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Manufacturing in the Ottoman Empire and Turkey, 1500–1950

Edited by
Donald Quataert

State University of New York Press
1994

Published by
State University of New York Press, Albany

Printed in the United States of America

For information, address State University of New York Press,
State University Plaza, Albany, N.Y. 12246

Production by Cindy Tenace Lassonde
Marketing by Fran Keneston

Library of Congress Cataloging-in-Publication Data

Manufacturing in the Ottoman Empire and Turkey, 1500–1950 / edited by
Donald Quataert.
p. cm. — (SUNY series in the social and economic history of
the Middle East)
Includes bibliographical references and index.
ISBN 0-7914-2015-9 (alk. paper). — ISBN 0-7914-2016-7 (pbk. :
alk. paper)
1. Turkey—Manufactures—History. 2. Turkey—Economic conditions.
3. Turkey—History—Ottoman Empire, 1288–1918. I. Quataert, Donald, 1941–
II. Series.
HD9736.T92M36 1994
338.4'767'09561—dc20

93-36571
CIP

10 9 8 7 6 5 4 3 2 1

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Contents

Tables

3

Ottoman Industry in the Eighteenth Century: General Framework, Characteristics, and Main Trends

Mehmet Genç

Changes that occurred in Ottoman industry in the eighteenth century do not bear any resemblance to the explosive industrial growth then occurring in Western Europe. Ottoman industry was neither totally stagnant nor did it evolve in a linear, uniform fashion over the course of the century. On the contrary, Ottoman industry displayed a complex development pattern under the impact of various regional influences and in different sectors of the industry; sometimes it expanded or shrunk, and was then revitalized, and at other times it remained totally stagnant. Nonetheless, patterns of development do not show trends, which potentially might have led to modern economic growth.

Obviously, the Ottoman economic system itself was not completely immune to the changes occurring externally. Still, principles that the Ottoman state itself relied on and imposed on the overall economy, and on industry in particular, remained immutable. This immutability can be observed best at times when pressure was exerted to motivate change.

One of the principles that the classical Ottoman system relied on is known as *provisionism*, that is, the maintenance of a steady supply so that all goods and services were cheap, plentiful, and of good quality. With respect to foreign trade, provisionism sought to keep the supply of goods and services to the internal market at an optimal level. Export was not encouraged, but rather curtailed by prohibitions, quotas, and taxes. Imports, by contrast, were fostered and facilitated.

Ottoman state provisionism did not require an import substitution policy as long as imports helped maintain the steady supply of goods and services. At times when imports could not fulfill this function, import substitution policies were put in operation. Industries that provided arms and equipment to the Ottoman military is a typical example of this practice. In this sector, sustaining all the necessary installations to avoid any dependence on foreign armaments was crucial.

The second principle that ruled Ottoman economic policy was *traditionalism*. We may summarize this as the tendency to preserve the existing conditions, and look to the past for models instead of searching for a new equilibrium when changes occurred. Traditionalism found its expression in the time-honored motto that one should not work against what comes from the olden time: *kadimden olagelene aykırı iş yapılmaması*. It remained a vital component of the referential framework of the Ottoman economic system that remained unchanged during the eighteenth century.

Fiscalism was the third principle guiding Ottoman economic policy decisions and can be summarized as the maximization of treasury income and the effort to prevent it from falling below already-attained levels. Parallel to the rhythm of increase in the production capacity of the Ottoman economy as well as in the degree of monetization, increases in the income of the treasury were extremely difficult and slow to achieve. For that reason, Ottoman fiscalism developed in the direction of preventing a fall in incomes and reducing expenses. A fisco-centrism evolved and was so rigid that it viewed all economic activity only in terms of the tax income they would yield.

The *mirî mübayaa* regime was one measure to reduce expenses. This policy imposed a tax-like levy to facilitate the provision of goods and services for the state at a price usually lower than the market prices (and sometimes even below production costs). Since the policy did not concern imports, an import substitution policy was implemented when the volume of imports threatened the state's fiscal standing. At such times, the state did not consider pursuing a strong protectionist customs policy because this would lead to increases in prices on the internal market.

Among the institutions established according to fiscalism during the eighteenth century, we need to mention the life-term tax farming system (*malikâne sistemi*), which had an impact on the entire economy, including industry.[1] In this system, the collection of public revenues was distributed as life-term tax farms (*malikâne*). The contractor of the public revenues (*mültezim*) paid the Treasury a fixed annual tax that annually was confirmed by the state. This system sought to encourage the contractors to increase the production of the resources from which they derived tax revenues. This arrangement ensured the growth of tax revenues derived from such resources and that the amount above the fixed amount would be left to the contractors. The *mültezim* would pay in advance for the source of the revenues derived from such taxes; this cash advance, known as *muaccele*, was the actual capitalization of his prospective profits. The amount of the cash advance was settled at auction to the highest bidder; a steady and progressively growing source of income to the Treasury. The contractors increased production, causing the tax revenues to increase and, accordingly, the actual capital. This policy, which created an active market for contractors, was put into operation in 1695 and was expanded in the eighteenth century to the extent that it affected all taxable economic activities.

This system had some positive economic impact, even though somewhat less than anticipated by the government. New contractors helped to improve productivity in the *malikâne*s they bought; they maintained security, provided credits, and even made long-term investments. Their attitude was very different from that of earlier tax collectors. Take, for example, the activities of a bureaucrat who bought the stamp duties of printed cotton cloth and dyehouse workshops in Tokat in the form of *malikâne*. In addition to maintaining these establishments, where a considerable amount of cotton cloth and printed cotton cloth was manufactured, he established a large dyeworks factory in 1726 where he located all the dyers.[2] New contractors who came from the ranks of the bureaucracy and the military thus had a chance to participate in mercantile activities. Nevertheless, this did not lead to the emergence of capitalist entrepreneurs. They remained as wealthy rentier bureaucrats; that is, the attitudes of the military elite and bureaucracy remained unchanged. *Malikâne*-owners who gradually turned into rentiers started to sub-contract their tax-collecting duties to second or even third parties. Thus the system helped to increase the burden of taxes by transferring the surplus from the productive to the unproductive classes.

Some other negative effects of fiscalism can be observed in the widespread penetration of the lower-ranking members of the military into areas of economic activity. We may call this the "militarization" or the "bureaucratization" of the economy. Here's how it worked: the genuine financial needs of the bureaucracy and the military, as well as the swelling of the permanent government cadres as a result of nepotism, continuously tended to surpass the bounds of the income coming into the Treasury. To provide additional revenues, a custom practiced since the seventeenth century became widespread during the eighteenth century. Known as "*hazine mande*", this policy encouraged low-ranking members of the military to bequeath their salaries to the Treasury. In turn, the Treasury assigned these persons to new positions in various areas of the economy, with titles such as *katip, dellal, bekçi,* and *gözcü*. Others included the artisanal administrative positions, starting in İstanbul, this practice became widespread in large- and even medium-size cities as administrators, carrying titles such as *kethüda, şeyh* and *yiğitbaşı*, were assigned to artisans.

Ottoman artisanal organizations had possessed considerable autonomy—they had elected their own administrators and paid their salaries. However, they could not resist the intervention of the military under the protection of the Treasury. Thus, they accepted the military into administrative positions in their organizations, believing that they would benefit from the privileges of the former. However, since the new administrators had no actual training or experience in administration, artisanal organizations maintained their traditional administrative framework. A double administration, thus doubly expensive, was established. This new channel, established to derive extra income for providing security for artisanal manufacture, became widespread in the eighteenth century. These newly established ranks and administrative positions then became a new source for taxes and started to be sold as *malikâne*. Artisans, by paying extra fees, employed the security they ensured to strengthen their own monopolies.

This pattern reinforced the tendency of artisans who were involved in the production of the same goods and services to come together in monopolies, a practice that became widespread in the eighteenth century. Rather than resisting, the state assisted, and sometimes promoted, this development. Such monopolistic trends not only would prevent fiscal smuggling and reduce tax-collecting expenses but also, in accordance with provisionism, would assign the production of each good or service to the responsibility of a certain group. Thus, the steady supply and the control

over the quality and price of the goods would be assured. Further, since the income and saving capacity of the artisans prevented them from investing in the physical plant, the state itself undertook such investments either directly or through pious foundations (*vakıf*s). In this manner, the state could extract some extra rent in addition to the taxes from artisanal production. Such investments formed part of the general trend in which the economy became more active and gradually expanded during the first half of the eighteenth century. Both in the activities that were expanding mainly for fiscal reasons, and in those that were contracting because of provisionist and protectionist thinking, investments were made in facilities used in the final stages of industrial production (such as dyeing, printing, and finishing/polishing installations as well as in oil, candle, and soap manufactories, and tanneries). As a result of such investments, the control of the state and the pious foundations over manufacturing expanded.

This eighteenth-century development, which combined the three principles that defined the Ottoman economic system on different levels, meant an expansion of existing state control over production into the urban industrial sector.

In industry, the concentration (centralization) of the final stages of production in certain centers under state control, instead of expanding the possibilities for development of these centers as proto-factories, caused their decline. These centers did not undergo organizational changes in terms of labor division, technology, or productivity. Artisanal organization dominated production. Collective working intensified the egalitarian and traditionalist qualities and attitudes of the artisanal organizations. They became more resistant to changes that, elsewhere in the world, would trigger a capitalist transformation. Agents employed to collect the taxes from these centers in the name of the state or the pious foundations also became a force resistant to change. These agents who were mostly owners of *malikâne*s, although they maintained their right to collect taxes in their lifetime, did not have any property rights over production.[3] Their concern with production was only fiscal, even fisco-centric; they remained indifferent or hostile to confrontations between producers that might jeopardize their tax revenues.

The changes made by the state in the tax-farming system, and the gradual increase in the capital flow, activities obviously aimed at the development of production, sometimes resulted in its quantitative expansion. But these mergers, designed to increase production, sometimes, at the end of our period, produced stagnation and inertia.

Nevertheless, Ottoman industry did not merely stagnate in the eighteenth century. The 'centralization' sought to confine manufacturing to artisanal production under state control, but fiscality was not easily realized. To escape the pressure and limitations, producers moved to small production centers in distant neighborhoods of the city where such controls had not yet been established. In addition, producers moved in accelerating numbers, during the eighteenth century, towards remote towns and villages in the country.

Rural industry obviously was active before this, but because of the classical Ottoman economic system and the provisionist policy, never had the chance to develop. Factors such as state policies promoting family plots, low labor to land ratios, the nature of agricultural land as state property exempt from confiscation, and state policies restricting the mobility of agricultural workers, all contributed to the underdevelopment of rural industry. Thus, rural industry developed only in mountain villages where agriculture was not possible and animal husbandry dominated, and in some populated areas.

In such rural industry, peasants produced and sold finished goods at local markets. The further expansion of production required the possibility for export, possible only with an active export policy against the mercantilistic and protectionist West. Due to prevailing provisionist policies, however, export was a marginal sector that the state taxed and, most of the time, actively hindered.

The vital condition for the development of rural industry was the readiness of an entrepreneurial group with capital to invest. Such a group, however, did not arise within the Ottoman economic system. To the extent possible, the state tried to control the revenues collected from production targeted for the domestic market, from exchange, and from artisanal production in the cities. Although it did not always attain its goals, the state was not altogether unsuccessful in controlling these revenues. The legitimate profit was calculated to be between five percent to fifteen percent in industrial and commercial transactions, and usually remained below ten percent. Interest, although prohibited by religious law, was common; at least fifteen percent was charged and usually reached twenty to twenty-five percent. With such high interest rates, commercial and industrial credits and capital flow were very limited.

This negative picture was beginning to change in the eighteenth century. Two factors, both of which came from outside, had converging and diverging effects. The first, the military challenge of the West, increased the share of public expenditures in the overall economy.

Ottoman *reaya* became more pressed for extra income in the eighteenth century in order to pay their gradually increasing taxes. The second factor was the increase in the Western interest in commerce. The Ottoman economic system maintained its control and limitations on exports by increasing the export dues from three percent (as fixed by the capitulations) to some fifty percent on goods that were in high demand in the West. But this strategy soon had an impact on the production of these goods, considerably increasing the output of industrial raw materials such as cotton, yarn, dye stuffs, and olive oil. It is not possible to give the exact figures for this increase. However, it can be estimated—cotton production, for example, increased three to four times.

Production of industrial raw materials partly satisfied the peasants' need for extra income. In addition there was some lesser expansion in other areas of rural industry. One example came from the Salonica-Macedonia region. There, production of cotton increased from 2.2 million to 7 million *okka* between 1740 and 1790. Most of this cotton produced was exported unprocessed, but 2 million *okka* of the total was spun into cotton yarn and then half of this cotton was woven in the region. The rest was exported to Central Europe.[4]

Clearly, there is a connection between these figures and the remarkable increase in the number of small towns and villages in the Salonica-Macedonia region that contained finishing plants for operations like the washing of thread, dyeing, and printing. This tendency, especially marked from the second quarter of the eighteenth century onward, which can be regarded as an indication of the development of rural industry towards proto-industry, followed a more or less parallel path with opportunities in foreign markets. Indeed, in the Tokat area, as in the Salonica-Macedonia region, the tendency to take flight to small centers intensified between 1730–1766, when local cotton cloths and calicoes enjoyed a market extending from the vicinity of the Black Sea to Russia and Poland. But from the 1770s, the Northern Black Sea area was left to Russia and this market, though not closed altogether, generally began to shrink. Likewise, the pattern that emerged in the Salonica-Macedonia region after the 1740s lasted until the turn of the nineteenth century. In this region as well, the exportation of thread and coarse cloth came to a halt and the foreign market was closed altogether.

The state intervened in a decisive manner in this effort to reduce output costs by moving outside the tax area which was based in the old centers, all of which had turned into *malikânes*. Entrepreneurs had lowered costs through their evasion of the taxes and restrictive practices of

the old centers, and by their use of cheaper labor. Ottoman law previously had punished tax evasion with a tax penalty of 100 percent; the new penalties started at 200 percent and included such incredibly harsh sanctions as confiscation of the produced goods, demolition of the plant, and condemnation of the workers to the galleys.[5] The stern orders clearly and emphatically noted that production intended to meet the local demand of nearby towns and villages should not, in compliance with provisionism, be interfered with by any means. The targets of the prohibitions and punishments were activities that likely were to supply the long distance trade, i.e. those with proto-industrial potential. At first sight, it is difficult to comprehend this stern attitude that, with the pretext that it abandoned traditional locations and customs and reduced tax income, condemned this proto-industrial potential even before it was ever born. However, viewed within the coordinates of the principles I have mentioned, it seems applicable. Here, fiscalism is especially important in shaping a state policy that combines all three principles in varying degrees, forming one of its ever-harsher shifts towards fisco-centrism. And this, to a large extent, is a result of the transformation that the *malikâne* system underwent in the hands of the rentier bureaucrats.

The state not only enacted policies that worked against development of manufacturing, but it also created certain obstacles for capital accumulation that might have prepared the grounds for these developments. The regime of *mirî mübayaa*, mentioned before, tops them all. When the need of the state for goods and services rapidly increased due to military exigencies in the second half of the eighteenth century, and when the state incomes did not increase at the same rate, the *mirî mübayaa* regime was applied more intensively. Those producing or trading in cotton cloth, thread, iron, timber, pitch, hemp etc., were thus further burdened. The equivalent of exacting a progressive tax in kind, the policy had a weakening effect on those sectors most likely to develop.

From the 1770s, more burdens were imposed on those that had some accumulated capital. Not only the *ayans*, but also wealthy merchants were required to equip troops and send them to the front on their own account. And, when the treasury was hard pressed, they provided compulsory loans. Finally, during the period 1770–1810, when finances were in a crisis, the state, perhaps for the first time in its history, began confiscating the inheritance of private individuals who were considered rich.

In these conditions, the obstacles to capital accumulation and investment reached a peak.

As stated, this inimical atmosphere against capitalist development did not affect small-scale, craft production destined for local markets. Craft organizations, as structures compatible with all of the three principles on which the Ottoman economic policy relied, remained the predominant form of organization in Ottoman industry throughout the eighteenth century. Differentiation within craft organizations underwent very few changes during the century. The differentiation between the poorest and the richest artisan in the same activity hardly exceeded 1:4 or 1:7. The largest workshops, those in weaving, food, metal and building material production, rarely exceeded five to twenty workers. State factories too remained small-scale workshops, employing approximately eight to twenty workers within a crafts-type organization and with little division of labor. Even in the arms industry, the cannon and gunpowder factories run with hydraulic or animal power had no establishments exceeding 50 to 100 workers.

Work implements and machines were cheap enough for craftsmen to afford easily. As I have noted, most of the buildings and immobile installations, that were somewhat expensive for the income level of the craftsmen, belonged to the state or the pious foundations (*vakıf*s). Most of those that were private property belonged to members of the military class; and, as the property rights of this class were insecure until the middle of the nineteenth century, they kept oozing into the State or *vakıf* group.

As in the eighteenth century, in compliance with the principles of provisionism, exports were continuously held in check. Ottoman industry enjoyed protection with respect to raw materials, which constituted the biggest item of cost, and to a large extent remained dependent on domestic raw material.

Another feature of Ottoman industry in the eighteenth century is the concentration on the production of ordinary commodities produced for non-luxury consumption: e.g., cotton and woolen cloths, food, metal, building materials, household items, earthen- and wooden-wares. Even in silk, medium quality production, mostly silk and cotton combinations rather than pure and luxury silks, remained dominant.

The organization of production and the quality of the domestic raw material being used provides interesting clues about Ottoman society. It suggests a certain egalitarian structure with respect to artisan and peasant production as well as a more egalitarian income and expenditure structure than we had expected.

On the other hand, there was also an upper-income group that mainly belonged to the military class. Most of the high-quality products consumed by this social layer were imports. The greater part, i.e. three quarters of these imported goods, consisted of fine woolens and quality silks. It was these two products that, for the first time in the early eighteenth century, became subject to attempts at import substitution with state capital.

The importation of quality products was not a new phenomenon. According to the logic of provisionism, since the olden times, obtaining these goods through imports had not been considered harmful in any way. Only the fine woolens used in the manufacture of soldiers' cloths, which required large sums, had been domestically produced. Taking advantage of the presence of qualified personnel specializing in this production—Jews who immigrated from Spain in the fifteenth century—factories were established to produce fine woolens in Salonica. However, this production too was transformed, following the general Ottoman pattern from the seventeenth century onwards, in such a way that it specialized in ordinary commodities for non-luxury production.[6] However, when an attempt at import substitution was put on the agenda in the early eighteenth century, a long period of war (1683–1699) had raised prices and reduced the possibilities of importation. Revenues fell and expenses rose as a consequence of war, but the Palace annually paid 40 to 50,000 *kuruş* for the imported woolens and silks. In short, according to both provisionism and fiscalism, import substitution became a necessity. Two of the three factories treated in this study were established to produce these woolens and silks.[7]

All three factories were established primarily in connection with provisionism and fiscalism, especially with the motive of reducing expenses; this is why providing them with customs protection like their European counterparts was never considered. According to the principles that were relied on, this would have been meaningless and absurd.

As will be seen, those factories could not last long. Could they have survived like those in Colbert's France, Peter the Great's Russia, or Meiji's Japan if they had been protected? Probably not.

State Investments in Manufactures

Woolen Cloth Manufacture: 1703

Simple and inexpensive textiles as well as more finished woolens were produced throughout the Ottoman Empire and were especially

noted in the Balkans. Even the more simple types of woolen cloth known by the name of *aba* and *kebe* found wide appeal among both the lower and middle social groups who wore them and the middle and even upper classes who used such materials for upholstery. Abundant raw materials and a continually expanding radius of interregional exchange within the Empire, in the Adriatic and with Italy helped boost production of these textiles during the eighteenth century. Marseilles merchants exported large quantities of rough woolens for the clothing of galleon slaves.[8]

The situation of fine textile production, however, was different. Except in the case of woolens manufactured of angora wool, which as a rare fiber had only limited application and market, the Ottoman Empire met its needs for middle- and fine-quality woolens with imports from Western Europe. From the seventeenth century onward, despite state measures to encourage and support industry, Ottoman manufacturing and local products (even those of the Spanish Jewish weavers who had settled in Salonica during the fifteenth and sixteenth century) faced stiff competition from Western Europe's increasingly technologically more advanced woolen industry.[9] In effect, Salonica industry grew less and less competitive because it attempted to survive by continually lowering the quality of its manufactures. For example, although the army alone represented a potential market of between 200,000 to 450,000 *zira* of cloth during the eighteenth century, the actual quality of Ottoman manufactures was so low that soldiers preferred to sell their state-issued stuffs to the poor and buy imports for personal use.[10]

To the degree to which such consumer patterns spread to the middle social classes over the seventeenth century, so foreign imports took an ever greater share of the domestic market. In particular, high-quality woolens from Western Europe constituted fifty percent of the entire quantity of imports. During the war period of 1683–1699, when imports witnessed a severe contraction, the danger of such a dependency on imports, which were widely in demand by the court, the elite, and the military, became apparent. The trade of Venice, then in the enemy camp and the source of twenty-five percent of Ottoman woolen imports, was completely redirected. France, England, and Holland, which accounted for the balance of imports, were at war with each other until well after the 1690s; this also contributed to the overall decline in the amount of woolen imports.[11]

The shortages were so great that for the first time, in 1703, the Grand Vezir Rami Mehmet Pasha issued an order to begin state production of woolens in Edirne and Salonica "so as to make provisions to be

self-sufficient of woolens from non-Muslim countries."[12] The first stage of production, realized with the aid of Salonica's Jewish weavers who were considered to have the most technical expertise and experience, lasted but a few months. The insurrection of August 1703 that brought down the Sultan and his Grand Vezir also put an end to this chapter of state sponsored industry.

Yet even this short-lived experiment of several months left a great impression on the French who then were in fierce competition with the English for hegemony in the Ottoman woolen market. Responding in August 18, 1704 to what must have been a previously issued directive by his government, France's representative in the Ottoman Empire communicated:

> With regard to cloth manufactories they feign to have established in Edirne and Salonica...the undertaking ran aground as the new Sultan took the throne, and so, Monseigneur, it is no more...It is very true that they manufactured samples of *Londrines*, but of very poor quality...Besides, it was not the French who manufactured them from what I have gathered so far and if the situation is to go on like this, I will comply with the orders of Your Highness on the subject.[13]

This state initiative to produce woolens did not, however, rest on a passing fancy of a sultan or vezir. Indeed, stubborn attempts, starting only a few years after, were to be continued over a period of some twenty-five years. On this occasion, however, it was decided that a manufacturing center for the woolen cloth industry was to be constructed in İstanbul so that workmanship, stocks and supplies could be brought under strict control. Thirty-eight of the most successful masters from the Jewish weavers of Salonica were summoned to İstanbul and established in the manufactory.[14] Five French prisoners, known to have skills in weaving, were taken out of their galley chains and put to work at their side. The first products of this enterprise appeared in the fall of 1708. The textiles were crude, of uneven quality and very costly. Realizing that the failure may have been due to the fact that the Salonica masters had become specialized in making low-quality woolen cloth, production was suspended toward the end of the year.

The French ambassador Ferriol, who had been closely following the situation, provided his observations in a letter dated October 17, 1708.

> Manufacturing of cloth for the Palace collapsed completely, they sent all the weavers who have worked there back to Salonica, and returned to prison all the Frenchmen who were put back again in galley chains. They were producing cloth which seemed to be extremely coarse as it is cottonned and costs more than 3 piasters a pic.[15]

Nonetheless, contrary to what Ferriol wrote, the endeavor to produce woolens was not abandoned. In early 1709, this project was taken up again, with some important changes and on an even larger scale.

While we are not in possession of more detailed information on earlier state initiatives in industrial organization, the existing data suggest that the type of enterprise pursued until this time was exclusively state managed and made use of essentially Ottoman technology and know-how. From 1709 onward, we come across two important changes. The first relates to the organization of production: rather than being the exclusive prerogative of the state, management was entrusted to an entrepreneur with his own capital and liability along the lines of profit and loss. The second concerns the quality of woolen production: the decision was made to locate and import technological know-how from abroad because it was realized that such skills were not to be found within the empire. The planned manufacturing center sought to produce the woolens most in demand within the Ottoman domestic market (such as *mahut, nim*, and *londrine*).

Beginning in early 1709, a non-Muslim Ottoman, whose name appears in the form of Tişo, or alternately Işon, undertook the role of entrepreneur in the new project. His first task was to bring together the technical staff, machinery, and equipment. Statements of French officials indicate that there was little reason to hope for technological aid from Western European countries at this time, because they were competing for dominance in Ottoman markets. Because of this, and/or because of some other relationships of which we are not aware, Tişo chose Poland as the source for technological know-how. With seven masters and machinery from there, which was installed in the İstanbul manufactory, he went into operation.

In the first stage, Tişo was able to establish a manufacturing unit consisting of seven looms at which 150 workers were employed.[16] In successive years, aiming for optimal scale and volume, the number of looms was increased to sixteen and a dyeworks, and other support facilities were added. Accounts up to the year 1716 show that the project

had cost 13,000 *kuruş* from the capital of the entrepreneur himself and 47,600 *kuruş* from state coffers, in addition to the costs of the physical plant and other fixed installations.[17] We can estimate that capital up to the amount of 100,000 *kuruş* was invested in this enterprise. This almost equalled one percent of the state's budget (around 10,000,000 *kuruş* in those years); when a skilled worker's daily wage was less than one third of a *kuruş*, this was not an inconsiderable investment.

In fact, these manufacturing initiatives pursued over a period of thirty years, despite several changes of rulers, must be characterized as a deliberate government policy. Nonetheless, despite the large quantities of cloth woven, this enterprise failed to achieve either the desired quality or price and eventually was abandoned after 1732.

The transformation of the woolen market surely constitutes one of the most important reasons for this failure. British woolens, which had been dominant in the seventeenth century Ottoman market, found a tough competitor in French production of cheap and middle-quality woolens during the eighteenth century. Overall, imports from Western Europe formed nearly fifty percent of the total Ottoman woolens market, with France and Britain in the dominant position.

Table 1A. Woolen Imports from France

Annual Average in Pieces of Cloth	
1700–1705	10,300
1708–1715	21,800
1716–1720	22,600
1721–1725	24,240
1726–1730	41,400
1731–1735	53,900
1736–1740	58,650

Source: Masson (1911), p.476.

Table 1B. Woolen Imports from England

Annual Averages in Pieces of Cloth		
	Long Cloth	Short Cloth
1701–1706	19,157	?
1705–1712	17,464	?
1712–1717	16,053	?
1718–1726	14,165	1,890
1727–1740	10,803	1,505.5

Source: Stoianovich (1974), p.77 and Ülker (1974).

The Ottoman Empire's total woolen imports were about 35,000 to 40,000 pieces at the end of the seventeenth century.[18] Imports from France and England already had reached this amount within the first decade of the eighteenth century and after 1736, surpassed it. The total imports from these two countries, together with lesser quantities that were imported from Holland and Venice, make it certain that the first decades of the eighteenth century witnessed a significant expansion in imported woolen textiles. This increase, which should be attributed to the increasing availability of cheap French woolens of middle quality, also meant a significant fall in the overall average price of imported woolens. Indeed, the fall of prices was the most important reason for the accelerated increase in imports over such a short time.

The survival of local woolen manufacturing under such market conditions required strong protectionist state policies as well as entrepreneurs with the ability to take advantage of the most advanced industrial technology and organizational forms of the period.

Contemporary reports make it clear that Ottoman efforts to import technology often encountered active opposition from Western Europeans. The role played by Dessalleurs, the French ambassador in İstanbul, in the 1714 kidnapping and expatriation of a Saxon dyemaster who was one of the technicians brought from Poland, vividly illustrates such attempts to sabotage the Ottoman woolen manufacturing initiative.[19]

The inabililty to obtain technology and the increasingly abundant and cheap manufactured imports made it imperative that the state apply a strictly protectionist regime over the long term. On the one hand, the Ottoman Divan provided every sort of advantage possible in the area of interest-free credit, even long-term capital without repayment. It also helped in securing supplies of raw materials, locating and settling workers, and offering broad tax exemptions. On the other hand, the state's guiding principle of provisionism in no way permitted any form of mercantilistic protectionism, either by curtailing imports, or by imposing duties that would raise domestic prices.

Still another probable cause for the failure of these industries was the inappropriateness of raw materials. The wool produced in the Ottoman Empire generally was not considered suitable for the manufacture of fine-quality woolen textiles.[20] The nature of Ottoman raw material probably played a role, alongside Western European competition, in the decline in quality of Salonica's textile manufactures after the sixteenth century. As a matter of fact, when high-quality woolens once again began to be manufactured in the 1830s, merino sheep were imported since local wool

was considered to be completely inappropriate. And, if we recall that the rather developed woolen industry of twentieth-century Turkey uses imported wool, it seems all the more certain that the low quality of raw materials was a factor in the failure of state manufacturing of woolens in the eighteenth century.

Silk Manufacture: 1720

Evidence from a number of independent sources makes it clear that Ottomans consumed more silk cloth than high-quality woolens. Compare, for example, the woolen and silk cloth consumption by the palace, a major customer of both types of cloths.

Table 2 Annual Cloth Consumption by the Palace

Year	Woolens		Silk Cloth		Source
	Amount (*Zira*)	Price (*Akçe*)	Amount (*Zira*)	Price (*Akçe*)	
1664	12,468	279	10,685	203	MM.6908
1665	12,380	284	12,111	219	MM.6908
1682	7,019	347	18,537	230	MM.6908, 40
1687	6,019	335	9,375	164	MM.2735, 29
1698	8,884	386	11,348.5	181	MM.2731, 82
1701	9,174	?	11,526	?	MM.429
1750	8,293	?	11,135	?	MM.429

Istanbul, Başbakanlık Arşivi
MM = *Maliyeden Müdevver*

Table 2 makes it clear that, for almost a century, with the exception of the years 1664 and 1665, the palace obtained more silk than wool cloth. Moreover, the rich and the notables had similar consumption patterns, clearly preferring silk cloth throughout the entire eighteenth century. This impression is confirmed by the composition of the presents distributed by the *Defterdar* in March 1731. He distributed 5,018 *zira* cloth: only thirteen percent were woolens and the rest were silks.[21] Also, consider this assessment, during the 1750s, by a French merchant familiar with economic conditions in the Middle East: "The silk trade is more important than that of the woolens. This is because Turks, like the other Levantines, consume twice as much silk cloth as the woolens."[22] And finally, the personal expenditure records of a vezir stationed in Belgrade, dated 1785, show that pure and mixed silk cloths constituted more than eighty percent of the total of 3,689 *zira* cloth bought.[23]

Silk cloth was also produced in large quantities. While the quality of silk imports, as in the case of woolens, was the highest, the quantity of silk imported was relatively small. Moreover, whereas three to four countries constantly competed in the woolen cloth market, silk cloth imports were dominated by one country—Venice. The fact that Venice, more often than not, was in the enemy camp surely encouraged an import substitution policy. Thus, during the 1717 Ottoman-Venetian war, the palace reduced its purchases of Italian *atlas*, that it normally consumed in large quantities.[24] And in 1720, when the palace decided to establish a silk factory in İstanbul, the stated purpose was: "to produce high quality silk cloth such as *diba*, *hatayî* and *atlas* which are all imported from the Venetian infidel."[25] The task of establishing the factory was given to the palace *bezirgânbaşı*. He found the experts and the machinery among the weavers of the Island of Chios who were flourishing at this period, and capable of producing cloths like those imported from the West. Three craftsmen brought from the island became the chief aides of the *bezirgânbaşı* in founding and later managing the factory.

According to the feasibility report written by these craftsmen, the factory required at least forty looms as well as dyeing, twisting, and final processing facilities in order to produce silk cloth in the desired quality and variety. The fixed capital, excluding the building, was 10,000 *kuruş* and the variable capital, to be utilized after initiation of the production process, was 20,000 *kuruş*. The Divan approved the report and ordered that the 10,000 *kuruş* fixed capital be provided immediately by the Treasury, and the rest be provided as the need arose.[26]

Within a year, twenty-four looms, each with an average cost of 133 *kuruş* had started to function, the dyehouse was completed and a silk mill "*meşdûd dolabı*" was assembled. These investments cost 4,259 *kuruş*.[27] At the weaving and other facilities, forty-four workers were employed. Installation of the brass press (bought for 390 *kuruş* in Chios) at the factory completed the establishment in September 1721. The whole operation took less than a year to complete and cost 8,347.5 *kuruş*, excluding the building.[28]

Each loom was capable of producing 120 to 400 *zira* of cloth per year; since the cost per *zira* would be 34 to 167 *para*, annual production capacity per loom equalled about 300 to 500 *kuruş*. Operating capital per loom, covering the annual wages and the raw material, was estimated at 600 *kuruş*, half was laid out in advance to be reserved to cover the wage payments and the purchase of raw materials for one year.

The factory started production immediately and was granted important privileges and tax exemptions. The three craftsmen who were to organize their lesser subordinates, the *ustabaşı, kalfa,* and the *yiğitbaşı,* and another one brought over from Chios to operate the press, worked within a guild-like structure. They were exempted from all the taxes, including *cizye* and *avarız,* and were authorized to carry arms and ride horses, privileges rarely granted to non-Muslims. The same privileges were granted to a "designer" who was employed for the first time in such a factory. There was another, unprecedented, privilege: this was the purchase obligation imposed on government employees. Accordingly, employees were prohibited from purchasing the silk cloth of other domestic and foreign factories as long as the produce of the Chios workers' factory was available. This regulation applied both to government employees in İstanbul and those in the provinces purchasing through their agents in İstanbul.[29]

Under these favorable conditions, the factory expanded its production rapidly and, after satisfying the demand of the palace as well as the bureaucracy, began to supply the free markets beginning in 1723. An order issued by the *Defterdar* deserves attention:

> Weaving of *diba, batayî, keneviz,* and *atlas,* which was initiated in the imperial *batayî* factory, proved to be of finer grade than expected, yet owing to the fact that it is well-known by and in demand among people, not only is most of the materials woven in the abovementioned factory permitted to be sold freely, but also the revenue accruing from their purchase is put to use to replenish the necessary stock of silk and the like and to sustain the continuation of the weaving process. In this manner, if the operation is to be kept on a continual basis...in a short while...the cloth produced there will be circulating throughout the land of Islam. It is apparent that it will be in more demand and more famed than their Venetian namesakes, and since its price is lower than those of similar varieties, it is obvious that everyone will be more than willing to purchase it...

It was decided to rent a shop in the Bedesten whose rent would be paid by the director of the manufacture.

This decision to expose the high quality silk cloths of the state factories to the Venetian competition in the free market reveals a totally

new approach in the management of state enterprises. The Ottoman state had always possessed workshops producing for its own needs. Although these workshops sometimes marketed their products in the free market, this practice was unusual except in the case of the so-called fiscal establishments. The sale of state produced commodities such as alum, salt, and the like in the free market aimed at obtaining revenues for the state. But, it must be emphasized, the relationship between the volume and the amount of sales, quality, and cost was not recognized in any of these activities.

The decree opening the silk manufactory to market forces also granted it much needed financial autonomy so that it could be self-sufficient and replenish its capital. From this perspective, we probably are witnessing an antecedent to the state economic enterprises which were to dominate the economy of the Turkish Republic in the twentieth century. It must be noted, however, that this attitude cannot be so clearly observed in the other state enterprises that were established in this period.[30]

Following the beginning of sales in a shop rented in İstanbul, the factory went through an expansionary phase. The number of looms, twenty-four in 1721, increased to fifty-three in three years' time and a second silk mill became operational. With the expansion of capacity, economies of scale were achieved and the average production cost of the main types of silk cloth was reduced by about seven percent. The amount of raw silk inputs increased by twenty percent between 1725 and 1726 (when it stood at 1,600 *okka*—2,000 kg) revealing that the expansion was continuing.[31]

The factory was doing well in the 1730s, when thousands of *ziras* of silk cloths were sent to the shop for sale.[32] Unfortunately, we do not have much information on subsequent developments. There was a devastating fire, after which ten looms were reconstructed in 1756.[33] The latest evidence about the manufactory is from 1760;[34] we surmise that it had lost its importance by then, but might still have continued to function for a couple of more years in order to supply silk cloths for the palace.

In sum, silk cloth manufacture was active for at least forty years for a number of reasons. Not only did it take advantage of the most advanced technology and know-how available locally, but also the strong protectionist policy of the state provided capital and a market. Its withdrawal from the market probably was caused by the stiff competition, not from foreign imports, but, because of mid-eighteenth-century developments in silk manufacturing, from producers all over the empire, especially in İstanbul and Chios. At this time, the Ottoman Empire

imported only a small portion of its remarkably vast consumption, and was able to suffice with local manufacture. The state did not attempt to establish or expand state-owned manufacture, but preferred to provide capital for artisanal production. Thus, it was able to guarantee profits from its investments. For example, it provided forty looms with 19,144.5 *kuruş* for the fixed installations of a plant newly constructed in Üsküdar in 1758. The state built the factory and dedicated it as a *vakıf*; it was rented to the artisans who manufactured a newly developing kind of silk cloth known as *yasdik*.

Sail Cloth Manufacture: 1709

The manufacture of sail cloths required for the Ottoman navy was concentrated on the Asian and European coasts of the Aegean Sea, especially at Gallipoli and Çanakkale. The widespread production of these goods in town and city as well as in rural areas met the demands of both the navy and the civilian fleets and was sufficent even for exportation.[35]

The number of large sailing vessels and the galleons used by the Ottoman navy increased to some thirty-five to forty by the early eighteenth century.[36] The increasing number of large vessels necessitated more, and better made, firm and heavy sail cloths. The organization and capacity of the existing artisanal manufacture, intended to meet the demands of the medium and small tonnage vessels, did not have the capability of adapting to the changing requirements, either in quantity or quality. Moreover, the Ottoman state's purchasing policy did not encourage such a flexibility; indeed it made it more difficult. According to this policy known as *mirî mübayaa*, the state, by imposing a levy-like taxation, purchased sailcloths at a fixed price below the market price, sometimes even below the production cost. When state demands were only a small portion of the production, the producers offset the loss with profits made in selling their products at normal prices in the market. But when state demands were heavy, their losses were great. The rigidity of the Ottoman financial system and the *mirî mübayaa* policy did not allow price increases in the market in response to increased demand. Therefore, when state demands increased, producers usually reacted by decreasing either the quality or the quantity of production. When the state set new standards, its supply became more difficult. Hence, the first imports of sailcloths.[37]

By 1709, the manufacture of sail cloths was established in the Arsenal at İstanbul in an effort to meet the demand for more and better quality products. In the state-owned physical plant, the organization of

production was assigned to an entrepreneur. This *bezcibaşı*, the director who managed the manufacture, was obliged to provide the navy with a certain amount of sailcloths every year. The state provided a sample that set the standard for the sailcloths to be produced. The *bezcibaşı* would buy cotton yarns from the dealers in İstanbul, at a price bound by contract, and he would collect the total amount in cash from the Treasury at the beginning of each year. He would be paid at a fixed price—2 *akçe* for each *zira* manufactured—and would receive that sum also at the beginning of each year. Thus the *bezcibaşı* would be acting like a subcontractor; he would organize the workers and pay their wages. The enterprise was to provide 30,000 *zira* of sailcloth per year, twenty-five to thirty percent of total navy needs during times of peace. During wartime, the production would increase up to 200,000 *zira*, forty to fifty percent of the total requirements.[38] In this way, difficulties arising from increased demands imposed on private producers would be eliminated. At the same time, the real purpose of the new policy was to secure a channel for the steady supply of high quality sailcloths.

The manufactory was designed to accommodate the increased demand that occurred during wartime. When at peace, the *bezcibaşı*, instead of decreasing production, was permitted to sell the surplus in the free market to civilians. But, in wartime conditions such as in 1713, when production increased sharply as war drew near, sales to the civilians were forbidden.[39]

By the end of the war of 1714–1718, the production of sailcloths for the navy was reduced (to 30,000 *zira*) and the ban on private production was removed. But the very high-quality and expensive sailcloth had little appeal in the civilian economy, and so the number of looms fell from about thirty or forty to ten by 1750.[40]

The *bezcibaşı* then appealed to the Divan. Claiming that the annual needs of the navy for 30,000 *zira* sailcloth could not be met by so few looms, he asked that the private looms in İstanbul participate in the production. If the private looms, then numbering twenty-four, were not willing to do so, their production should be stopped and the *bezcibaşı*'s monopoly restored. He proposed this as the only way to meet the demand of the navy.[41] Accepting the petition of the *bezcibaşı*, the Divan asked the thirty-four loom owners (ten state-owned and twenty-four private) to produce 900 *zira* sailcloth each at a fixed price to meet the total demand of 30,000 *zira*. But the production cost was twenty-four *akçe*, and the Divan offered seventeen *akçe* per *zira*—some thirty percent less. Since each loom would lose 6,300 *akçe* every year, private loom owners

refused. Consequently, according to the *bezcibaşı*'s proposal, private production was banned (ca.1751), and the monopoly of sailcloth production was reestablished in İstanbul and environs. Two years later, the monopoly was extended to include İzmir.[42]

Manufacture thus was revitalized and, by 1760, once again reached full capacity.[43] When demand increased during the war with Russia (1768–1774), the existing capacity expanded in 1770 by new establishments.[44] After the war was over, the demand of the navy increased even more. Not only did the navy rebuild, making up for its losses during the war, but it also became more active against Russian naval forces in the Black Sea, no longer, after 1774, an Ottoman lake. Annual demand for sail cloths increased, at a minimum, to 60,000 *zira* by 1777.[45] Actual demand, which fluctuated according to immediate needs, was much above this figure.

Table 3 Sailcloth Required by the Navy

Years	Amount
1774	140,000
1777	222,000
1781	118,000
1782	196,000
1783	182,635
1791	160,000
1801	200,000
1802	250,000
1803	300,000

Sources: İstanbul, Başbakanlık Arşivi, MM.19549, pp.13–24; TKSA.E.9572; MM.10405, p.178; Cevdet Bahriye (C. Bah.) 10325; C.Bah.217; C.Bah.3326; MM.9997, pp.428–429.

In order to meet these rapidly increasing demands of the navy, sailcloth manufacture grew in capacity and the number of looms reached fifty by 1785.[46] The rapid growth in demand, not only triggered increases in capacity, but also, paradoxically, hindered its growth. The increase in capacity could never catch up with demand. Behind this paradoxical relationship was the distribution of wages and market relations. On the one hand, what the navy paid for the sailcloth was below its production cost. However, since the wages were paid in advance by the beginning of each year, the manufactory was able to accumulate capital in the form of

credit. The *bezcibaşı* sold a considerable amount of the sailcloths manufactured by using this capital in the free market and delaying the delivery of goods to the navy until the end of the year. Thus, he made some profit and expanded activities at the manufactory. This was the case between 1750 and 1760 when he was able to sell in the free market under the monopoly regulations. Yet after 1769, when the navy increased its demand rapidly and started to buy all of the production, the chances of selling in the free market were reduced and the manufactory incurred losses. For example, in 1776, the Arsenal lost 2,448 kuruş keeping the contract to supply sailcloth to the navy, but made 600 kuruş profit from sales in the free market.[47] The *bezcibaşı* was obliged to put up his own house as security in order to continue production.[48] In response, the Divan increased the unit price paid for the sailcloth, bringing it closer to production costs. With advance payment, the manufactory was able to make some profit and to continue production.

This depended on the ready availability of cotton yarn, which constituted eighty percent of the production cost, at a stable price. One of the reasons for establishing a monopoly in sailcloth manufacture in 1750 was to stabilize cotton yarn prices at a reasonable rate by reducing the demand of the private producers. In the second half of the eighteenth century, maintenance of such stability became increasingly difficult because of the inflation that resulted from the new monetary regulations. Moreover, the price of cotton yarn began to increase more rapidly than inflation because of a number of factors, these included: increased demand for Ottoman cotton yarn in Central Europe; the war in the Aegean Sea, which interrupted maritime transportation; and, factors such as piracy and plague, which reduced supplies, especially in İstanbul. With its limited resources, the Treasury could not sufficiently adapt to the increase. As a result, sailcloth manufacture continuously suffered losses and could not meet the demand of the navy.

The precautions taken against this situation typify Ottoman economic behavior; cotton yarn was incorporated within the policy of *mirî mübayaa* by the end of the eighteenth century. State officials directly bought the yarn needed for sailcloth manufacture from the western Anatolian production centers. At first, producers managed to supply some ten tons of cotton yarn required by the state. When the demand increased, they reduced the quantity and the quality of the cotton yarn as they often did with other products and services regulated also by the *mirî mübayaa*. Feeling the impact of technologically more advanced Western products, Ottoman cotton yarn producers, who already were suffering from a

shrinking market, refrained from selling their products in this period of inflation when the state offered prices that did not change for years and remained very low. Thus, sailcloth production was reduced by the shortage of cotton yarn and the navy was obliged to rely on imports (mostly from Russia).

To avoid imports, the Divan decided to establish a spinning mill in İstanbul.[49] It was founded in November 1826 with capital derived from the pious foundations. There were fourteen animal-powered machines, modeled on English prototypes and made by local craftsmen. The machines busied 114 workers and had 1,680 spindles with a daily capacity of 225 kilograms cotton yarn.[50] With the addition of this spinning mill, the manufacture of sailcloth became the first integrated cotton industry in Ottoman Turkey. Its total capacity of 250,000 *zira* was intended solely for the navy, and sales in the free market were banned.[51]

The manufacture of sailcloth was the most enduring of the industries established with state capital. Several factors contributed to its endurance over the course of the century. First, there was never any difficulty in providing technology or qualified workers in this traditional branch of textile industry. Second, the navy provided a secure and continuous demand even though wages were very low. But payment of the wages in advance, at the beginning of each year, offset their low level; thus, when capital was scarce and expensive, this policy provided secure credit. Third, a manager who had a personal stake in the enterprise not salaried bureaucrats contributed to its capacity to sell in the market under monopoly regulations. The possible relationship between its disappearance in mid-nineteenth century and the ban on the sales in free market are interesting topics that require investigation.

Notes

1. Genç (1987a).

2. Genç (1987b), 156.

3. The *malikâne*-owners, most of whom were members of the military class, were not guaranteed property rights and therefore realized the above-mentioned investments only within the *vakıf* system.

4. Svoronos (1956), 245, Beaujour (1800) I, 72–75. The comparison of these figures regarding the cotton production in Macedonia, which constitutes only a small portion of cotton production and consumption in the Ottoman Empire, with the figures from England, the seat of the "Industrial Revolution", bring out very interesting results. England consumed 4.2 million lbs. in 1772 and 15.5 million lbs. in 1792. In 1790, the Salonica-Macedonia region alone spun 7 million lbs. of cotton into yarn and used half of it in weaving. Başbakanlık Arşivi (İstanbul) Maliyeden Müdevver (hereafter MM) 9957, 15 (1743–47), 67 (1751); Cevdet İktisat (hereafter C.I.) 1137 (1790–1801); MM 8567, 122–123 (1820).

5. MM 10178, 195 (1735); MM 10203, 193 (1760).

6. Braude (1979).

7. The other was the sailcloth factory; although sailcloth was not an imported item, the factory was established to create a potential of supply in appropriate amounts, quality, and time.

8. Svoronos (1956), 256.

9. Braude (1979).

10. de Peysonnel (1787), I, 57–58.

11. Stoianovich (1974), 86, 91.

12. "*kefere memleketinden gelen çukadan müstagni olmak mülahazası ile.*" Topkapı Sarayı Müzesi Arşivi (İstanbul) (hereafter TKSA) E. 6074.

13. Svoronos (1956), 255.

14. MM 2488, 118.

15. Varenbergh (1874), 326.

16. MM 7560, 298.

17. MM 7560, 303.

18. Stoianovich (1974), 80.

19. Stoianovich (1974), 91.

20. Svoronos (1956), 240.

21. MM 10172, 12ff.

22. Flachat (1765), 287.

23. Başbakanlık Arşivi Kamil Kepeci (İstanbul) (hereafter KK) 791.

24. Başbakanlık Arşivi (İstanbul) Başmuhasebe Defterleri (hereafter D.BŞM), 1129.4.29, April 12th, 1717.

25. KK707, 43/72 1135, 8.9.1723.

26. KK 706, 38.

27. KK 706, 29–31 and 39.

28. MM 1736, 250 and D.BŞM. 1443.

29 KK 706, 49/29 B 1142,28.2.1729.

30. The sailcloth manufactory, established in 1709 (and examined later in this article), also competed in the free market, but it did not assume the mercantile attitude so clearly evident in the case of the silk factory.

31. KK 706, 44 (İbnülemin-Muafiyet/İmtiyazat no:140).

32. D.BŞM. 1689/1732–1735.

33. MM 8947, 551.

34. TKSA.E.6074.

35. France, Ministère des Affaires Étrangères Paris (hereafter Aff. Étr.) Biii239, no: 14.

36. MM 2483, 127–133 and C. Bah. 8814.

37. MM 10149, 124, 1703.

38. MM 10309, 155; MM 6266, 138 and Genç (1984), 90.

39. MM 9983, 281.

40. MM 9983, 282.

41. The daily production of one single loom was around fifteen *zira* (C.Bah. 12404 and MM 10309, 55) and, in one year, it was possible to have 30,000 *zira* woven in ten looms. However, the fixed price—2 *akçe* per each *zira*—that the state had paid since 1709 was inadequate. Wages had risen by fifty percent between 1709–1750. Thus, the private sector would have endured considerable losses.

42. MM 9983, 282–283; MM 9976, 270.

43. MM 8947, 672.

44. MM 10381, 157.

45. C.Bah. 12251.

46. C.Bah. 9466.

47. C.Bah. 10485.

48. "*evini rehin bırakmak zorunda*" C.Bah. 12251.

49. MM 8958, 219.

50. MM 8882, 160–161.

51. MM 8882, 154.

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*Ottoman Manufacturing in the Nineteenth Century**

Donald Quataert

In writing the story of nineteenth-century Ottoman manufacturing, historians have focused on its decline in the face of European competition. This article takes a different view. Using textile manufacturing as the example, it makes clear that the fate of late Ottoman industry is more complicated and interesting than flat assertions of decline have suggested. Some textile industries permanently did diminish over the period, particularly those that had been competing in the international market. Others, however, only temporarily lost customers during the first onslaught of European imports, ca. 1820–1850, but then regained them after adjusting to the new conditions. Overall, there was a marked manufacturing revival, beginning in the early 1870s and continuing, with fluctuations, until World War I.

This upward shift derived from a mix of international and local factors. Among the most directly relevant international factors were the ongoing mechanization of yarn spinning and cloth weaving in Europe and the United States as well as the development of factory-made dyestuffs. We also should include the rising disparity of wealth between the Middle

*This article is a greatly condensed version of material found in Quataert (1993b).