either insufficient or misleading. And the second is to explore the sources of output growth. The output decomposition in the chapters on the agricultural sector and the partial equilibrium analysis of textiles output growth in the chapters on protectionism serve the latter purpose.

The following chapter brings together the main findings of the earlier chapters in a comparative manner in order to obtain insights regarding the contrasting economic performance of the economies of Turkey and Egypt in the interwar period. In addition, it provides a brief discussion of how our findings fit with the monetary and fiscal policies adopted by policy makers in the 1930s and an attempt to further the theoretical insights that were discussed in the Introduction based on the experience of other economies. It is here argued that the monetary and fiscal policies to a large extent remained passive in interwar Turkey and Egypt and policy makers implemented a protectionist agenda to varying degrees. Turkey pursued more aggressive protectionist policies, yet this difference had more impact on the extent of industrialisation than on the recovery in domestic demand, which was for the most part driven by factor endowments, geographical characteristics and the economic problems Turkey and Egypt inherited from the pre-World War I period.

## 8.1. A Summary of Findings

In both Egypt and Turkey, the interwar period's economic shock was external in origin and massive in size. The Great Depression was transmitted, just as it was for many other developing countries, mainly via the decline in agricultural prices, the terms of trade and export earnings. However, as much as the source of depression was external, the origins of the response and the extent of economic recovery turned out to be internal.

The evidence of price levels and terms of trade indicates the depth of the depression. The net barter terms of trade of both countries was reduced by around 40 percent between 1926-1929 and 1933 (Figure 8.1).[1] On the other hand, the movement of Egypt and Turkey's terms of trade diverged in the second half of the 1930s: while they remained almost unchanged in Turkey, Egypt suffered a further loss. This might have been due to two factors. First, Turkey's foreign trade became increasingly oriented towards Germany via the clearing system in the second half of the 1930s. Germany might have paid for exports from Turkey above market prices. Second, Turkey's export basket was more diversified, so the average export prices might have recovered more compared to cotton, which was Egypt's main export. This was particularly important because while exports made up around 10 percent of GDP in Turkey, they most likely made up twice as much in Egypt. Therefore, the direct impact of the fall in the terms of trade was considerably greater in Egypt.

The extent of the shock was also reflected in the movement of agricultural prices, which had a far broader impact on the domestic market due to its spillover effects (Figure 8.2). Average prices declined by 60 percent in Turkey

[1] Since the export prices were unusually high in 1925, the average of 1926-1929 is a better reference point.

between the late 1920s and 1933 and slightly recovered thereafter, whereas the extent of deflation remained around 40 percent in Egypt. Yet the smaller decline does not mean the crisis was less severe in Egypt because the bulk of the Egyptian peasantry was involved in commercial relationships, whereas large-scale commercialisation was restricted to a few regions in Turkey, which enabled a part of the peasantry to escape a severe debt-deflation shock.

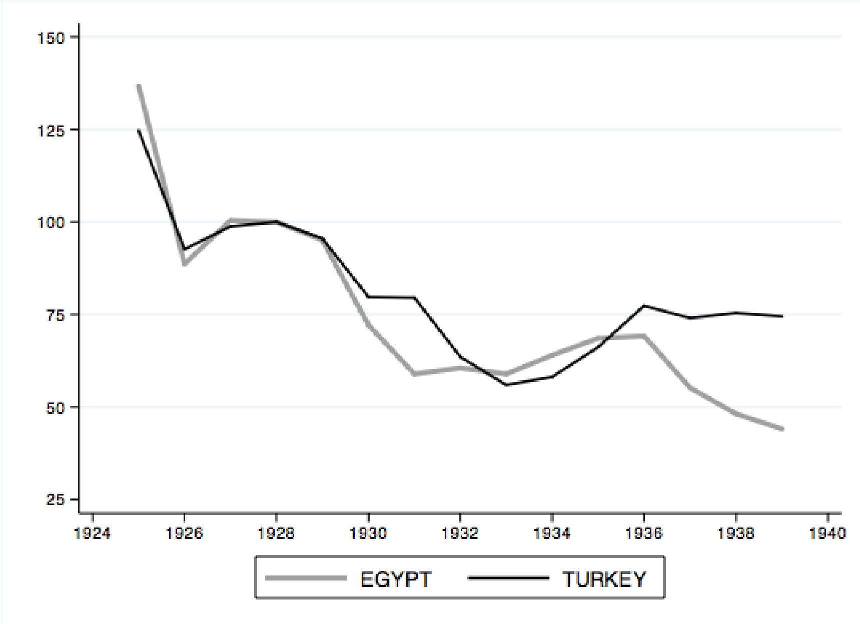
Overall, although there were some differences in the movement in agricultural prices and terms of trade in Egypt and Turkey, there is no doubt that the crisis was felt severely in both countries between 1929 and 1933. And what is equally important was that the deterioration in the terms of trade and deflation in agricultural prices were to a large extent prolonged until World War II, which not only impacted on the medium-term economic performance, but also the formation of economic policies, as will be discussed later on.

Given that both economies were predominantly agricultural, we first look at how the total agricultural output responded to the sharp deflation. Figure 8.3 compares net agricultural output per worker, the sum of both crop and livestock, in Egypt and Turkey, as estimated in Chapters 2 and 5. The divergence in the movement of output after 1930 is obvious. In Turkey the output per worker increased, with a 2.3 percent annual trend growth rate over 1925-1939, and only a temporary decline between 1933 and 1935, whereas Egypt witnessed a -1.6 percent annual decline over the whole period. These results should be viewed in relation to the background of severe deflation. Undoubtedly, the performance of Turkish agriculture was impressive in view of the 50-60 percent decline in agricultural prices, while the increase in crop yields in Egypt only partially offset the adverse impact of the decline in agricultural prices.

What led to the contrasting pattern of agricultural development in interwar Turkey and Egypt were the constraints and potentials created by the previous development path, geography and, to a lesser degree, policies. To begin with, population, both total and agricultural, grew rapidly in both countries: its compound annual growth rate was 1.15 percent in Egypt and 1.82 percent in Turkey from 1925 to 1939.[2] However, the consequences of population growth

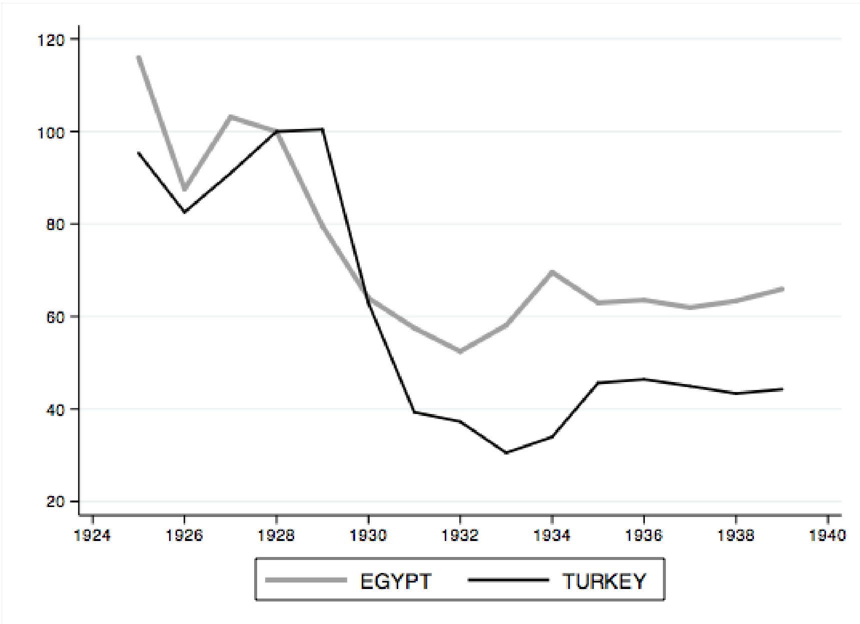
[2] The respective rates from 1914 to 1939 were 1.14 percent in Egypt and 0.61 percent in Turkey. The huge decline in population during World War I and subsequent demographic changes until the mid-1920s kept the population growth over 1914-1939 at a modest rate.

Figure 8.1.: Net Barter Terms of Trade in Egypt and Turkey (1928=100), 1925-1939



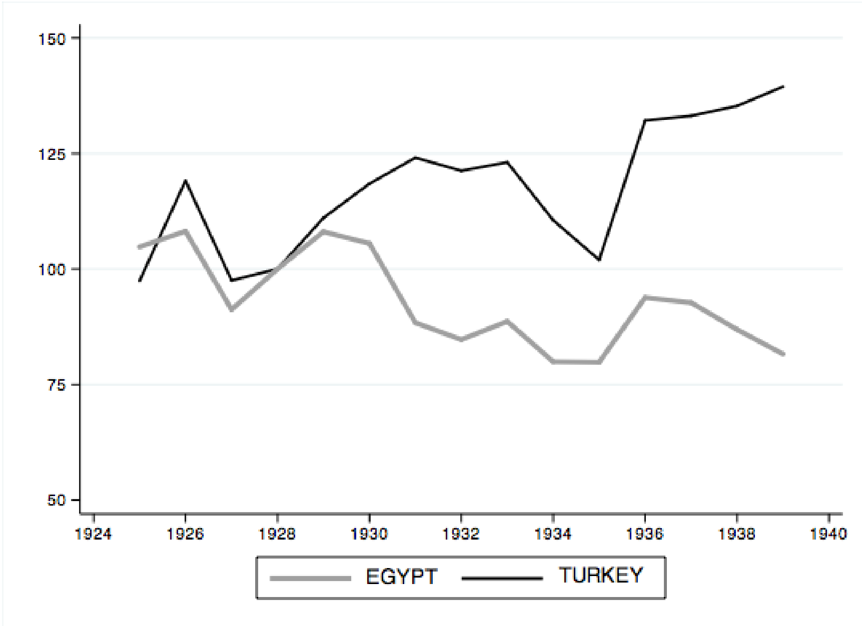

Sources: Bulutay et al., *Türkiye'nin Milli Geliri*, Additional Table 52; and Mead, *Growth and Structural Change*, Table V.A.7.

Figure 8.2.: Agricultural Prices in Egypt and Turkey (1928=100), 1925-1929




Sources: Data appendix in Chapters 2 and 5.

Figure 8.3.: Net Agricultural Output Per Worker (Constant Prices) in Egypt and Turkey (1928=100), 1925-1939




Source: Data appendix in Chapters 2 and 5.

were totally different. In Turkey the population growth stimulated output growth as a result of the available cultivable land, whereas its effect was quite adverse in Egypt, since the country had already reached the limits of its spare cultivable land by the onset of World War I, as repeatedly pointed out in the Egyptian historiography. This contrast in land use is easily noticeable in Figure 8.4, which shows that the total cropped acreage in Turkey increased by one fourth during the 1930s, whereas it was almost stagnant in Egypt.[3] Arthur Lewis' theory of the unlimited supply of labour is probably applicable to Egyptian agriculture, despite cotton production being quite labour-intensive and becoming even more so during the interwar period because of the increase in the use of water and chemical fertilisers.[4]

[3]Note that the cropped area was expanded between 1914 and 1926, unlike in the following period. See Radwan, *Capital Formation*, p.270.

[4]W. Arthur Lewis, Economic Development with Unlimited Supplies. *Manchester School* May 1954. Lewis' theory is based on the idea that an unlimited supply of labour in agriculture, working with a negligible marginal productivity, is a characteristic phenomena of a traditional economy. Thus, in a typical developing country, where there is no opportunity for investment in the traditional sector and there is surplus labour at low wages in an unlimited amount, the scope of industrial development is only limited by the availability of cheap labour and food. The model is applied to Egyptian agriculture for the period 1937-1965 by Mabro and he found that although there was disguised unemployment and a labour surplus in Egyptian agriculture, industrial development

Therefore, the dynamics between available land and population were one of the key factors that determined the extent of agricultural growth in the inter-war period. The decomposition of crop output growth, separately carried out for Turkey and Egypt in Chapters 2 and 5 respectively, provides an illustration of the sources of agricultural growth. For Egypt, the years 1913-1939 can be assessed as a single period, because they differ from the earlier period in terms of the economic problems that Egyptian agriculture faced, that is, the end of easily available cultivable land and the previous deterioration in yields. During that period, the price index declined by around 20 percent, but its influence on the total value of output was totally offset by the combined effect of the improvement in yields (18 percent), a small increase in the cropped acreage (2 percent) and the shift towards more valuable crops (3 percent).

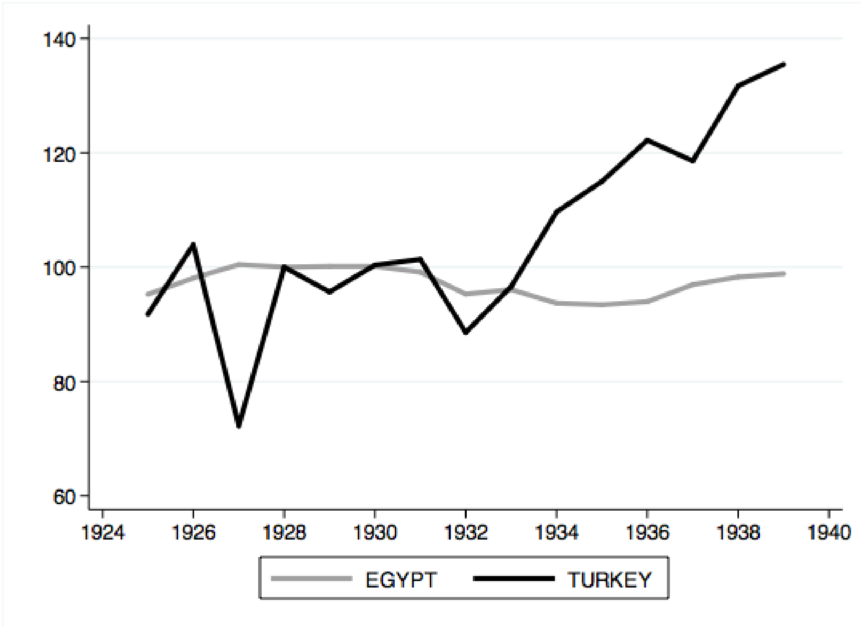
By contrast, in Turkey between 1925 and 1939, the total output level was maintained, which was the result of a 75 percent increase in yields and a 48 percent increase in total acreage, despite the 66 percent decline in prices. The emphasis placed on the open land frontier in Turkey in the conventional wisdom therefore ignores to a large degree the rise in land productivity. As argued earlier, this positive trend in yields was mainly explained by wheat and cash crops. Although an accurate judgement is difficult to make due to the limited data, it seems that in the case of cash crops, such as cotton and sugar beet, government policies and the expansion of new industries contributed to the implementation of better cultivation techniques and the adoption of better seeds. Wheat yields, on the other hand, rose in the coastal regions where the scope of land expansion was limited. Turkey thus experienced a much greater increase in yields, as shown in Figure 8.5, which compares the quite limited increase in Egyptian yields with the highly volatile but increasing yields in Turkey.[5]

Furthermore, the role of government policies in agricultural performance should be considered in the context of the developments that had taken place in the earlier period. In Egypt the rapid progress of cotton cultivation before 1914 had been made by extending the frontier with the help of irrigation,

was not able to absorb the surplus due to the high population growth rate. Robert Mabro, Industrial Growth, Agricultural Under-Employment and the Lewis Model: The Egyptian Case, 1937-1965. *Journal of Development Studies*, 3(4) 1967.

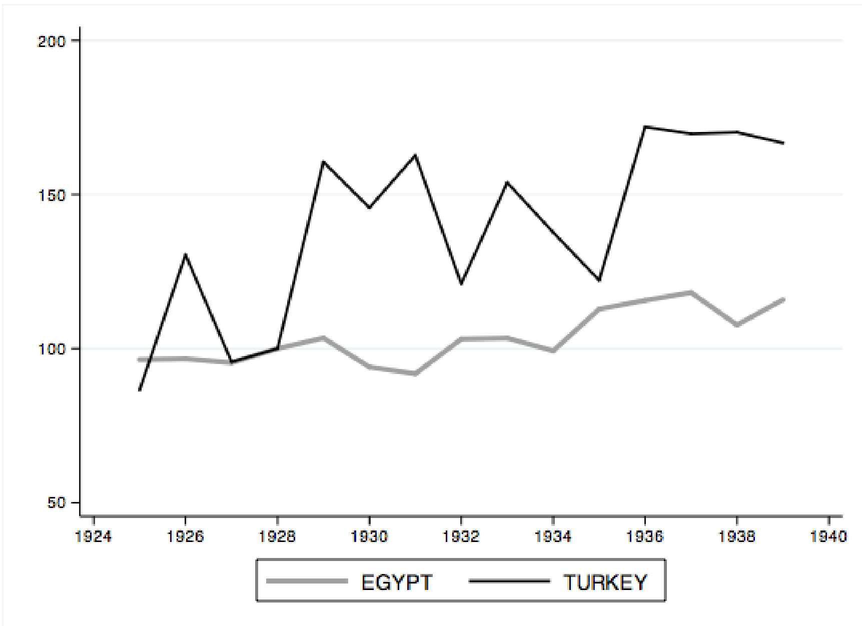
[5] The higher volatility in the case of Turkey was the result of the greater dependence of the agricultural production on rainfall, which was not the case in Egypt owing to the large-scale irrigation.

Figure 8.4.: Cultivated Area in Egypt and Turkey (1928=100), 1925-1939




Source: Data appendix in Chapters 2 and 5.

Figure 8.5.: Average Crop Yields in Egypt and Turkey (1928=100), 1925-1939




Source: Laspeyres indices. Crop yields are weighted with acreage times prices. Data appendix in Chapters 2 and 5.

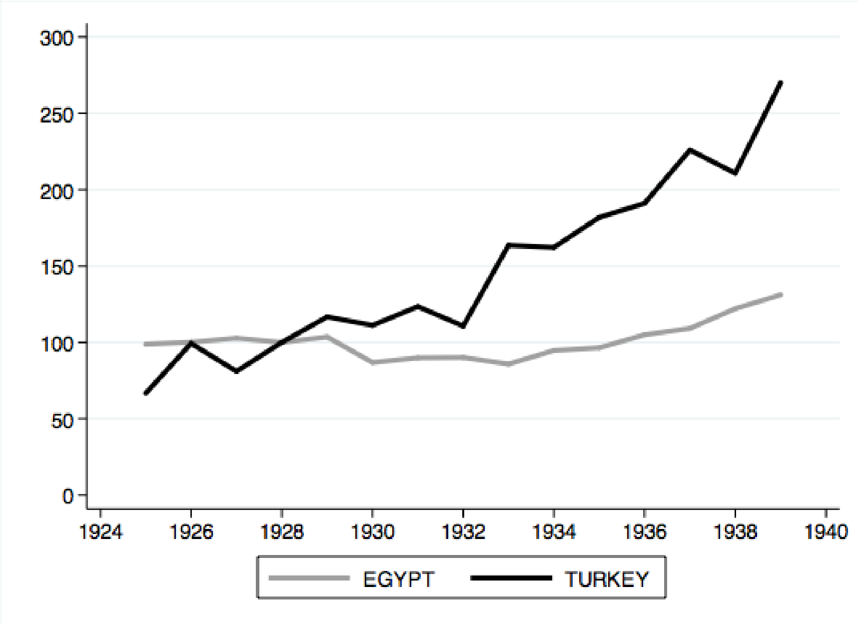
land reclamation and population growth. Therefore, the agricultural sector in the interwar period had to deal with land shortages and the deterioration in cotton yields. The government initiated large-scale drainage and some further irrigation projects, and made continuous efforts to improve cotton yields in order to return to the higher levels of before. Such attempts eventually proved to be successful. On the other hand, the reversal of the decline in prices was a more difficult task, as reflected by the failure of the occasional restrictions on cotton acreage between 1921 and 1932. Whether it was based on economic logic or the interests of landlords is an open debate, but after 1933 Egyptian policy makers came to the conclusion that the policy had to be oriented towards increasing cotton output. On the other hand, the policies of Turkey's republican governments, such as the abolition of the tithe in 1925, the extension of railroads towards the interior's hinterland and the support for cash crop production in all likelihood stimulated output growth, yet the strong rhetoric centred around agricultural modernisation and development did not yield notable improvements in the use of technology, whether by mechanisation or through other agricultural techniques.

It is widely accepted that the 1930s marked the beginning of industrialisation in both Egypt and Turkey. However, the lack of comparable data has so far not allowed us to accurately compare the two countries' growth performance. To do so, we have provided the first comprehensive estimates of Egyptian industrial output, as well as re-estimates of Turkish industrial output that are more reliable and detailed than the earlier ones presented by Bulutay et al. and Zendisayek.[6] The new estimates confirm the existence of industrial take off during the 1930s in both countries (Figure 8.6). Yet it turns out that the extent of industrial growth was rather different. The index of aggregate physical output in Turkey increased by two and a half times between 1929 and 1938, whereas it only grew around 30 percent in Egypt during that period. Thus, the strong growth in Turkey stands in sharp contrast to the moderate growth in Egypt.

On the other hand, this aggregate comparison hides an important aspect of Egyptian industrialisation. In both countries the textiles output grew by an unprecedented degree, by four to five times in the 1930s, whereas food processing output expanded twice in Turkey but remained stagnant in Egypt

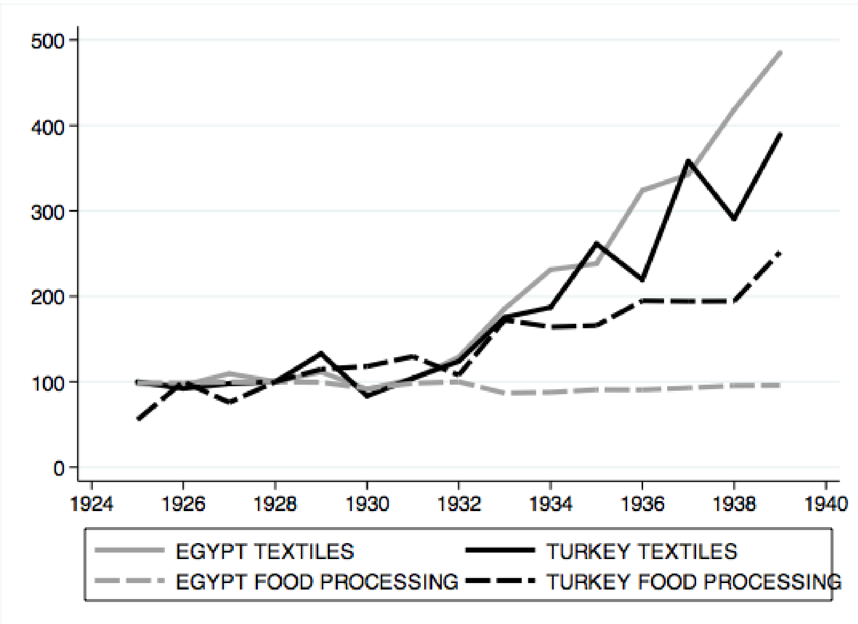
[6] Bulutay et al., *Türkiye'nin Milli Geliri*; and Zendisayek, Reevaluation.

Figure 8.6.: Aggregate Industrial Output in Egypt and Turkey (1928=100), 1925-1939




Source: Data appendix in Chapters 3 and 6.

Figure 8.7.: Textiles and Food Processing Output in Egypt and Turkey (1928=100), 1925-1939




Source: Data appendix in Chapters 3 and 6. The indices cover cotton, woollen, silk and hemp goods.

(Figure 8.7). While in Turkey almost all sectors such as milling, tobacco and alcohol processing grew to a significant degree, in Egypt most sectors did not see significant growth until World War II. Therefore, by comparison, it appears that the industrial expansion in Turkey was much more balanced as the variation in the growth rates within industry was more pronounced in Egypt, despite the fact that textiles grew the most in both economies. In particular, the output of the food processing sector in Egypt moved in line with the sluggish domestic incomes. Foodstuff imports were reduced over the 1930s, but the impact on output growth rates remained limited because imports had made up a small proportion of total consumption before 1930. For instance, the share of imports in domestic wheat consumption was just 10-15 percent, and it declined to negligible levels by the end of the 1930s. Vegetable oils were another case, since the consumption of cotton seed oil was already totally supplied by domestic production, while other types, such as olive oil, continued to be imported, so the share of imported vegetable oil, which was around 20 percent, remained stable. In sharp contrast, the share of imports in cotton textiles consumption in Egypt was around 80-85 percent during the 1920s and as a result of rapid domestic growth it fell to 50 percent in 1938 and even further during the war. Nonetheless, the estimates presented in Chapter 6 indicate negative or sluggish growth in the consumption of textiles and foodstuff, which apparently placed an enormous check on Egypt's industrial development.

In order to assess the determinants of output growth in the fastest growing sector in both economies, that is, textiles, we suggest a partial equilibrium analysis, which differentiates between the impact of import prices, relative aggregate prices and real income on the domestic output of cotton, woollen, silk and hemp textiles. The analysis shows that the tariff-inclusive import prices had a statistically significant impact on textiles output in Turkey: a 10 percent increase in the relative tariff-inclusive import prices led to 8-8.5 percent increase. Furthermore, there was another factor that operated in favour of output growth: in Turkey a 10 percent increase in real income on average resulted in a 13.7 percent increase in output, which leads to the conclusion that import protection combined with the improvement in domestic incomes determined the high rates of growth in the textiles sector. In order to gauge the particular impact of tariff rates instead of tariff-inclusive import prices per se, we ran a few counterfactual simulations and showed that growth would have been 34-56 percent less than actual rates if the moderate tariff rates had been maintained after the 1929 tariff reform. The same exercise also shows that the growth rates would have been 16-28 percent less if the per capita national income had not increased after 1935, which underlines the importance of domestic income in the industrial expansion. One should thus note that the growth in agricultural output played a prominent role in the growth of national income.

In Egypt, just as in Turkey, import prices turn out to be a strong and robust predictor of output growth: a 10 percent increase in the relative tariff-inclusive import prices on average led to a 9-9.5 percent rise in output. On the other hand, due to the absence of income estimates for Egypt, we make a crude estimate of the change in real income based on the total consumption of agricultural goods and relative prices of manufactures and it does not seem to have had any significant impact on domestic output. Instead, relative prices, specifically the ratio of the aggregate price index to raw material prices, appear as a significant determinant of output growth. In addition, a similar counter simulation indicates that the growth rates would have been 15-33 percent less than actual ones if tariff rates had been kept at moderate levels after 1930.

Therefore, these findings make it possible to discuss the role of tariff protection in interwar industrialisation in Egypt and Turkey. First, there were similarities at the macro level between the tariff policies: Figure 8.8 shows that economy-wide nominal tariff rates moved in a similar manner in the interwar period. In both countries the average rates followed pretty much the same pattern, by increasing from 10-20 percent to 40-50 percent after the tariff reforms. Second, the structure of the new tariff schedules changed after 1929-1930, as final goods became more heavily taxed than intermediate goods and raw materials, so that effective rates increased more than nominal rates in both economies. And third, the share of imports in domestic consumption was at similar levels before the tariff reforms, resulting in a similar scope in both countries for import replacement during the 1930s. In effect, there was a significant decline in imports of manufactures in both countries, with an expected degree of variation. However, in the end, the aggregate industrial output grew much faster in Turkey.

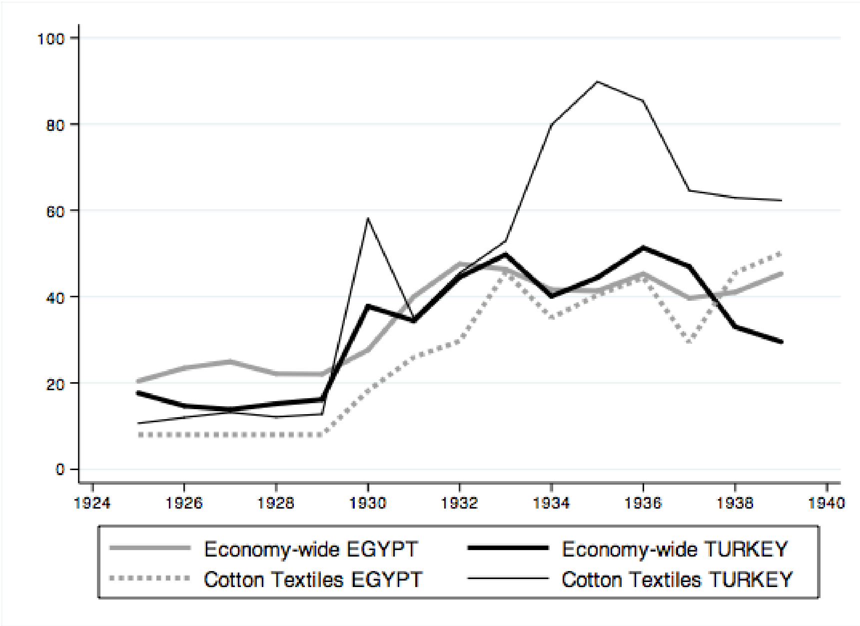
At this stage, it is useful to make a distinction between textiles and food processing for analytical purposes because their growth patterns were totally different. As argued earlier, textile output grew almost to the same degree in both countries. As demonstrated in the counterfactual simulations, in Egypt textile output could have expanded more than it did with higher duties, particularly on finer cotton textiles, just as in Turkey (Figure 8.8).[7] However, even higher growth rates in textiles would not have had much impact on the aggregate growth rates because of the slow growth rates in the food processing sector. That was the crux of the problem for Egypt's industry and foreign competition was not its ultimate cause. In this respect, in Egypt the real constraint on the scope of industrial growth was the sluggish consumption, which was a reflection of stagnant domestic incomes, rather than the lack of protection. In other words, higher tariff protection could have given some more impetus to local manufacturing, but such an impact was doomed to fail due to depressed incomes. In this respect, the impact of tariff protection on industrial growth was even smaller than we observe its impact on textiles sector, as the growth of food-processing was more dependent on domestic incomes, compared to textiles.

There were also other factors behind the industrial growth that do not appear as clearly as they should in the econometric analysis provided above due to the limitations of the model. These factors were directly related to profit margins in manufacturing. For one thing, the movement of the domestic terms of trade was undoubtedly in favour of manufacturers in both countries.[8] As discussed above, relative aggregate prices turned out to be a significant determinant of textiles output in Egypt. Although the data on the prices of final foods is lacking, this more or less reflects the wedge between the prices of final goods and raw materials prices, so it can be taken as representing industrial profits. Another measure which likewise reflects profit margins is the domestic terms of trade, that is, relative industrial prices. Its movement is shown in the Figure 8.9 and indicates that industrial prices increased by 50 percent relative to agricultural prices in the early 1930s in Turkey and remained there for the rest of the decade, which was far from surprising in view of the strong protectionism at the time. But the escalation in the manufacturing prices

[7] Note that the size of counterfactual tariff rates are set differently for Turkey and Egypt in the preceding chapters. The criteria is the counterfactual assumption that the countries continue with the moderate tariff rates, which were determined by specific historical and economic conditions in each country. One needs to take this account when interpreting the results.

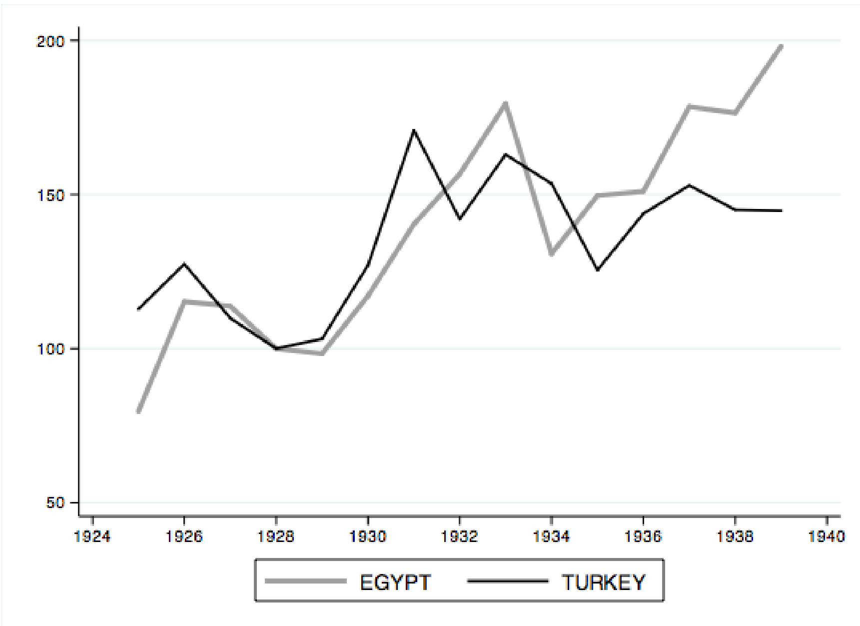
[8] For a similar argument, see Kazgan, Türkiye Ekonomisinde Depresyon, pp.260-62. She considers the changes in terms of trade and the decline in import capacity as signs of increasing profit margins, without providing evidence.

Figure 8.8.: Nominal Tariff Rates in Egypt and Turkey (%), 1925-1939




Source: Data appendix in Chapters 4 and 7.

Figure 8.9.: Domestic Terms of Trade, Egypt and Turkey (1928=100), 1925-1939




Source: Data appendix in Chapters 2 and 7.

was more pronounced in Egypt as it continued after 1936. Therefore, it can be inferred that manufacturers in both countries greatly benefited from the cheap raw materials and the high prices of final goods.

Moreover, while reliable information on manufacturing wages is lacking, the available indicators suggest that manufacturing profits were also supported by favourable wages. In Turkey the available series provided by Bulutay et al. exhibit a certain degree of nominal rigidity in the 1930s. The wage index was 45 in 1927 and 44 in the years 1933 and 1939. This index may, however, have been based on data from large enterprises. Another estimate of wages in small workshops in Istanbul indicates that average wages declined by 15-20 percent between 1927 and 1933.[9] Nonetheless, whether wages were stagnant or declined, it is almost certain that industrial prices fell more than wages up to 1933. But for the period when industrial output surged, that is, 1933-1939, industrial prices increased by 20 percent, while wages were stagnant. Another supporting piece of evidence is that Tekeli and Ilkin calculate that the share of wages in the output of the enterprises that benefited from the Law for Encouragement of Industry, which were mostly medium- and large-scale firms, declined from 11.2 to 9.7 between 1932 and 1935, whereas the share of profits increased from 28.8 to 36.6.[10] As for Egypt, next to nothing is known on wages in industry, as was stated in Chapter 7. Yet the sharp decline in rural wages and cereal prices, which are the most relevant wage goods, after 1929 implies that the role of wages was probably even more favourable than in Turkey. At the theoretical level, this can be justified on the ground that the existence of a labour surplus, that is, a high population density, and factor mobility should have helped to keep wages at low levels in Egypt.

Overall, the new estimates of output growth in agriculture and industry give us an idea of their relative contribution to national income. The percentage change in real GDP can be decomposed into the relative change in value added in agriculture, industry and services with respect to the initial level of GDP in the following way:

[9] Tekeli and İlkin, *Uygulamaya Geçerken*, p.24.
[10] Tekeli and İlkin, *Uygulamaya Geçerken*, p.20.

$$\frac{\Delta Y}{Y_i} = \frac{\Delta(A+I+S)}{Y_i}$$
$$\frac{\Delta Y}{Y_i} = \frac{\Delta A}{Y_i} + \frac{\Delta I}{Y_i} + \frac{\Delta S}{Y_i}$$

where Y stands for real income, A, I and S for the value added in agriculture, industry and services, $Y_i$ for the initial level of national income. For the sake of comparability, we choose 1925 as the initial year and 1939 as the final year. One should recall that we have already produced the revised GDP estimates for Turkey by bringing together the new agricultural and industrial value added estimates with the services output provided by Bulutay et al. in Chapter 4.[11] According to these new estimates, GDP at 1927 prices increased by 84.5 percent between 1925 and 1939, while the value added in agriculture, industry and services did so by 23.6, 20.3 and 40.6 percent respectively. This implies that 27.9 percent of GDP growth was due to agricultural growth, 24 percent to industrial growth and 48.1 percent to the growth in services. Therefore, it appears that the direct contribution of agriculture and industry to aggregate output was both substantial and similar in size.

On the other hand, the same exercise cannot be easily carried out for Egypt due to the lack of reliable income estimates. However, we can make relatively consistent predictions based on the agricultural and industrial value added estimates presented earlier in the present work. To begin, during 1925-1939 the estimates of net output in agriculture and industry presented in Chapters 5 and 6 indicate 20 percent growth in agricultural output and 40 percent growth in industrial output. Then, to get a sense of the contribution of the sectoral growth rates to aggregate output, we need the share of agriculture and industry in total GDP. In the absence of reliable figures, the best thing is to consult the available estimates closest to the interwar period. Hansen and Marzouk present all the available estimates of Egyptian GDP.[12] The estimates for 1939-1945 are based on Anis' work, which suggests that the share of agriculture and industry in GDP varied between 24 and 29 percent and 7 and 10 percent during the war.[13] On the other hand, the official estimates for the 1945-1954 period give higher shares: 30-42 percent for agriculture and 12-14

[11] Table 4.6 in the data appendix of Chapter 4.
[12] Hansen and Marzouk, *Development and Economic Policy*, pp.318-20.
[13] Anis, A Study of National Income.

percent for industry. The latter figures might be more accurate, however, as the share of agriculture was in all likelihood higher in the interwar period than in the postwar period due to the sustained industrial growth during and after the war. Therefore, it seems that the these post-war figures can be reasonably adjusted in favour of agriculture for the interwar period, for instance, 40-45 percent for agriculture and 7-10 percent for industry. Consequently, based on these predictions, a 20 percent growth in agricultural output should have led to a 8-9 percent increase in real GDP and a 40 percent growth in industrial output to a 3-4 percent increase. In short, the contribution of industrial expansion to national income was probably around half of that of agriculture. It is no wonder that population growth rate was higher than these figures, which most probably led to a decline in real income per capita, as was predicted by our estimates based on agricultural consumption.[14]

## 8.2. Protectionism and the Broader Policy Framework

Now, it is worth asking, first, if the monetary and fiscal policies played a part in economic performance in the 1930s in Egypt and Turkey and, secondly, about the extent to which the policy choices are in conformity with the dominant conceptual framework discussed in the Introduction, which, it will be recalled, suggests that the countries that adhered to fixed exchange rates had to resort to greater import repression during the 1930s because they were less free to increase the money supply by open market operations or to pursue deficit-financing because the primary emphasis was placed on maintaining exchange rates.

During the whole interwar period, the money in circulation in Turkey remained quite stable and independent of the changes in domestic demand.[15] In the 1920s this was not a deliberate policy since the government did not have any means to manipulate the volume of money. Only after Bankalar Konsorsiyumu, a transitory regulatory body, was founded in 1930, and the Central Bank began to be operative in 1932, were policy makers able to pursue an independent policy. For the 1930s the main reason for the stable volume of

[14] Table 7.9 in the data appendix of Chapter 7.
[15] Tezel, *Cumhuriyet Dönemi*, pp.110-12.

money was, however, the prevailing vigilance. It was believed by policy makers that the paper money printed during World Way I had lost its value against gold and thus led to inflation. This fear caused a rather strict policy stance as far as the money in circulation was concerned. On the other hand, the bank deposits, the other component of the money supply, slightly increased over the course of the 1930s in line with the development of private banking. However, even then, the ratio of total money supply to GDP declined (Figure 8.10).

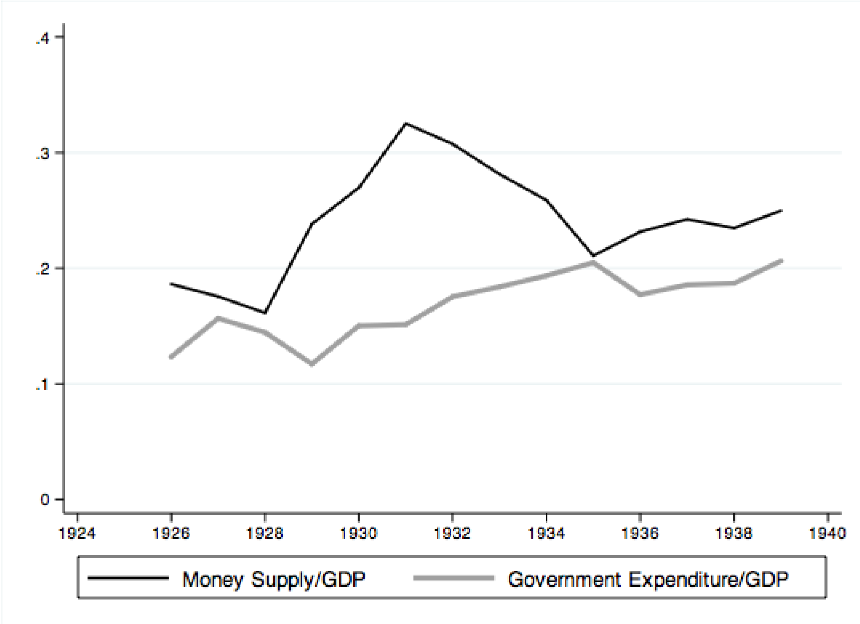
By the same token, fiscal policy remained rather conservative as the Turkish government strictly avoided budget deficits. Total expenditure progressively increased in nominal terms, yet its share in GDP was stable throughout the 1930s. The guiding perspective of "tight money-balanced budget" maintained in the 1930s thus provided a rigid framework for short-term policy initiatives.

Turkey's exchange rate policy was also largely in line with the perspective described above. Foreign exchange controls began as soon as the foreign exchange crisis broke out in 1929, shortly before the Great Depression, and the rates remained controlled throughout this period. The value of the Lira had been determined without any government intervention before 1930. In August 1930, however, it was pegged to the British pound at the rate of 1.03 TL/Sterling, and after Britain went off gold in 1931 it was tied to the French France at 0.083 TL/Franc.[16] Just as was the case in money supply policy, the concerns about inflation led policy makers to avoid depreciation throughout the period and, as Tezel maintains, the value of the Lira was considered a matter of honour. Hence, the Lira appreciated against the US Dollar and the British Pound between 1930 and 1934, as seen in figure 8.11, and the parities remained stable thereafter.[17] As a result, overvalued exchange rates put an external constraint on the import-competing sectors, while they also punished the export sectors.

However, two developments eased the exchange rate constraint on the export sectors. First, in 1936 importers began to buy convertible foreign exchange, such as dollars and sterling, from exporters in the open market by paying a premium. This led to the emergence of informal rates and the extent of its spread saw the government to accept those rates in 1939.[18] The

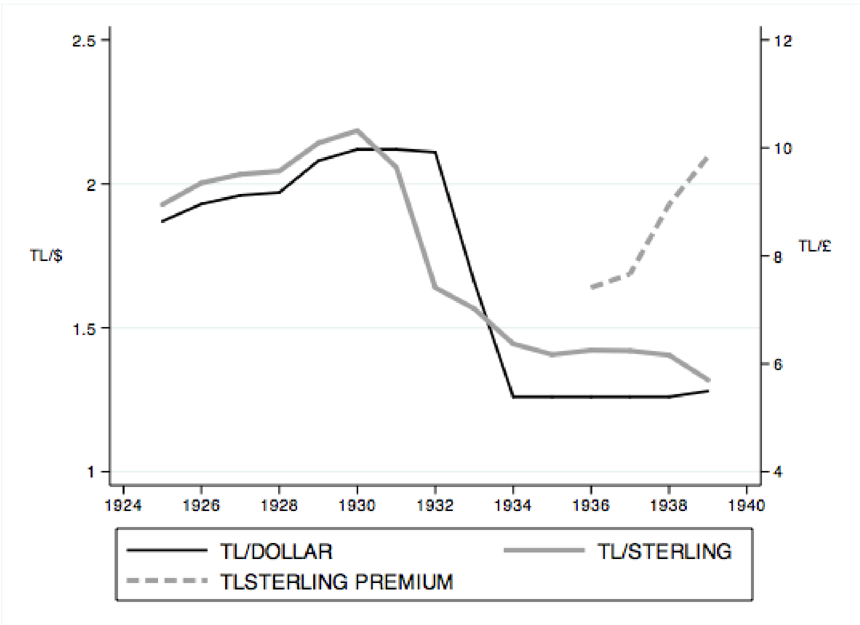
[16]Aziz Köklü, *Türkiye'de Para Meseleleri.* Milli Eğitim Basımevi, 1947, p.82.
[17]Tezel, *Cumhuriyet Dönemi*, p.110 and pp.154-56.
[18]Tezel, *Cumhuriyet Dönemi*, p.156.

Figure 8.10.: Money Supply and Government Expenditure as Percentage of GDP in Turkey, 1926-1939




Sources: Tezel, *Cumhuriyet Dönemi*, pp.110-12, 389; and Bulutay et al., *Türkiye'nin Milli Geliri*.

Figure 8.11.: Exchange Rates, Turkey




Source: Tezel, *Cumhuriyet Dönemi*, p.154.

size of such informal dealings is not known, but apparently the system to a certain degree reduced the burden of overvaluation in favour of the export sectors, while also favouring the import-competing sectors. While the official TL/Sterling rate was 6.25 in 1936, the premium rate was 7.41, which increased until 1939, while the official rates were almost the same. On the other hand, the depreciation in the premium rates did not reach extreme levels, as they actually returned to the peak level of the late 1920s. What is more, the official values of the Lira were not in operation against the non-convertible currencies, most importantly against the German Mark. Consequently, the impact of the emergence of informal rates seems to only have reduced the exchange rate pressure on traders who exported to the countries whose currencies were non-convertible with the Lira. Second, the clearing arrangements that increasingly framed Turkish foreign trade in the second half of the 1930s most likely worked in favour of exports, as Germany paid prices above world market levels for its exports, while the system also replaced some sort of barter trade.

What was the impact of protectionism on macroeconomic growth? The drawback of the partial equilibrium approach employed earlier is that it addresses the sources of industrial growth but the general equilibrium effects of tariffs are largely ignored. Eichengreen refers to this point by emphasising that it is hard to make a convincing case about tariffs' effect on growth and output without discussing the responses of wages and exchange rates.[19] Accordingly, there is evidence that tariffs would stimulate growth and output in the presence of rigid money wages and fixed exchange rates. In contrast, if protectionism drives up wages or exchange rates, then it may put pressure on the export sector and import-competing sectors alike, thus absorbing the expansionary impact of tariffs. Unfortunately, the issue is beyond the confines of this work and requires a more detailed study. However, it is possible to argue that the available evidence indicates that the movement of wages and exchange rates was probably far from sufficient to offset the expansionary stimulus of tariffs. As argued above, the data at hand points to the presence of a nominal rigidity in industrial wages or some decline in line with the decreasing food prices and, as was stated in the preceding paragraphs, the rather conservative policy of maintaining the value of the Lira led to a significant

[19]Eichengreen, Political Economy of Smooth Hawley.

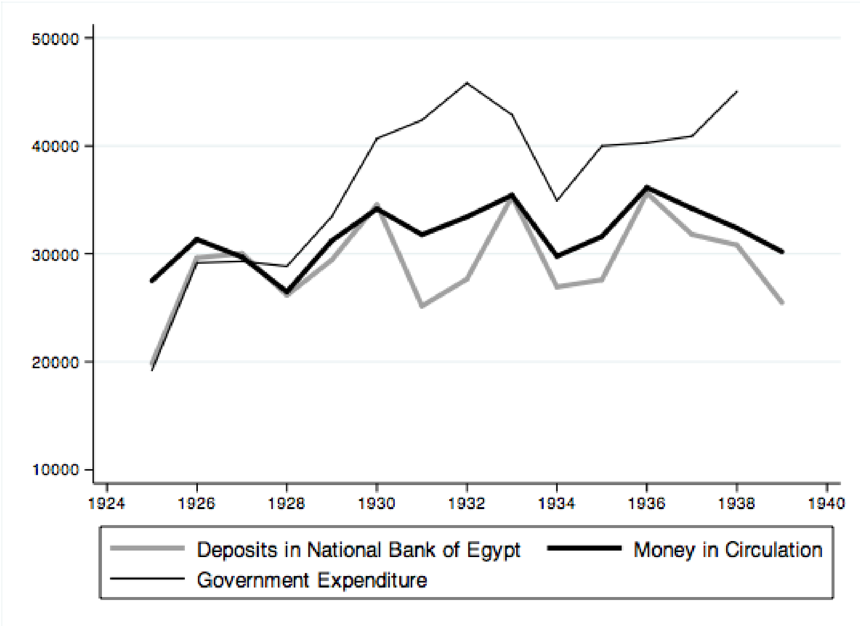
appreciation between 1930 and 1934, yet as soon as its contractionary impact on the export sector surfaced a hybrid informal/formal exchange rate system emerged.

Egyptian monetary system was fundamentally different. The National Bank of Egypt was a private and foreign-owned bank and did not serve as a central bank until 1951, but it nevertheless performed the note issuing function.[20] Until World War II capital movements were free and the Egyptian pound was pegged to Sterling at a constant rate of 0.975 LE=1 Sterling, which continued to be the case until 1947. The money supply was thus a function of the domestic demand for money, which in turn depended on the country's export earnings.[21] In other words, the domestic money supply was a derivative of cotton proceeds and therefore world cotton prices, which imparted a greater amount of instability to domestic incomes due to the erratic price movements of the interwar period. On average, money in circulation at constant prices did not show any trend, yet it was subject to large fluctuations during the period of deflation (1925-1939) (Figure 8.12). Data on the total amount of bank deposits is lacking, but the deposits of the National Bank of Egypt is a good indicator, which more or less followed the sluggish movement of the volume of money in circulation. In short, Egypt effectively did not have an independent monetary policy, so it remained quite passive and transmitted the instability emanating from external factors to the domestic economy.

Egypt's fiscal policy was also rather conservative due to institutional and political constraints. Before World War I the budget had been balanced and public investments were financed by current revenues, while budget surpluses prevailed for most of the interwar period.[22] The main constraint on increasing revenues and thus expenditure was the Capitulations, which ruled out tax reform until 1936. Import revenues were limited to the 8 percent uniform tax up to 1930 and they slightly increased thereafter with the new duties. The bulk of government revenues had been made up of land and building taxes, which had been fixed as a small share of rentals at the end of nineteenth century. Hansen argues that there was a heavy pressure on governments in the period of independence (the post-1923 years) to lower land taxes due to

[20]Pamuk, Intervention During the Great Depression, p.448.
[21]C.Bresciani Turroni, *Some Considerations on Egypt's Monetary System*. 1934, p.167.
[22]Hansen, *Egypt and Turkey*, p.59.

Figure 8.12.: Indicators of Monetary and Fiscal Policies in Egypt (LE '000), 1925-1939




Source: *Egypt, Ministere des Finances*, Annuaire Statistique, 1940/41.

the decline in cotton prices.[23] Furthermore, the tax reform initiatives that began in 1936 could not be finalised until 1939, and failed to bring about an effective system based on the taxation of land and export revenues. The constant price government expenditures confirm these points (Figure 8.12): while there was a significant rise during the 1920s as a result of high cotton proceeds, it was first reduced in the early 1930s and only went up slightly in the 1930s.

As for the economy-wide effects of tariffs, we need to look at exchange rates and wages. Following Britain's policy, Egypt returned to the Gold Standard in 1925 and left gold in 1931. Being pegged to the British Pound, the Egyptian Pound depreciated against other currencies in the first half of the 1930s, while the rest of the decade saw either stability or some appreciation. Hansen maintains that the LE might have been overvalued in the 1920s, but it cannot be said for the 1930s in view of the changes in tariffs.[24] Since Britain was one of the major markets for Egyptian cotton, the impact of appreciation on the export sector remained rather limited. Similarly, the limited evidence for

[23]Hansen, *Egypt and Turkey*, p.60.
[24]Hansen, *Egypt and Turkey*, p.209.

wages, as described above, implies that industrial wages declined, perhaps with some degree of rigidity. Therefore, it is possible that the general equilibrium impact of tariffs was rather limited in Egypt as far as the wages and the pressure of exchange rates on the export sector were concerned.

Furthermore, another issue that needs to be emphasised here is that we have so far not paid much attention to the role of the state in industrialisation apart from the trade policy choices, and more specifically the tariff policy. However, in the Turkish literature there is a lot of emphasis on state entrepreneurship, although it has been argued earlier that the role of state enterprises in terms of their share of industrial output was less significant than is usually thought. That being said, one can argue that the state might have acted to ease the lack of investment and/or coordination failure in the economy. Such a point reminds us of the argument that Gerschenkron made that the more backward a country, the greater the extent to which the state or large banks must substitute for the lack of prerequisites for development, referring to the late industrialising countries in the nineteenth century.[25] In the context of interwar Turkey and Egypt, the state entrepreneurship that came into existence with Turkey's Five Year Plan in 1933 or the Bank Misr's activities in Egypt during the whole interwar period can give support to the argument. Admittedly, our approach does not sufficiently address the role of the state or the banks in easing capital scarcity or a shortage of entrepreneurial capacity. Therefore, by focusing on the impact of tariff policy on industrial growth, we may be underestimating the role of institutions. In this respect, the greater government activity in the industrial sector might have been a major difference between Turkish and Egyptian industrialisation in the interwar period. Similarly, it is quite likely that the high tariffs not only increased domestic prices but also influenced the expectations of local producers by guaranteeing them a protected domestic market, thus supporting their propensity to invest.

As a result, it is possible to argue that in both countries the monetary and fiscal policies remained passive or perhaps pro-cyclical at best during the 1930s. In Turkey, it was due to the conservative perspectives of policy makers, which was the outcome of the prior experience of wartime inflation.

[25] A. Gerschenkron, Economic Backwardness in Historical Perspective. In A. Gerschenkron, editor, *Economic Backwardness in Historical Perspective: A Book of Essays*. Harward University Press, 1962a.

By contrast, in Egypt the lack of independent monetary policy and the Capitulations were the major political and institutional constraints that were inherited from British rule and they did not allow the authorities to pursue autonomous policies. Therefore, in the absence of expansionary policies, the shift towards protectionism was the only way to stimulate growth by shifting demand away from imported goods. For this reason, in both countries, import repression came to be viewed as the dominant policy.

## 8.3. Conclusion

The present paired case study of economic growth in interwar Egypt and Turkey sheds fresh light, first and foremost, on our understanding of the beginning of industrialisation in these two large Middle Eastern countries in the 1930s. Although our findings do not invalidate the conventional wisdom regarding the interwar Egyptian and Turkish economies, it suggests a much more nuanced interpretation. Moreover, as the economic history literature has not paid due attention to the experience of agricultural economies after the Great Depression, this work contributes to this literature by bringing two major agricultural economies under close investigation. In effect, it reinforces the received wisdom in some ways, and challenges it in others.

To begin with, this dissertation looks at proximate rather than fundamental causes of economic growth. Otherwise, a more appropriate approach would be focusing on institutional change, technology and human capital, as demanded by the modern theories of economic growth, since such factors are considered as the long-term determinants of growth. However, since our research question is to investigate the income per capita divergence between Turkey and Egypt in the interwar period, we are instead interested in the short- to medium-term sources of growth. To do so, we employ a sectoral perspective by looking into the sources of growth in agriculture and industry. The need to look at agriculture and industry is obviously driven by the fact that both economies were predominantly agricultural at the time, in terms of the composition of employment and the national income, while they also witnessed the beginning of industrialisation in the interwar period. In neither Turkey nor Egypt did the industrial growth of the 1930s result in a significant structural change, some progress in this direction notwithstanding, but the post-war developments had their roots in the interwar period.

The brief discussion of the historical background provided in the Introduction contends that the received wisdom on the economic history of interwar Turkey has for the most part been preoccupied with industrial growth, which has been attributed to import substitution and state entrepreneurship (*etatism*). It was also argued that the over emphasis on the role of the state is misplaced because much of the industrial expansion was accounted for by the small- and medium-scale private enterprises, even though the government made an important contribution to the ongoing industrialisation by investing heavily in large-scale enterprises in key industries and possibly easing the capital shortage and coordinations failures.

This dissertation instead directs attention to two relatively under-appreciated areas in the interwar Turkish economy. First, the role of growth in agriculture has largely been underrated, as it has simply been taken as a matter of extensive growth. However, the significant output growth in agriculture was the result of a more complex process of land expansion, improvements in yields, population growth and, to a lesser extent, the shift to cash crops. Thus, the boundary between intensive and extensive growth is being blurred at this point. Not least, the agricultural growth also created a favourable environment for industrial expansion by increasing the rural demand for manufactures. The adverse movement of the domestic terms of trade have usually drawn the attention of the historian to the hardships of the peasantry, but it is shown here that the significant rise in output more than offset the decline in prices. Therefore, without an exogenous recovery in farm income – exogenous in the sense that the output growth in agriculture was not the direct consequence of policies–, the industrial expansion would have been much more limited. The role of agriculture in the recovery is even more striking considering the conservative monetary and fiscal policies and the persistent crisis in the export sector during the 1930s.

Second, although much has been said of import substitution in the literature, most of the discussion has been based on poor-quality value added estimates or fragmentary evidence. Therefore, we first re-estimated the industrial growth at sectoral and aggregate levels in order to give a more reliable picture. We confirmed rapid growth but at lower rates than the officially accepted figures imply. Moreover, we focused on the role of tariff policy and argued that the tariff reform in 1930 indeed triggered industrialisation, which has been pointed out often in the literature, as the introduction of high tariffs, complemented with exchange controls and quotas, provided local enterprises with excellent opportunities to enjoy the artificially inflated domestic prices, as per usual in most import-substituting processes. But we furthermore showed that one major factor was also responsible for the strong industrial performance: the rise in profit margins due to the favourable movement of the domestic terms of trade and wages. Both factors were to a certain extent independent of trade policies in the 1930s.

In contrast with the Turkish literature, the Egyptian scholarship has predominantly been concerned with the problems of agriculture in the interwar period. Our findings confirm the argument already raised in the literature: the limitations inherited from earlier developments put strong constraints on agricultural growth. These were mainly the land shortage, high population density and earlier deterioration in cotton yields. In addition, Egyptian agriculture was highly exposed during the interwar era to external shocks via the sharp decline in cotton prices and the terms of trade. However, the crop output decomposition shows that some improvement in crop yields was also achieved and as such it eased the adverse impact of prices on aggregate output. Yet this impact was obviously insufficient to bring about any sizeable increase in the total output. In this way, the geographical constraints, external pressures and historical legacies played a prominent role in the agricultural crisis in Egypt and thus in the stagnation of national income.

The literature on the Egyptian economy fundamentally differs from that on the Turkish economy because the statistical data on the industrial sector has been extremely limited. This dissertation therefore fills this huge gap by providing the first estimates of output growth. And these estimates not only inform us about the extent of growth but also its character: as opposed to the growth in Turkey, it was a largely textiles-driven process. Although the rate of industrial growth in Egypt, 4.5 percent over the 1930s, was obviously respectable in view of the massive external shocks, the growth in the sectors other than textiles remained quite limited. This was because the industrial expansion was far more dependent on the contraction of imports, as the stagnating domestic demand put a strong check on industrial growth, as opposed to the case in Turkey. Again, the domestic terms of trade and wages were as favourable as in Turkey.

It is remarkable that the monetary and fiscal policies largely remained passive, or pro-cyclical at best, in both countries. The policy menu at the disposal of policy makers in Egypt was rather small because of the institutional and political constraints related to the gradual decolonisation process, whereas Turkish policy makers preferred passive policies due to the memories of war-time inflation and Ottoman debt default. Yet, policies played a prominent role in the field of trade: the emphasis was placed on maintaining the trade balance and reducing imports of manufactures in favour of local production, although to varying degrees. While Turkey resorted to a complicated policy mix of aggressive tariff and non-tariff protection (quotas and exchange controls), Egyptian policy makers almost solely relied on tariff protection, which was more moderate in nominal terms, due to the complex coexistence of industrial, landed and foreign interests.

This comparative study also has important implications in terms of the received wisdom on the extent and sources of the economic recovery in inter-war economies. As was argued in the Introduction, the dominant view of the economic recovery after the Great Depression, as best seen in the writings of Barry Eichengreen and Peter Temin, considers the early departure from the Gold Standard, devaluation and/or expansionary monetary and fiscal policies as the most important factors that induced early recovery and higher growth rates among the industrialised economies. This was largely because recovery was dependent on the home market in the 1930s, and thus on the factors stimulating domestic demand, all be it at the expense of export sectors and foreign economies. They also argue that the countries that stuck with fixed exchange rates succumbed to protectionism more heavily than others.[26]

This framework is largely in conformity with the analysis put forward for, for instance, the Latin American experience by Diaz-Alejandro, who argues that reactive countries on average performed better than passive ones and they were usually large and had policy autonomy.[27] The countries willing to devalue their currencies moved toward the new domestic relative prices more speedily than those with fixed exchange rates, and they were able to limit both price and monetary deflation and contain their negative impact on real output. In such countries, manufacturing growth was more impressive than overall growth, as the average annual rate ranged between 3 and 8 percent over 1929-1939. Industrialisation was largely due to import substitution, as measured by the share of local production in domestic consumption. Bulmer-Thomas

[26]Eichengreen and Irwin, Slide to Protectionism.
[27]Diaz-Alejandro, Latin America.

refines this framework by arguing that in Latin America home demand was the most important source of growth, and its main component was private consumption, which was promoted by the recovery of the export sector and loose fiscal and monetary policies.[28]

Although this framework may successfully point to the diverging experience between reactive and passive countries, it does not address the variation among the countries that employed different policy tools. In our particular case, the more relevant question is what determined the extent and timing of recovery among the countries that did not pursue expansionary monetary and fiscal policies, whether by choice, as in Turkey, or due to political and institutional constraints, as in Egypt, but shifted more heavily towards import protection. For instance, the experience of Eastern and South-eastern European countries differed from Latin America, where the policy experimentation was different in nature and greater in scope and most countries devalued their currencies in the early 1930s. By contrast, the agrarian countries in Eastern Europe remained either in the Gold Bloc or the German trade bloc throughout the 1930s and continued with fixed exchange rates. Unfortunately, we are still far from understanding the dynamics of recovery within this group. We know that these countries commonly pursued highly protectionist policies and also experienced strong industrial growth, but with sluggish national income. Turkey in particular had much in common with this group of countries in terms of its main policy choices and development path during the 1930s, as it saw a strong industrial growth helped by protectionist policies.

In both Egypt and Turkey the impact of protectionism on income growth and home demand was minimal, if not negative. For instance, at a time of sharp declines in agricultural prices, the policies had limited impacts on the movement of prices, as best exemplified by the failure of Egypt's cotton policy to increase the price of Egyptian cotton. Similarly, the wheat purchasing program initiated in Turkey after 1933 only served to stabilise prices rather than bringing any increase. Therefore, agricultural policies instead targeted increases in physical output or crop diversification, but they did not yield substantial improvements due to the rigidities in supply and demand. Instead, geography and factor endowments, for instance, played their part: the characteristics of the Nile and the shortage of available water in Egypt

[28]Bulmer-Thomas, pp.209-10.

placed a check on land expansion, whereas the high land/labour ratio in Turkey and the open land frontier made it possible to bring new areas under cultivation.

Therefore, the home demand was largely driven by structural and extra-policy factors, such as the factor endowments in agriculture, population growth and commodity prices. Turkey was endowed with a favourable set of endowments that was conducive to growth, whereas Egypt continued to suffer the persistence of the traditional export economy structure at a time of massive deflation, and stimulating demand through expansionary policies was not a viable option due to the lack of full sovereignty. In this regard, Egypt was an illustrative example of an export economy described by Bulmer-Thomas: export-led growth was subject to strong cycles as fiscal and financial systems reinforced the cycles emanating from the export sector.[29] On the demand side, any increase in urban concentration might have produced expanding markets based on wage labour and a growing middle class, but it was not the case in Egypt due to the fact that the structure of cotton production, being dependent on the bulk of the peasantry remaining on the land, hindered the scope of growth of urban sectors.

On the other hand, policies played a prominent role in industrialisation. The analysis of the sources of textiles output growth in Chapter 4 and 7 shows that tariff-inclusive import prices were a significant driver of output growth in both countries, so tariff protection combined with the additional favourable factors (domestic terms of trade and wages) to stimulate industrialisation. However, we also show that the main difference between industrial expansion in Egypt and Turkey lied in the limited growth in the non-textiles sectors in Egypt, which was the outcome of the stagnant home demand. Furthermore, the latter had little to with the difference between nominal protection rates, which implies that the more aggressive protectionist policy of Turkey does not explain the whole difference in the extent of industrial expansion.

In this sense, when it comes to industrialisation, Egypt instead needed to pursue non-protectionist expansionary policies. Diaz-Alejandro maintains that the larger the institutional barriers to domestic resource mobility, the more difficult it was for the growing sectors to dominate the shrinking ones and Bulmer-Thomas adds that the shocks created disequilibria that policy

[29]Bulmer-Thomas, p.171.

makers had to address as a matter of urgency.[30] The relevance of these points is best illustrated in the case of interwar Egypt: the Egyptian economy consistently suffered from insufficient investment and capital scarcity in the interwar period, limiting its capacity to divert resources towards manufacturing.[31] In such circumstances, Yousef argues, an optimal export tax would have generated the much-needed resources to invest in the development of the domestic economy by altering the incentive structure for producers and consumers.[32] Based on the hypothetical identification of potential losers and winners of an export tax, he concludes that such an action was incompatible with the balance of power within Egypt's ruling elite, in particular the cotton exporters and foreign importers who exerted influence over policy making. As a result, the 1930 tariff reform was actually a sub-optimal solution ensuring protection for domestic production and financial support for cotton producers simultaneously. Similarly, Egypt's government finances remained based on land taxes in the 1930s and even though the attempts to reform the system began as soon as the Capitulations came to an end with the Anglo-Egyptian agreement in 1936, it took three years for the new rates to be finalised as a result of the bargaining process that reflected the influence of large landowners and the result was again an unsatisfactory compromise.[33] Therefore, both examples strikingly show how the entrenched vested interests in Egypt impeded change in the existing structure of incentives, limiting government capacity at a time when it was needed to overcome the deflationary pressures. Nonetheless, tariff protection itself was also a politically contentious issue, as its extent and form was determined by the specific constellation of political forces. For instance, the 1930 tariff reform was a moment of compromise between agricultural and industrial interests and Lancashire remained a part of policy making regarding tariffs on cotton textiles during the 1930s. As such, decolonisation proceeded gradually in Egypt, greatly hindering the ability of the country to exploit the interwar crisis in the interests of structural transformation.

By contrast, Turkish policy makers were largely able to implement their nationalist and developmental agenda due to the absence of the influence

[30]Diaz-Alejandro, Latin America, p.38; and Bulmer-Thomas, *Economic History of Latin America*, p.196.
[31]Owen and Pamuk, *History of Middle East Economies*, p.35; Issawi, *Egypt at Mid-Century*, p.93; and Mabro, *Egyptian Economy*, p.17.
[32]Yousef, Explorations in Economic History 37 [2000].
[33]Owen and Pamuk, *History of Middle East Economies*, p.37.

of landed or foreign interests. In this context, the fact that they avoided devaluation, easy money or budget deficits was associated with the memories of wartime inflation and of the sovereign debt default, which meant that they were seen by policy makers as sources of economic instability. Instead, import repression was viewed as an effective way of ensuring the trade balance and supporting industrial interests simultaneously.

In short, the dichotomy of reactive-passive policies suggested in the literature falls short of explaining the contrasting growth performances in Egypt and Turkey, even though Turkey's relatively more aggressive trade policies were responsible for some part of the difference in the extent of industrial growth. Instead, one should also consider the impact of different paths of institutional development, geographical differences and factor endowments to get a better understanding of economic recovery in the 1930s. Such an approach though requires further comparative research not only on the interwar Middle East, but also the other regions on the periphery of the world economy.

# A. Formulas for Decomposition of Crop Output

The decomposition of crop output growth, carried out in Chapters 2 and 5, is based on the following formulas presented by Jamal and Zaman.[1]

The total change in output in value terms (V) are decomposed into four components: area (A), price (P), yield (Y) and crop-mix:

$$
\begin{aligned}
ln\left(\frac{V_t}{V_o}\right) &= ln\left(\frac{A_t \sum\limits_c P_{ct}Y_{ct}a_{ct}}{A_o \sum\limits_c P_{co}Y_{co}a_{co}}\right) \\
&= ln(Area) + ln(Price) + ln(Yield) + ln(Crop - mix)
\end{aligned}
$$

where $a_{ct}$ denotes the relative share of the crop c in the total acreage at year t. The acreage effect is simply equal to $ln(Acreage) = ln(\frac{A_t}{A_0})$ and the others are as follows:

$$
\begin{aligned}
ln(Price) = &\frac{1}{3}ln\left(\frac{\sum P_{ct}Y_{ct}a_{ct}}{\sum P_{co}Y_{ct}a_{ct}}\right) + \frac{1}{3}ln\left(\frac{\sum P_{ct}Y_{co}a_{co}}{\sum P_{co}Y_{co}a_{co}}\right) \\
&+ \frac{1}{6}ln\left(\frac{\sum P_{ct}Y_{co}a_{ct}}{\sum P_{co}Y_{co}a_{ct}}\right) + \frac{1}{6}ln\left(\frac{\sum P_{ct}Y_{ct}a_{co}}{\sum P_{co}Y_{ct}a_{co}}\right)
\end{aligned}
$$

$$
\begin{aligned}
ln(Yield) = &\frac{1}{3}ln\left(\frac{\sum P_{ct}Y_{ct}a_{ct}}{\sum P_{ct}Y_{co}a_{ct}}\right) + \frac{1}{3}ln\left(\frac{\sum P_{co}Y_{ct}a_{co}}{\sum P_{co}Y_{co}a_{co}}\right) \\
&+ \frac{1}{6}ln\left(\frac{\sum P_{ct}Y_{ct}a_{co}}{\sum P_{ct}Y_{co}a_{co}}\right) + \frac{1}{6}ln\left(\frac{\sum P_{co}Y_{ct}a_{ct}}{\sum P_{co}Y_{co}a_{ct}}\right)
\end{aligned}
$$

[1] Jamal and Zaman, Decomposition of Growth Trend

$$
\begin{aligned}
ln(Crop - mix) = {} & \frac{1}{3} ln \left( \frac{\sum P_{ct} Y_{ct} a_{ct}}{\sum P_{ct} Y_{ct} a_{co}} \right) + \frac{1}{3} ln \left( \frac{\sum P_{co} Y_{co} a_{ct}}{\sum P_{co} Y_{co} a_{co}} \right) \\
& + \frac{1}{6} ln \left( \frac{\sum P_{ct} Y_{co} a_{ct}}{\sum P_{ct} Y_{co} a_{co}} \right) + \frac{1}{6} ln \left( \frac{\sum P_{co} Y_{ct} a_{ct}}{\sum P_{co} Y_{ct} a_{co}} \right)
\end{aligned}
$$

# B. Solution of Reduced Form Output Equation

Chapters 4 and 7 use a reduced form output equation in order to look into the sources of textile output growth in interwar Turkey and Egypt. The correct solution of this output equation, which is based on Irwin and Temin's article, is as follows:[1]

The output supply equation is originally defined as

$$Q_s = Ae^{\pi t}C^{\alpha_1}L^{\alpha_2}K^{\alpha_3} \tag{B.1}$$

where $K = \overline{K}e^{\delta t}$, growing at an exogenous rate, $\pi$ is the rate of Hicks neutral technological change, t time trend, C raw material, L labour and K capital. The prices of C and L are equal to their marginal products:

$$C = \frac{\alpha_1 PQ}{p_c} \tag{B.2}$$

and

$$L = \frac{\alpha_2 PQ}{w} \tag{B.3}$$

Taking logs of equations (B.1-B.3) and inserting $lnC$ and $lnL$ into the supply equation we obtain the following:

[1]Irwin and Temin, Antebellum US Cotton Industry. The final reduced form output equation is different from the one that can be found in Irwin and Temin's article because they come up with an incorrect solution, as explained in the text above. We have consulted Douglas Irwin about the issue.

$$\begin{aligned}
lnQ &= lnA + \pi t + \alpha_1(ln\alpha_1 + lnP + lnQ - lnP_c) \\
&+ \alpha_2(ln\alpha_2 + lnP + lnQ - lnw) + \alpha_3 lnK \\
&= lnA + \pi t + \alpha_1 ln\alpha_1 + \alpha_2 ln\alpha_2 + (\alpha_1 + \alpha_2)lnQ + (\alpha_1 + \alpha_2)lnP \\
&- \alpha_1 lnP_c - \alpha_2 lnw + \alpha_3 lnK
\end{aligned}$$

Solving the above equation for lnP:

$$lnP = \frac{(1 - \alpha_1 - \alpha_2)lnQ + \alpha_1 lnp_c + \alpha_2 lnw + D}{\alpha_1 + \alpha_2}$$

where $D = lnA + \pi t + \alpha_1 ln\alpha_1 + \alpha_2 ln\alpha_2$. For simplicity, we define $a = \frac{1-\alpha_1-\alpha_2}{\alpha_1+\alpha_2}$, $b = \frac{\alpha_1}{\alpha_1+\alpha_2}$, $c = \frac{\alpha_2}{\alpha_1+\alpha_2}$, and $d = \frac{D}{\alpha_1+\alpha_2}$ then

$$lnP = alnQ + blnp_c + clnw + d \tag{B.4}$$

On the demand side, the output demand equation is defined as follows:

$$Q_d = Be^{\psi t}(\frac{Ep^*(1+\tau)}{p})^{b_1}(\frac{p^a}{p})^{b_2}Y^{b_3} \tag{B.5}$$

then, taking logs we have,

$$lnQ = lnB + \psi t + b_1 ln(Ep^*(1+\tau)) + b_2 lnp_a - (b_1 + b_2)lnp + b_3 lnY$$

Plugging $lnp$ in equation B.4 into the equation above yields,

$$\begin{aligned}
lnQ &= lnB + \psi t + b_1 ln(Ep^*(1+\tau)) + b_2 lnp_a \\
&- (b_1 + b_2)(alnQ + blnp_c + clnw + d) + b_3 lnY
\end{aligned}$$

Solving the above equation for $lnQ$ gives:

$$lnQ(1 + ab_1 + ab_2) = lnB - d(b_1 + b_2) + \psi t + b_1 ln(Ep^*(1 + \tau)) + b_2 lnp_a \tag{B.6}$$
$$- b(b_1 + b_2)lnp_c - c(b_1 + b_2)lnw + b_3 lnY$$

Therefore, to be able to get the following reduced form equation, Irwin and Temin come up with,[2]

$$lnQ = \beta_0 + \beta_1 ln\frac{Ep^*(1 + \tau)}{p_c w} + \beta_2 ln\frac{p_a}{p_c w} + \beta_3 lnY + \beta_6 t + \epsilon$$

it should be assumed that:

$$b = \frac{\alpha_1}{\alpha_1 + \alpha_2} = 1$$

and similarly

$$c = \frac{\alpha_2}{\alpha_1 + \alpha_2} = 1$$

which would imply $\alpha_1 = \alpha_2 = 0$. This would mean that both the supply elasticity of raw material and labour supply are zero, which is of course non-sensical.

Instead, the correct solution of the reduced form equation can be obtained in the following way. Given that $b = 1 - c$, equation B.6 becomes:

[2]Irwin and Temin, Antebellum US Cotton Industry, p.785.

$$\begin{aligned} lnQ(1 + ab_1 + ab_2) &= lnB - d(b_1 + b_2) + \psi t + b_1 ln(Ep^*(1 + \tau)) + b_2 lnp_a \\ &- b(b_1 + b_2)lnp_c - c(b_1 + b_2)lnw + b_3 lnY \\ &= lnB - d(b_1 + b_2) + \psi t + b_1 ln(Ep^*(1 + \tau)) + b_2 lnp_a \\ &- (1 - c)(b_1 + b_2)lnp_c - c(b_1 + b_2)lnw + b_3 lnY \\ &= lnB - d(b_1 + b_2) + \psi t + b_1 ln(Ep^*(1 + \tau)) + b_2 lnp_a \\ &- b_1 lnp_c - b_2 lnp_c + c(b_1 + b_2)lnp_c - c(b_1 + b_2)lnw + b_3 lnY \\ &= lnB - d(b_1 + b_2) + \psi t + b_1 ln\left[\frac{Ep^*(1 + \tau)}{p_c}\right] + b_2 ln(\frac{p_a}{p_c}) \\ &+ c(b_1 + b_2)ln(\frac{p_c}{w}) + b_3 lnY \end{aligned}$$

If the coefficients are arranged and simplified, the final equation turns out to be:

$$lnQ = \beta_0 + \beta_1 t + \beta_2 ln\left[\frac{Ep^*(1 + \tau)}{p_c}\right] + \beta_3 ln(\frac{p_a}{p_c}) + \beta_4 ln(\frac{p_c}{w}) + \beta_5 lnY + \epsilon \tag{B.7}$$

where $\beta_4 = c(\beta_2 + \beta_3) < (\beta_2 + \beta_3)$ must hold since $c = \frac{\alpha_2}{\alpha_1+\alpha_2} < 1$.

The expected signs of the all coefficients, except that of time trend, are all positive, based on the following reasonable assumptions: First, $b_1$, $b_2$, $b_3$ (demand elasticities of $\frac{Ep^*(1+\tau)}{p}$, $\frac{p^a}{p}$ and real income, respectively) are positive. They are all sensible, since we expect the domestic production to increase, if the import prices and the prices of other commodities increase relative to domestic textile prices and moreover the higher real income induces demand to increase. Second, $1 - \frac{1}{\alpha_1+\alpha_2} < \frac{1}{b_1+b_2}$ must hold. It is hard to verify the latter, but as long as $\alpha_1 + \alpha_2 < 1$, that is the sum of output elasticity of raw material and labor is smaller than unity, it certainly holds.

These two conditions can be illustrated with one example: the coefficient of $\frac{p_a}{p_c}$ is $\beta_3 = \frac{b_2}{1+ab_1+ab_2}$. Therefore for $\beta_3 > 0$ holds, both the numerator and denominator should be positive. The denominator is $1+ab_1+ab_2 = 1+a(b_1+b_2) = 1 + \frac{1-(\alpha_1+\alpha_2)}{\alpha_1+\alpha_2}(b_1 + b_2)$, which is equivalent to $(1 - \frac{1}{\alpha_1+\alpha_2})(b_1 + b_2) < 1$. The last inequality certainly holds if $\alpha_1 + \alpha_2 < 1$. However the sign of $\beta_3$ is obviously dependent on the values of parameters $\alpha_1$, $\alpha_2$, $\beta_1$, $\beta_2$, that is the demand elasticity of raw material and labor consumption and output elasticity of relative tariff inclusive import prices and relative aggregate prices.

When the output demand (equation B.5) is expanded to include the imperfect substitution between different kinds of textiles by adding $p^s$, the price of substitute goods, then we have:

$$Q_d = Be^{\psi t}(\frac{Ep^*(1+\tau)}{p})^{b_1}(\frac{p^a}{p})^{b_2}(\frac{p^s}{p})^{b_3}Y^{b_4} \tag{B.8}$$

In this case, we come up with a similar reduced form output equation:

$$\begin{aligned} lnQ = \beta_0 + \beta_1 t + \beta_2 ln\left[\frac{Ep^*(1+\tau)}{p_c}\right] + \beta_3 ln(\frac{p_a}{p_c}) + \beta_4 ln(\frac{p_s}{p_c}) \\ + \beta_5 ln(\frac{p_c}{w}) + \beta_6 lnY + \epsilon \end{aligned} \tag{B.9}$$

where $\beta_5 = c(\beta_2 + \beta_3 + \beta_4) < (\beta_2 + \beta_3 + \beta_4)$ must hold since $c = \frac{\alpha_2}{\alpha_1+\alpha_2} < 1$.

Consequently, in Chapter 4 and 7, we estimate the final reduced form output equations B.7 and B.9 in order to explain the sources of textiles output growth. Note that the term $Ep^*$ originally refers to the the prices of imported goods in local currencies (nominal exchange rates times import prices in foreign currency), so it can also be written as $p^*$ in our final equation, because we have already calculated import prices in local currency (TL in Turkey and LE in Egypt).

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