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# Economic Imperialism in China

Silk Production and Exports,  
1861–1932

ROBERT Y. ENG

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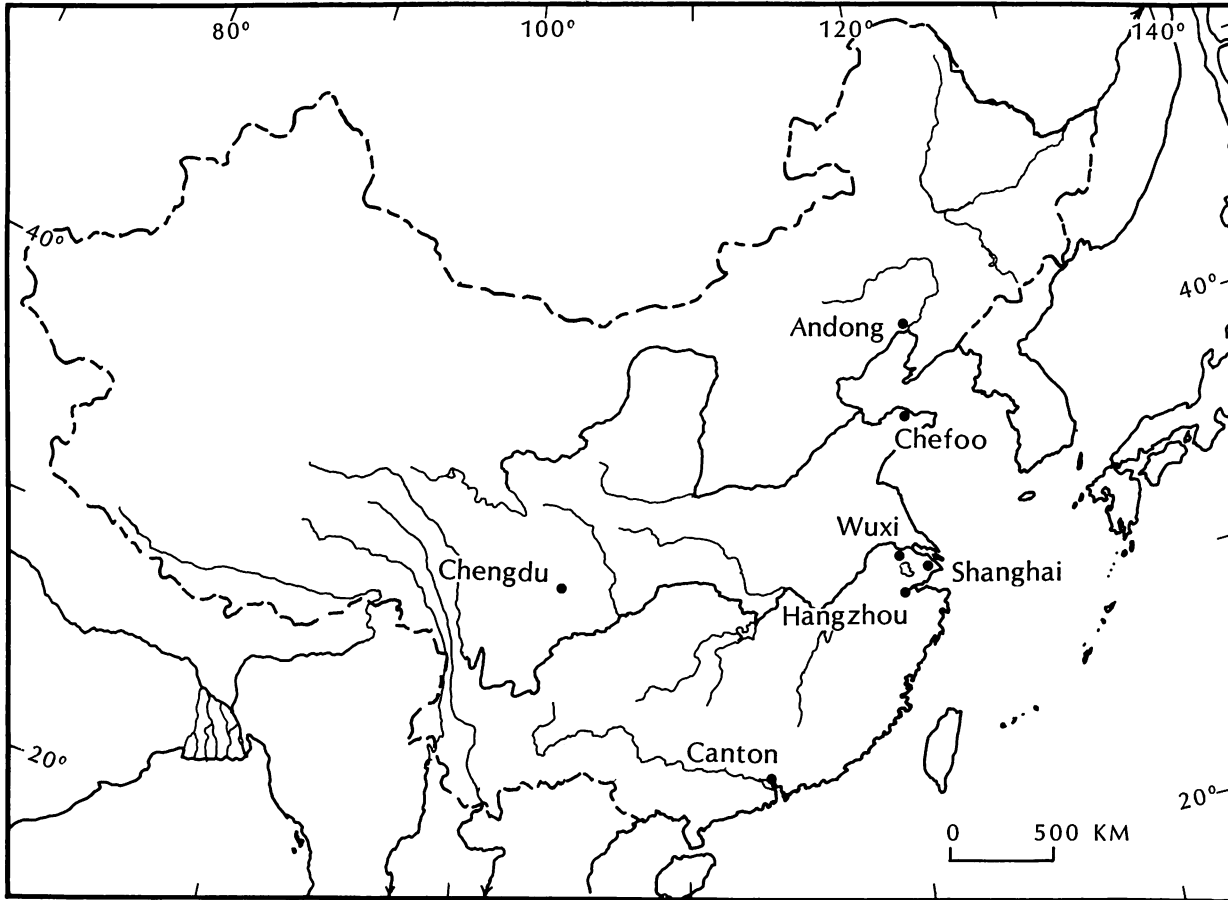
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Robert Y. Eng is Associate Professor of History at the University of Redlands. Previously he taught at Arizona State University and was a Mellon Fellow at Case Western Reserve University. His articles have appeared in such journals as *Modern Asian Studies* and *Modern China*, and he has conducted research in the People's Republic of China on a National Endowment for the Humanities Summer Stipend. His research interests are in modern Chinese socioeconomic history, particularly the peasant economy and family and demographic history.

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Map 1. Some Major Silk Centers in Republican China



## Prologue: The 1881 Nanhai Weavers' Riot

On October 5, 1881, the silk weavers' guild (*Jinglun tang*) held its annual feast at a temple in Dagang market of Nanhai county, in the province of Guangdong. The weavers' mood was far from celebratory, however. They had been suffering from the growing scarcity and rising prices of hand-reeled silk, which constituted the raw materials of their trade, because an increasing number of cocoons had been diverted to the eleven steam filatures nearby, most of which had been constructed within the previous two years to produce raw silk for foreign export. A poor harvest of cocoons further aggravated the plight of the weavers.

At the feast the weavers' ugly mood was fed by heavy gambling and drinking. One weaver cried out against the filatures as the source of all the weavers' troubles and urged their destruction. The restive mob unanimously concurred with his recriminations. More than one thousand angry weavers marched to nearby Xuatang village, where Yuhouchang, a filature, was situated. They smashed the machinery inside Yuhouchang and looted more than 10,000 piculs of cocoons and other materials. At the sound of the disturbance villagers rushed to the rescue; they chased out the weavers, captured two of them, and drowned two others.

Overnight the villagers built fortifications guarding the roads leading to Xuatang village and prepared to deliver the two prisoners to the county authorities. On the following day a couple of thousand weavers returned to the village to free their colleagues. In the ensuing gun battle two people were killed. Finally, Xu Gengbi, the Nanhai county magistrate, sent in the local militia (*yong*), which scattered the riotous weavers.

On October 7 the weavers collected money from their employers to purchase weaponry and ammunition and seized firearms used to defend silk-transport boats. The following day they once again gathered at Dagang market, where they decided collectively to attack Xuatang village and to call for a work stoppage by all in their trade. Ignoring the magistrate's attempt to placate them by ordering the closure of all filatures, more than three thousand weavers stormed Xuatang village on October 9. There they met heavy resistance from an armed band organized

by the village. Xu Gengbi had to send in troops (*ying*) to disperse both armed bands. The mercenaries hired by the village were disarmed and expelled, and troops were posted there.

Even before this riot the weavers had proved to be an unruly group; there were more than ten thousand weavers in the Jiangpu, Jiujiang, and Xichao areas of Nanhai county, who were moreover allied to their fellow artisans in Canton and Foshan and in the neighboring counties of Shunde and Sanshui. A mob of weavers in front of the headquarters of the governor-general in 1866 had rudely demanded the annulment of the *likin* (*lijin*) tax; in 1875 another mob had smashed the sedan chair of the magistrate. Anxious to prevent recurring troubles from the weavers, Xu Gengbi concurrently carried out measures directed against both the weavers and the filatures. On the one hand, although he released most of those who had been arrested, he ordered the execution of the four chief instigators of the attack on Xuetang village. He also ordered the collection of monthly reports on the activities of the weavers and the organization of all weavers under a *baojia* type of system: every ten weavers were to be organized under one foreman (*gongtou*), and all weavers in a village under a headman (*mashou*), who guaranteed them and in turn had to be guaranteed by the owners of the weaving shops. On the other hand, Xu cited the filatures with violating the law that restricted the establishment of industrial enterprises to officials only. Moreover, in Xu's words, the filatures had robbed the livelihood of several tens of thousands of people for the profit of a few merchants: while the Western countries were run on the profit motive alone, in China the people were the foundation of the realm (*minwei bangben*). Therefore, he ordered the permanent closure of all filatures.<sup>1</sup>

If the official rhetoric is taken at less than face value, this incident may be viewed as an example of the interference of bureaucratic conservatism with the development of modern industry in the interest of preventing civil disturbance, and secondarily, preserving official monopolies. It may also be viewed as the first of the few instances of Luddism in late nineteenth century China<sup>2</sup> and thus a concrete case of conflict

<sup>1</sup> Xu Gengbi, *Puqianzai mancun* (1882 ed.), *juan* 6:17a-20b; SGYS, II, 45-50; GYS, I, 959-65.

<sup>2</sup> Zeng Tongchun, *Zhongguo siye* (Shanghai, 1933), 58-9; Mark Elvin, *The Pattern of the Chinese Past* (Stanford, 1973), 315. The above account of the Nanhai weavers' riot was based on Xu Gengbi's reminiscences, written within one year of the incident. Another account, however, which reflects the viewpoint of the filaturists, the targets of the riot, claims that Xu failed to respond promptly to reports of the initial attack, which was not spontaneous but premeditated by the weavers. The weavers' guild routinely retained the services of lower degree holders (*shengyuan* and *jiansheng*) to write legal briefs justifying their actions

between modern industry and traditional handicrafts. Less obviously but perhaps more significantly, the village community of Xuetang had been drawn together by the establishment of the silk filature. Common economic interests now reinforced lineage loyalties, which had united all social classes in the single and multi-lineage villages of the Canton Delta. The livelihood of those living in villages where filatures had been built had become bound up with the vicissitudes of the world raw silk market, and their interests had become pitted against those of the communities where the weavers resided.

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in incidents such as the 1881 riot or for other contingencies. See Chen Tianjie and Chen Qiutong, "Guangdong diyijian jingqi saosichang Jichanglong ji qi chuanganren Chen Qiyuan," *Guangzhou wenshi ziliao* 8 (1963), 70-1.

# I

## Economic Imperialism in China

If imperialism is defined not narrowly, as the acquisition of formal empires, but functionally, as the domination of a strong political community over a weaker one to ensure the extraction of economic rewards and material advantages,<sup>1</sup> the imperialist era in China may be said to begin with the Opium War of 1839–42. This war marked the beginning of a long and painful process that irrevocably sucked China into the whirl of global history, subjected her to humiliations by the Western powers, and linked her ports and their hinterlands to the Western economies. It was triggered by the Chinese government's attempt to enforce the banning of illegal Western imports of opium. Victory gave the British government an opportunity to satisfy the long-standing demands of British merchants and manufacturers for a better access to the China market, hitherto confined to the single entry point of Canton.

The ensuing Treaty of Nanking of 1842, the first of a series of unequal treaties that the Western powers (and later Japan as well) imposed on China through gunboat diplomacy, set the pattern of imperialist penetration. These treaties provided for the opening of numerous ports to Western diplomatic, commercial, and missionary personnel and recognized the extraterritorial rights of foreigners to be tried by their own consuls and under their own national laws. Many of these treaty ports lay along the coast, but some were in the interior. In the sixteen most important Great Britain, France, Germany, Russia, the United States, Japan, and other imperialist powers set up concessions under their administration and outside Chinese jurisdiction. There their nationals could freely trade, invest in banking, industry, and construction, and engage in missionary and other cultural activities. Although China never completely fell under the direct control of any imperialist power, the treaty ports, which formed the kingpin of the imperialist system,

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<sup>1</sup> William Appleman Williams, *Empire as a Way of Life* (New York, 1980), 7–8.



were functionally similar to the port cities of the Western colonies in Asia and Africa as linkages to the metropolitan countries.

Moreover, the adoption of the most-favored-nation clause in the unequal treaties meant that concessions to one power would automatically be enjoyed by the other powers as well. Tariffs were restricted to 5 percent *ad valorem*, and inland transit dues on foreign goods imported into the interior or on Chinese goods destined for export were limited to a nominal percentage. In addition, some of the Chinese government organs, such as the Maritime Customs Office and the Salt Administration, came under foreign management.

An era of intensified imperialist encroachment followed the Sino-Japanese War of 1894-95, as each of the imperialist powers scrambled for territorial leases and mining and railway concessions and carved out spheres of influence within China, where they had the right to post police forces. Only the countervailing rivalry among the powers saved China from being divided.

Though economically motivated, imperialist encroachments had profound social, political, and cultural repercussions. In the interior the missionaries challenged the social and cultural hegemony of the gentry. Within the treaty ports emerged a new mercantile elite known as the compradors, who functioned as intermediaries between Western commercial interests and the Chinese hinterlands. The humiliation of successive military defeats, concessions, and extraterritoriality led the Chinese to question the adequacy of their cultural values and political forms and to propose reforms that increasingly adopted Western technology, ideas, and institutions. Imperialist penetration not only severely strained the political authority of the Qing government and contributed to its downfall, but ultimately promoted the rise of Chinese nationalism as well.

In this study, however, we shall be focusing primarily on the socioeconomic effects of imperialism on China; we shall also probe into the related question why the Chinese were unable to resist the onslaught of Western intrusion. This question invites comparison with Japan, since like China, Japan also was forced by gunboat diplomacy to open up its ports to the West, to concede extraterritoriality, and to relinquish tariff autonomy, but unlike China, Japan was able to establish a strong centralized state on the road to industrialization within decades. Indeed, Japan is the only non-Western country to have industrialized successfully and also the only victim of imperialism to have become itself an imperialist power.

### Western Interpretations of the Impact of Imperialism on China

At present, there are two schools of interpretation in Western scholarship regarding the impact of imperialism on China. The neo-Marxist school adopts the analytic framework and empirical findings of earlier Chinese Marxists and nationalists and such Western sympathizers of the Chinese revolution as Harold Isaacs. It is a conscious reaction against the revisionist school, which is itself a conscious or unconscious reaction against the Marxist indictment of imperialism for its detrimental effects on Chinese society and economy. Both schools agree that Western penetration had profound social, political and cultural repercussions on China, but they disagree on their nature and extent. Most fundamentally, the revisionist school questions whether Chinese psychological shock and anguish were in fact commensurate with the actual damage done by imperialism to the social and economic fabric of China.<sup>2</sup>

According to the neo-Marxist interpretation, the treaty ports served as beachheads of economic imperialism that facilitated foreign extraction of raw materials and exploitation of a cheap labor force. Chinese commercial and industrial enterprise was inhibited by foreign domination of the treaty port economy, which was buttressed by extraterritorial privileges and the absence of a protective tariff. At the same time, the nascent bourgeoisie was also hampered by monopolistic bureaucratic capitalism. Chinese exports were skewed toward a few staples such as tea and silk, concentration on the production of which exposed the peasants to the instabilities of overseas market conditions. The influx of cheap foreign imports through the treaty ports to the interior displaced traditional Chinese handicrafts and led to the immiseration of the peasantry, who had depended on byemployments to supplement their meager income. At the same time the landlords, who had become a ren-

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<sup>2</sup> Needless to say, such a classification scheme obscures the many differences in interpretations and shades of emphasis within each school. For succinct and forceful arguments of both schools, see the interchange in *Bulletin of Concerned Asian Scholars*, IV:4 (Dec. 1972): Andrew J. Nathan, "Imperialism's Effects on China," and Joseph Esherick, "Harvard on China: The Apologetics of Imperialism"; see also the review article by Eugene Lubot, "The Revisionist Perspective on Modern Chinese History," *Journal of Asian Studies*, XXXIII:1 (Nov. 1973), 93-7. Here, however, I have labelled what Lubot called the "revisionists" as the neo-Marxist school and what he termed the "counter-revisionists" as the revisionist school, for these reasons: the term "revisionist" has a rightist or centrist political connotation, particularly in the Chinese context, and yet it is the neo-Marxists who believe in the necessity of revolution and the revisionists who believe in the possibility of reform; moreover, the neo-Marxists are not presenting a new view but restating an earlier Chinese perspective, which the revisionists are attempting to modify or refute.

tier class residing in the towns and the treaty ports, drained off wealth from the countryside by exacting higher rents and spending their income on foreign imports, thus exacerbating the miseries of a debt-ridden peasantry.

The revisionist interpretation, on the other hand, sees the treaty ports as centers of political and economic modernization where Western ideas and forms of government and institutions were transmitted to the Chinese and where Western entrepreneurship and capital not only pioneered in many of the fields of modern industry, but also prompted imitative responses from the Chinese. Rather than destroying peasant handicrafts, the treaty ports actually stimulated the rural economy by providing employment for the underemployed and by exerting a demand for agricultural and handicraft products. At the same time, however, the revisionist school minimizes the foreign impact on the Chinese economy; it emphasizes instead the resilience of the traditional handicraft sector, the stable share of the Chinese in the industrial sector of the treaty ports, and the small share of foreign trade in relation to the total Chinese economy. According to the revisionists, the modernizing efforts of foreigners were frustrated by a recalcitrant Chinese government and by entrenched Chinese economic interests.<sup>3</sup>

Both the neo-Marxist and the revisionist paradigms attribute the inability of the Chinese to resist Western onslaught partially to the failure of the Chinese government. But whereas the neo-Marxists see the Qing government as a conservative and reactionary body bent on preserving the status quo and becoming increasingly reliant on the help of the foreign powers for the suppression of domestic rebels and the preservation of the dynasty, the revisionist school suggests that the problem was insufficient Western influence to stimulate the process of modernization for China as a whole: Hong Kong, Taiwan, and Manchuria are cited as examples of economic prosperity under the aegis of foreign administration.<sup>4</sup> Although the foreign presence yielded net

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<sup>3</sup> For example, see Chi-ming Hou, *Foreign Investment and Economic Development in China* (Cambridge, Mass., 1965); Rhoads Murphy, "The Treaty Ports and China's Modernization," in Mark Elvin and G. William Skinner, eds., *The Chinese City Between Two Worlds* (Stanford, 1974), 17–71; Robert F. Dernberger, "The Role of the Foreigner in China's Economic Development, 1840–1949," in Dwight H. Perkins, ed., *China's Economy in Historical Perspective* (Stanford, 1975), 19–47.

<sup>4</sup> Jack M. Potter, *Capitalism and the Chinese Peasant* (Berkeley, 1968); Ramon H. Myers and Thomas R. Ulie, "Foreign Influence and Agricultural Development in Northeast China: A Case Study of the Liaotung Peninsula, 1906–42," *Journal of Asian Studies*, XXXI:2 (Feb. 1972), 329–50; Myers, "Comment—Economic Development in Manchuria under Japanese Imperialism: a Dissenting View," *China Quarterly*, 55 (July/Sept. 1973), 547–56.

benefits within China proper, such benefits were limited by the strength of the traditional economy. Thus, while the neo-Marxist framework emphasizes the detrimental effects on Chinese society and economy and the linkages between imperialists and the feudal classes, the revisionists seek the reasons for the inadequacy of the Chinese response to imperialism in factors within Chinese society.

An intermediate position is taken by Victor Lippit, who accepts the generally detrimental effects of imperialism but ascribes the principal barrier to economic progress to the self-serving conservatism of the amalgamated gentry-merchant elite. However, the central issue, which is not entirely clarified by Lippit and which lies at the heart of the neo-Marxist versus revisionist debate, is: Was China after the Opium War in a state of undevelopment (or, in Elvin's evocative phrase, a high-level equilibrium trap, which could be broken only with external stimuli in the form of expansion of trade relations with the West and the import of Western science and technology) or was it in a state of underdevelopment (in which external dependence was created by imperialist incursions at the expense of long-run, overall, domestic development)?<sup>5</sup>

### **Comparisons of Chinese and Japanese Modernization**

Most comparative interpretations of the success of the Japanese response to Western threat and the failure of the Chinese are congruent with the revisionist paradigm in that internal socio-cultural factors are stressed.<sup>6</sup> Whereas certain elements in traditional Japanese social structure and cultural values made Japan receptive to the importation of Western ideas and technology and to the need for far-reaching changes in political and social institutions, elements of Chinese society and culture retarded the possibility of constructive responses to Western penetration. While the Chinese complacently saw themselves as the center of civilization, the Japanese had a tradition of cultural borrowing from the Chinese that made it easier for them to learn from the West, and, at the same time, more conscious of their national identity.

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<sup>5</sup> See Victor Lippit, "The Development of Underdevelopment in China," *Modern China*, IV:3 (July 1978), 251–328, and the various papers in the "Symposium on China's Economic History," which discuss Lippit's article and which appear in the same issue of *Modern China*.

<sup>6</sup> A useful survey is Allan Cole's "Contrasting Modernization in China and Japan," *The Chung Chi Journal*, IV:2 (May 1965), 99–138.

The Tokugawa feudal legacy also conferred on Japan certain advantages in modernization. The military samurai leadership more quickly appreciated the superiority of Western military strength than did the civilian Chinese scholar-official elite.<sup>7</sup> In Japan the rigidity of the feudal social structure meant that a merchant was only motivated to do a good job in his own profession (for example, to be a good merchant) and to make his son succeed him as a good merchant. In China, on the other hand, since the route of entry into the elite class of the scholar-gentry was theoretically open to anyone through the examination system, merchants would educate their sons to compete in the civil service examinations; thus entrepreneurial talent might take flight into the gentry class.

The precedence of loyalty to one's superiors in the feudal hierarchy over loyalty to one's own family in the value system of feudal Japan had a stabilizing effect after the abolition of the feudal system with the Meiji Restoration: loyalty was easily transferred to the nation with the emperor as the symbol, and served as the motivating force for the Meiji bureaucrats, entrepreneurs, farmers, and workers alike. In China, on the other hand, filial piety took precedence over loyalty, resulting in nepotism and corruption rather than in national unity in working toward collective goals.<sup>8</sup>

These Weberian interpretations of Japan's success and China's failure at modernization give us a cultural and psychological dimension lacking in the neo-Marxist paradigm and provide us with much valuable insight for understanding the mentality and behavior of Chinese and Japanese political and commercial elites at the onset of modernization. Yet cultural factors are in part the products of the social matrix in which they are operant: in both China and Japan, indigenous politicians and entrepreneurs functioned in an environment increasingly conditioned by exogenous foreign forces. These Weberian socio-cultural theories, however, ignore or downplay the external factors. Marion Levy, for instance, assumes that foreign pressures on China and Japan were virtually identical.<sup>9</sup> This assumption is questionable, since Westerners in the nineteenth century looked to China rather than to Japan for potential markets, were reluctant to invest in Japan during the early Meiji period because of

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<sup>7</sup> John K. Fairbank et al., "The Influence of Modern Western Science and Technology on Japan and China," *Explorations in Entrepreneurial History*, VII:4 (April 1955), 194-7; William W. Lockwood, "Japan's Response to the West: The Contrast with China," *World Politics*, IX:1 (Oct. 1956), 42-3.

<sup>8</sup> Marion Levy, "Contrasting Factors in the Modernization of China and Japan," *Economic Development and Cultural Change*, II (Oct. 1953), 161-97.

<sup>9</sup> *Ibid.*, 161.

rampant inflation, and indeed made no demands through gunboat diplomacy on Japan after the opening of the treaty ports. It is thus plausible to interpret the contrasting development of China and Japan in terms of differing external influences.<sup>10</sup>

Following the lead of Paul Baran and adopting Immanuel Wallerstein's world systems approach, Frances Moulder attributes China's stagnation and Japan's development to differences in their degree of incorporation into the capitalist world economy. Paradoxically, Japan, not China, has moved to the core of the capitalist world economic system because initially it was not as thoroughly incorporated into that system.<sup>11</sup> Moulder's approach merits consideration because it takes into account the international context and outside factors ignored by the culturalist interpretations, but it goes to the other extreme and underplays the importance of internal factors. The state might have played an autonomous role over and above class interests; social values and structures might not have been as similar as Moulder contends and actually might have played a key role in determining the different outcomes of the drive to modernization by China and Japan.

If Japan's leadership during the Meiji Restoration was often divided over the means, it was seldom in disagreement over the national goal: the establishment of an absolutist state that was militarily powerful, economically rich, and capable of retrieving the national honor by winning the abrogation of the unequal treaties. On the other hand, the Chinese leadership during the Tongzhi Restoration and the Foreign Affairs Movement (*yangwu yundong*) was more equivocal. While these men saved the Qing dynasty from domestic rebellion, at the same time they contributed to its long-run decline by centrifugal tendencies that weakened central authority; the regional cooptation of finance, taxation, and military affairs that was permitted during the great rebellions initiated a trend of devolution of power from the late Qing through the Republican period. The industrial and commercial activities of the leaders of the Foreign Affairs Movement did introduce modern enterprise in a number of areas, first in defense, transportation, and communications, and then in consumer and heavy industries. Their jealously guarded monopolistic privileges, however, stifled private Chinese entrepreneurial initiative but did not prevent foreigners from setting up factories, even

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<sup>10</sup> Koya Azumi, "Japanese Society: A Sociological View," in Arthur Tiedemann, ed., *An Introduction to Japanese Civilization* (New York, 1974), 519.

<sup>11</sup> Frances V. Moulder, *Japan, China, and the Modern World Economy* (Cambridge, U.K., 1977).

before such activities were legalized by the Treaty of Shimonoseki in 1895. The Taiping leadership under Hong Rengan, which did envision a far-ranging plan of economic and political modernization as an alternative to Qing bureaucratic capitalism, was ruthlessly exterminated before any of its ambitious programs could be tested. When the Qing government was alerted by defeat in the First Sino-Japanese War and the Boxer debacle to the urgency of institutional reform and bolstering central power, the centrifugal tides could no longer be stemmed. After the 1911 Revolution not Yuan Shikai nor the Beiyang warlords nor the Nationalist government ever achieved more than partial political control; only with the victory of the Chinese Communist party in 1949 was a strong and effective central government established and enabled to pursue the goals of wealth and power, which remain elusive to the present day.

If we are to understand the modernization process in China and Japan as a whole, we must go beyond citing various internal or external factors that might have facilitated or retarded modernization and even beyond weighing the relative importance of internal versus external factors. Rather, we must try to understand the organic links and dynamic interactions between domestic and foreign forces.

### **The Silk Industry as a Test Case**

Both the neo-Marxists and the revisionists agree that imperialism in China exhibited political manifestations, including the display of military power and the employment of metropolitan advisors and supervisory personnel, and had an impact on China's cultural and political values. They disagree fundamentally over the degree of imperialism's economic consequences, which would include:

1. the drainage of wealth from the economies of poor countries by foreigners;
2. foreign employment of labor at wages lower than would obtain in a free bargaining situation, or foreign appropriation of goods at prices lower than in a free market;
3. the transformation of agrarian economies into monocultures dependent on the vicissitudes of foreign markets;
4. foreign businesses' use of their governments' support against weaker local governments to protect and further their material interests;
5. foreign monopoly or monopolies exploiting customers as well as competitors.<sup>12</sup>

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<sup>12</sup> Adapted from Sherman Cochran, *Big Business in China* (Cambridge, Mass., 1980), 202-7.

A case study of the silk industry, the most important export industry of China, in two regions around Canton and Shanghai, the two most important treaty ports, should clarify some of the issues in the debate over the economic impact of imperialism on China. By testing for the presence or absence of the aforementioned economic consequences of imperialism, we hope to measure the impact of imperialism on the Chinese economy.

The silk industry is an important test case for several reasons. First, not only was silk the leading Chinese export commodity until the 1930s, silk-reeling was also the most important Chinese industry before the rise of cotton spinning in the twentieth century. In 1894 about half of an estimated total of 27,000 workers in Chinese-run modern industries and about a fifth of an estimated total of 92,000–98,000 workers in the modern Chinese industrial sector were employed in silk-reeling; 14 of 39 modern industrial enterprises with more than 500 workers were silk filatures.<sup>13</sup> Between 1885 and 1930 exports of silk and related goods accounted for between a fifth and a third of total Chinese exports (see Table 1.1). The expansion of foreign trade (as in the case of Chinese silk) is not necessarily equated with imperialism. But the manner in which Sino-Western trade was opened and conducted, the securing of economic concessions through gunboat diplomacy and even wars, the loss of tariff autonomy (which facilitated the import of foreign goods and the export of raw materials such as silk), and the judicial protection extended to foreigners under the umbrella of extraterritoriality made such trade imperialistic.

Moreover, the activities of the silk industry affected the continuum of the rural and industrial sectors as well as the export sector.<sup>14</sup> An ex-

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<sup>13</sup> GYS, I, 1201–3.

<sup>14</sup> It may be useful at this point to differentiate between the separate phases of the silk industry. The sericulture sector includes the growing of mulberry leaves for the consumption by silkworms, the raising of silkworms to spin the cocoons from which the silk threads are to be reeled, and the preservation of silkworm eggs for the next crop. During the reeling phase, raw silk is reeled directly from the cocoons as a single thread. Raw silk prepared this way may constitute the basic materials for certain weaving processes, or it can go through additional throwing or spinning processes whereby fine silk threads are “twisted and doubled into more substantial yarns.” Waste silk, by-products of the reeling process, may also be spun into a yarn consisting of many short strands twisted together. Raw silk, thrown silk, and spun silk constitute the raw materials for the finishing stages: the silk may be woven on looms, where the warp (longitudinal thread) is first prepared before being crossed by the weft (latitudinal thread), or knit. Finally, the silk products may go through the dyeing and printing processes. For a simple description of these various processes, see Silk and Rayon Users’ Association, *The Silk Book* (London, 1951), chs. III–VIII.



TABLE 1.1  
 SHARE OF SILK AND RELATED GOOD EXPORTS  
 IN TOTAL CHINESE AND JAPANESE EXPORTS,  
 1886-1925

Period	China (percent)	Japan (percent)
1886-1890	36.3	46.5
1891-1895	34.9	44.4
1896-1900	34.6	36.6
1901-1905	34.1	39.4
1906-1910	28.9	37.5
1911-1915	24.5	29.2
1916-1920	21.7	30.9
1921-1925	23.4	45.7

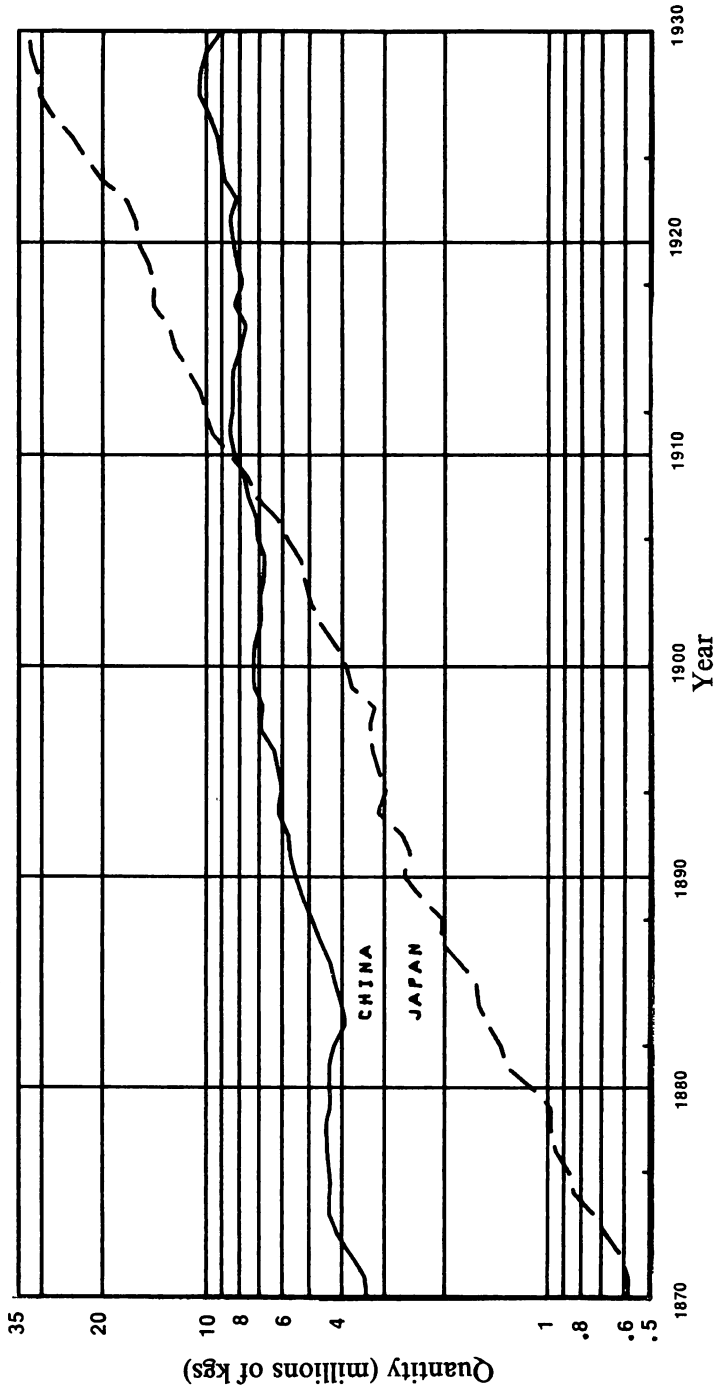
SOURCES: Compiled and computed from Maritime Customs, *Decennial Reports, 1922-31* (Shanghai, 1933), I, 190, Table 3; Liang-lin Hsiao, *China's Foreign Trade Statistics, 1864-49* (Cambridge, Mass., 1974), 22-4; Kenzō Hemmi, "Primary Product Exports and Economic Development: The Case of Silk," in Kazushi Ohkawa, Bruce F. Johnston, Hiromitsu Kaneda, eds., *Agriculture and Economic Growth: Japan's Experience* (Tokyo, 1970), 310.

amination of the linkages and interactions among the various domestic and foreign sectors, should provide some insight into various questions about the effects of industrialization on China, some of which have been suggested by the Nanhai weavers' riot. Was bureaucratic interference a hindrance to the development of industry? Did silk export growth lead to the impoverishment of weavers and peasants? What were the connections between the Chinese entrepreneurs and the foreign sector, and did the latter have any demonstration or inhibiting effects upon the former?

In the context of silk, a comparison with Japan is again appropriate. The Japanese silk industry was China's biggest competitor on the world market from the late nineteenth century on. Although starting from a lower level, Japanese raw silk exports surpassed Chinese exports by the 1900s (see Figure 1.1); by 1929 Japan had more than 60 percent of total world trade in raw silk.<sup>15</sup> Since between 1868 and 1930 raw silk and related goods accounted for 42 percent of total Japanese exports, thus providing foreign exchange earnings needed for capital goods im-

<sup>15</sup> Bacon and Schloemer, 471.

Figure 1.1. Raw Silk Exports from China and Japan, 1870-1930



ports and economic development<sup>16</sup> (see Table 1.1), the success of that industry was an important factor behind Japanese industrialization. While the fate of Chinese and Japanese modernization did not hinge on the silkworm alone, a comparative analysis of the causes behind Japanese success in the silk industry can give us insight into the progress of modernization in both countries.

Recent studies on the Chinese silk industry have either not dealt fully with these important issues or have focused on different problems. Shi Minxiong's brief monograph is restricted to the Qing period and concentrates mainly on the Jiangnan area, neglecting the equally important Canton region.<sup>17</sup> While Shannon Brown's research on a British filature, based on the archives of Jardine, Matheson, is a valuable microeconomic study examining the difficulties in technological transfers, it unfortunately cannot be duplicated for Chinese firms because of the unavailability of company records.<sup>18</sup> Two recent significant studies of the silk industry in the Canton Delta fill in the gaps in our knowledge of that region: Winston Hsieh's magnificent micro study of Luocong, a market town that thrived on silk production and trade, details the links between commercialization and social protests;<sup>19</sup> Alvin So's stimulating dissertation places the political economy of the Canton Delta silk districts in the context of his synthesis of the Marxist class theory and world-system approaches.<sup>20</sup> The most comprehensive study of the silk industry is Lillian Li's meticulously researched *China's Silk Trade*, which emphasizes internal institutional constraints as the explanation for the eventual failure of the Chinese silk industry. Li's monograph is very much in the vein of the revisionist paradigm: she argues that, since foreign investment did

<sup>16</sup> Hemmi, 303, 310.

<sup>17</sup> See his *Qingdai shizhi gongye de fazhan* (Taibei, 1968), which has been translated by E-tu Zen Sun as *The Silk Industry in Ch'ing China* (Ann Arbor, 1974); Sun has also contributed an essay on the subject, "Sericulture and Silk Textile Production in Ch'ing China," in William Willmott, ed., *Economic Organization in Ch'ing Society* (Stanford, 1974), 79–108. Shi's failure to study sources on Guangdong has resulted in misinformation: for example, he mistakenly states that filatures in the Canton Delta were not located near the cocoon-producing areas, and that before 1894 most did not use steam power (Shi, 40).

<sup>18</sup> Shannon R. Brown, "The Ewo Filature: A Study in the Transfer of Technology to China in the Nineteenth Century," *Technology and Culture*, XX:3 (July 1979), 550–68.

<sup>19</sup> Winston Hsieh, "Commercialization and Collective Violence in Rural Kwangtung: The Case of a Local Marketing Community Specialized in the Silk Trade" (Seminar paper, Modern China Project, Center for Far Eastern Studies, University of Chicago, June 1979).

<sup>20</sup> Alvin Y. So, "Gentry and the Capitalist World-System: A Study of the Political Economy of the South China Silk District" (Ph.D. dissertation, Department of Sociology, University of California, Los Angeles, 1982).

not dominate the silk industry and since the beleaguered Qing government lacked the necessary will to reform, imperialism was not the problem. Li concludes that “it might have been better for the stability of the business if more direct foreign investment had been made instead of short-term financing”; in the last analysis, the Chinese, with a self-sufficient and domestic-oriented economy, failed to adopt the necessary steps to compete with the more aggressive and more foreign-trade dependent Japanese.<sup>21</sup> As we shall argue below, however, despite the absence of direct foreign investment the silk trade was not only heavily conditioned by the imperialist framework but also strongly exhibited all the consequences of economic imperialism.

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<sup>21</sup> Lillian M. Li, *China's Silk Trade: Traditional Industry in the Modern World 1842–1937* (Cambridge, Mass., 1981), especially 205–6.

## II

# Chinese Silk Industry and Trade before and after the Opium War

The domestication of silkworms and the production of silk in China date back as far as the Shang dynasty. In the Yellow River Basin (particularly present-day Shandong and eastern Henan), mulberry and silkworm culture was first practiced on a widespread scale during the Han dynasty.<sup>1</sup>

When cotton, whose cultivation had been introduced into the border regions of China as early as around 200 B.C., evolved sometime before the twelfth century from a perennial to an annual species, it became competitive with silk and ramie as a clothing fiber. Since cotton was warmer than ramie and more durable than silk and could moreover be used as padding material, it became the preferred fiber in North China,<sup>2</sup> where from the middle of the Ming dynasty on, the silk industry dwindled into insignificance.

Although Sichuan was already well-known for its silk goods by the first century A.D. (and continues to be an important silk region to the present day), sericulture was not popularized in the south until northern refugees brought with them knowledge of the silk industry from the fourth to sixth centuries on, when North China was occupied by successive waves of nomad invaders. By the founding of the Northern Song dynasty (960–1127), the center of economic activities had already shifted from the more devastated northern region to the south. The center of silk production, too, had moved southwards to present-day Jiangsu-Zhejiang.<sup>3</sup> While the Yellow River basin contributed about one-third of

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<sup>1</sup> Jia Zhifang, *Jindai Zhongguo jingji shehui* (Shanghai, 1950), 236–7.

<sup>2</sup> Kang Chao, *The Development of Cotton Textile Production in China* (Cambridge, Mass., 1977), 4–14.

<sup>3</sup> Zhang Kai, “Woguo canye fazhan gaishu,” *Nongshi yanjiu jikan*, II, 109–18; Chen Zhengxiang, *Zhongguo de cansiye* (The Chinese University of Hong Kong, Graduate School, Geographical Research Centre, Research Report No. 45) (Hong Kong, 1971), 1–3;

the total collected tax on silk goods, the upper and lower Yangtze basins supplied about one half, with the Jiangsu-Zhejiang region alone accounting for close to one-quarter. In silk tribute to the court, the share furnished by the upper and lower Yangtze basins was much higher.<sup>4</sup> Even in the Yangtze Delta, however, cotton cultivation replaced sericulture to a great extent, as it was less time-consuming, had a higher yield per acre, and was more suitable to the needs of the masses. While the silk industry continued to thrive in regions such as Huzhou, its importance declined relative to cotton in Jiangsu-Zhejiang as a whole.<sup>5</sup> Nevertheless, as early as the 1070s or 1080s the trade was organized under the guild system in Suzhou,<sup>6</sup> and by the Yuan dynasty (1271–1368) sericulture in Jiangnan was becoming commercialized; instead of keeping the raw silk that they had reeled from cocoons on hand wheels for domestic weaving, many peasant households sold it to urban weaving households (*jihu*),<sup>7</sup> which carried out production either with family labor or with hired hands in workshops.

The growth and commercialization of silk culture in Jiangnan continued during the Ming dynasty (1368–1644), when silk reeling and weaving techniques had reached the limits of traditional science.<sup>8</sup> If Huzhou was considered the most renowned silk region in the nation, raw silk produced at Qilicun (which gave rise to the generic name for Chinese hand-reeled silk—Tsatilees) was considered the best in Huzhou and fetched the highest prices.<sup>9</sup> Silk and silk goods produced in the Huzhou area were first collected at the town of Shuanglin before being distributed to domestic and overseas markets. East of Huzhou, Puyuan, Wangjiangjing, and Shimen all became important market towns because of their silk trade by the second half of the seventeenth century. Shengze in Wujiang county in South Jiangsu was only a small village of 50–60 households at the beginning of the Ming dynasty; less than two hundred years later it had become a thriving market town dealing in silk fabrics, and by the end of the Ming the number of silk thread brokers numbered

Li Jiannong, *Wei-Jin Nanbeichao Sui-Tang jingji shigao* (Peking, 1959), 194.

<sup>4</sup> Zhang Kai, 118.

<sup>5</sup> Zhang Kai, 125.

<sup>6</sup> Peng Zeyi, "Cong Mingdai guanying zhizao de zhaying fangshi kan Jiangnan sizhi shengchan de shengzhi," reprinted in *Mingdai shehui jingji shi lunji*, III, 63.

<sup>7</sup> Qian Hong, "Yapian zhanzheng yiqian Zhongguo ruogan shougongye bumen zhong de ziben zhuyi mengya," *Zhongguo zibenzhuyi mengya wenti taolunji* (Peking, 1957), I, 240.

<sup>8</sup> Shi Hongda, "Mingdai sizhi shengchanli chutan," reprinted in *Mingdai shehui jingji shi lunji*, III (Hong Kong, 1975), 35–45.

<sup>9</sup> Xie Guozhen, comp., *Mingdai shehui jingjishi xuanbian* (Fuzhou, 1980), I, 43–5.

more than 1,100. Young girls before marriageable age all learned the art of silkworm breeding. As Shengze prospered from its silk trade, it was made the capital of Wujiang county in 1740.<sup>10</sup> At the urban centers of Hangzhou, Suzhou, and Nanking, many fortunes were made in silk weaving.<sup>11</sup>

During the Ming the government was an important factor behind the demand and supply of silk goods, through the court's exaction of silk tribute and through production at the manufactories of the central and local governments, which numbered more than twenty and constituted the largest sector in the industry. These manufactories were staffed with drafted artisans, a class with a hereditary status under Ming law. Initially, employment in the government shops might have provided the artisans with some guaranteed income at a time when the economy was still recuperating from the late Yuan wars. As the economy recovered, however, the system proved unworkable. Official oppression and widening discrepancies between officially set and market prices caused many artisans to abscond. The government was forced to switch to a subcontract system, with a subcontractor (*baolanren*) responsible for distributing silk to and collecting silk goods from weavers working outside the manufactories. After 1628, all official manufactories ceased operations.<sup>12</sup>

The system of subcontracting was revived by the Qing (1644–1911) in 1645 and 1646 in Hangzhou, Jiaying, Huzhou, and Zhenjiang. But even after the reconstruction of the imperial manufactories at Suzhou, Huzhou, and Nanking between 1645 and 1647, the government sector was far smaller than during the Ming and was dwarfed by the private sector by the last half of the eighteenth century. During the Qianlong period (1736–95), the three Imperial Silk Manufactories (*zhizaoju*) at Suzhou, Hangzhou, and Nanking each employed close to 2,000 weavers who worked with about 600 or more frames.<sup>13</sup> But by the late eighteenth century, the government sector accounted for only a fraction of weaving frames in Jiangnan, which numbered more than 30,000 in Nanking and

<sup>10</sup> Cong Hanxiang, "Zhongguo fengjian shehui nei ziben zhuyi mengya zhu wenti," JSBN, IV, 63; *Juqu zhi*, 1689 ed., *juan* 7:4a–b.

<sup>11</sup> Quan Hansheng, "Mingji Zhongguo yu Feilubin jian de maoyi," note 18, 422; "Zhi Mingji zhi Qing zhongye xishu Meizhou de Zhongguo sihuo maoyi," 453–4; and note 10, 456, in his *Zhongguo jingji shi luncong* (Hong Kong, 1972), I.

<sup>12</sup> Peng Zeyi, "Qingdai qianqi Jiangnan zhizao de yanjiu," *Lishi yanjiu* (1963:4), reprinted in JSBN, II, 79.

<sup>13</sup> Jian Bozan, "Lun shiba shiji shangbanqi Zhongguo shehui jingji de shengzhi," in *Renmin daxue Zhongguo lishi jiaoyanshi, Zhongguo zibenzhuyi mengya wenti taolunji*, I, 366–7.

about 4,000 in Suzhou.<sup>14</sup>

The expansion of the private weaving industry in Jiangnan was promoted by the recovery of the domestic economy by the eighteenth century and the rise in demand for silk fabrics, which found markets all over China.<sup>15</sup> This rise in demand for silk fabrics during the late Ming and early Qing stimulated the growth of the sericultural sector. By 1800, Nanking and Suzhou weavers faced insufficient local supply, and had to import raw silk from Hangzhou, Huzhou, and elsewhere in Jiangnan.<sup>16</sup> Especially in overpopulated areas, peasants found sericulture far more profitable—if far more subject to price fluctuations—than rice planting and came to rely on it as the source of income to finance food imports and to provide capital for their regular agricultural pursuits; the fate of rice planting became dependent on the fortunes of sericulture. In the last quarter of the sixteenth century, the percentage of dry land in total cultivated acreage in Jiangnan was still relatively low, and not all or even most of the dry land was devoted to mulberries. But by the end of the Ming, counties like Haiyan, which had not practiced sericulture previously, had turned to it. According to Gu Yanwu, annual rice production in Chongde county of Jiaying prefecture could supply only about eight months of the local residents' consumption. Almost half of cultivated acreage in Chongde (renamed Shimen under the Qing) was devoted to mulberries and other dry crops.<sup>17</sup> Despite the expansion of sericulture, however, most peasants in Jiangnan did not participate in mulberry cultivation and silkworm raising, except in prefectures like Huzhou and Jiaying; the majority of the peasantry continued to rely on rice production as their main occupation.<sup>18</sup>

Although domestic demand had increased, silk continued to be a luxury item. In eighteenth century Jiangnan the social status of an individual could be detected from the quality of his apparel: only upon passing the county examination were young men to assume silk clothing. The silk fabric stores of Kaihua in Zhejiang did not carry whole pieces of

<sup>14</sup> By the 1870s, the number of looms in the imperial manufactories had plummeted to 905, half of total capacity in the eighteenth century. Lillian M. Li (1981), 42.

<sup>15</sup> Qian Hong, 242.

<sup>16</sup> Li Zhiqin, "Guanyu Zhongguo Qingchu zibenzhuji shengchan mengya de fasheng wenti," in Renmin daxue Zhongguo lishi jiaoyanshi, *Zhongguo zibenzhuji mengya wenti taolunji*, V, 598.

<sup>17</sup> Chen Hengli, *Bunongshu yanjiu* (Shanghai, 1963), 5–6, 107–9; Li Zhiqin, "Lun Yapien zhanzheng yiqian Qingdai shangyexing nongye de fazhan," in Renmin daxue Zhongguo lishi jiaoyanshi, *Ming-Qing shehui jingji xingtai de yanjiu* (Peking, 1957), 287–8.

<sup>18</sup> Chen Hengli, 1–2.



silk gauze but only small pieces to make shoes and belts.<sup>19</sup> Thus, the domestic market, although growing, was limited by the nature of the demand.

### **The Rising Importance of the Foreign Market**

From mid-Ming, however, internal market demand was not the primary reason for the expansion of the silk industry; foreign trade had assumed a new importance. The export of Chinese silk had a long history, dating back at least to the Western Han (206 B.C.–A.D. 8), when silk goods were transported along the Silk Route, via the Hexi Corridor and the Tarim Basin overland through Central Asia to the Roman Empire.<sup>20</sup> Yet until the arrival of the Europeans into the China trade, such exports were limited in quantity and to finished goods only, except for the illicit smuggling of silkworm eggs.

From about mid-sixteenth century, the Philippines became the focal point of Chinese-Spanish trade. The Chinese merchants furnished the Spanish residents not only with daily necessities and military supplies, but also with silk and silk fabrics; most of the silk goods were transported by the Spanish for sale in the Americas. In return the Chinese were paid with silver from the Bolivian, Peruvian, and Mexican mines. From the late sixteenth century Japanese silver imports, which had also increased significantly, became at least as important a source of silver for China. The silver, recirculated in China, gradually superseded the over-issued and depreciated copper cash as the medium of exchange and became adopted as the medium of land tax payment as well.<sup>21</sup>

Atwell has argued that by the late sixteenth century China had been drawn into the world economy through this exchange of Japanese and Spanish-American silver for Chinese silk and porcelain: the influx of silver stimulated the whole economy and encouraged regional specialization and the expansion of interregional trade. The decline in silver supply in the seventeenth century led not only to the decline of local silk centers like Huzhou but also to severe deflationary pressures in the Chinese economy and was thus a major factor in the fall of the Ming.<sup>22</sup>

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<sup>19</sup> Cong Hanxiang, 68–9.

<sup>20</sup> Chen Zhengxiang, 2.

<sup>21</sup> For details about the Chinese-Philippines trade, see the two articles by Quan Hansheng cited above, and his “Ming-Qing jian Meizhou baiyin de shuru Zhongguo,” in *Zhongguo jingji shi luncong*, I.

<sup>22</sup> William S. Atwell, “Notes on Silver, Foreign Trade, and the Late Ming Economy,” *Ch’ing-shih wen-t’i*, III:8 (Dec. 1977), 1–33.

Although silver from the Americas continued to be imported into China through at least the early nineteenth century, the depletion of the American mines and the decline of Spain as a maritime power signaled the dwindling of this Sino-Filipino trade. From no later than 1685, when the southern ports were opened by the Kangxi emperor, the British dominated Sino-Western commerce. Silk continued to be an important export commodity through mid-eighteenth century, but after 1700 the export of silk piece goods, though still substantial, declined precipitously from the levels of the last years of the seventeenth century, while exports of raw silk gained in relative importance (see Table 2.1). The shift in

TABLE 2.1  
EXPORTS OF RAW SILK AND SILK GOODS  
BY THE EAST INDIA COMPANY, 1694-1753

	Raw Silk	Silk Goods (no. of pieces)	Port Exported From
1694	—	430,000	Amoy
1697	30 tons	149,000	Amoy
1698	20 tons	650,000	Amoy
1699	—	350	?
1700	695 piculs	—	Canton
1701	200 piculs	7,500	?
1702	1,300 piculs	—	Amoy
1703	300 piculs	—	Amoy
1704	370 piculs	—	Ningbo
1714	43,300 pounds	—	Canton
1717	120 chests	20,750	Canton
1722	200 piculs	10,500	Whampoa
1723	160 piculs	8,150	Amoy & Whampoa
1724	150 piculs	10,000	Canton
1730	145 piculs	—	Canton
1731	600 piculs	16,000	Amoy
1740	20 piculs	11,031	?
1741	28 piculs	11,074	Canton
1750	986 piculs	5,640	Canton
1753	1,192 piculs	1,900	Canton

SOURCE: Chen Zhen, IV, 117-8.

demand was reflected in the faster climb of raw silk prices: between the last years of the seventeenth century and 1747, the price of raw silk rose by 86 percent at Wujiang while the price of damask increased only by 30 percent.<sup>23</sup> The growing demand for raw silk and the lessening demand for silk goods was a consequence of the maturing of the European silk-weaving industry.<sup>24</sup>

In 1759 Anning, the Commissioner of the Imperial Silk Manufactory at Suzhou, recommended in a memorial to the Qianlong emperor a ban on the export of raw silk. He argued that huge purchases of silk by Cantonese and Fukienese merchants in Jiangnan had resulted in a rise in its price and the bankruptcy of many weavers.<sup>25</sup> Possibly, the commissioner was motivated by the difficulty in purchasing raw silk for the manufactory, since official purchase prices were usually lower than market prices, and, according to regulations, could be increased only by a small amount.<sup>26</sup> Taking up Anning's recommendation, the Qianlong emperor banned the export of raw silk; a year later he confined all foreign trade to the single port of Canton. The ban on silk export was lifted two years later, but limitations remained on the type and amount of silk that could be exported by each ship. Under these restrictive conditions the annual export of Chinese silk remained static throughout the last half of the eighteenth century, rarely exceeding 4,000 piculs (see Table 2.2).

At the beginning of the nineteenth century, silk exports, principally to England, did increase at an erratic rate, reaching nearly 10,000 piculs by the 1830s (see Table 2.3). But it was not until after the opening of the five treaty ports of Canton, Amoy, Shanghai, Ningbo, and Fuzhou, that Sino-Western trade in general and Chinese silk exports in particular began to surge (see Table 2.4). Even then the Chinese silk industry still produced principally for a large domestic market, which, rather than the export market, exerted the dominant influences on price.<sup>27</sup> Mulberry production, silkworm raising, and silk reeling were still concentrated in peasant households. Large silk farms<sup>28</sup> were uncommon. Urban weaving shops remained small in scale, generally limited to fewer than twenty hired workers.

<sup>23</sup> Shi Minxiong, *Qingdai sizhi gongye de fazhan* (Taipei, 1968), 22.

<sup>24</sup> Chen Zhen et al., comps., *Zhongguo jindai gongyeshi ziliao* (Peking, 1957), IV, 117-8.

<sup>25</sup> Nishimura Takao, "Chūgoku yu shutsu kinu no seisan kōzō," reprinted in *Chūgoku kankei ronsetsu shiryō*, X:3 (July-Dec. 1968), 626.

<sup>26</sup> Peng, "Qingdai qianqi Jiangnan zhizao de yanjiu," 98-9.

<sup>27</sup> S. Wells Williams, *The Chinese Commercial Guide*, 2nd ed. (Hong Kong, 1863), 137.

<sup>28</sup> Such as the one in the vicinity of Huzhou mentioned by Thomas Allon, "The Manufacture of Silk," *Chinese Repository*, XVI:5 (May 1847), 223-36.

TABLE 2.2  
CHINESE RAW SILK EXPORTS IN THE LAST QUARTER  
OF THE 18TH CENTURY (IN PICULS)

	East India Company	Britain	France	U.S.	Other	Total
1775	2,112	1,196	271		145	3,724
1776	?	965	576		320	1,861*
1777	1,829	1,142	408		340	3,719
1778	1,827	277	390		367	2,861*
1779	1,605	2,027	154		478	4,264
1780	2,514	537	38		502	3,591
1782	776	147	211		181	1,315*
1784	678	141	117		163	1,099*
1785	525	298	423		1,059	2,305
1786	2,889	189	71		416	3,565
1787	2,339				433	2,772
1788	1,877	1,214	73	256	488	3,908
1789	1,620	2,371	118	660	335	5,104
1790	1,527	1,216	120	184	49	3,096
1791	786	954	84	55	121	2,000
1792	1,272	1,764	56	25	217	3,334
1793	762	1,051		36	29	1,878
1794	1,160	1,464		3	75	2,702
1795	711	460			95	1,266
1796	599	1,201		97	77	1,974
1797	453	1,415		63	253	2,184
1798	488	955		61	104	1,608
1799	871	111			152	1,134
1800	827	302		35		1,164

SOURCE: Chen Zhen, IV, 120.

\* Corrected from original totals.

### **The International Background to Silk Export Expansion in the Nineteenth Century**

The unequal treaties from 1842 on established the imperialist framework under which Sino-Western trade was to be conducted. But simply facilitating the export of raw materials from China and the import of manufactured goods into China by depriving the Chinese of their right to set their own tariff schedules did not by itself account for the in-

TABLE 2.3  
CHINESE RAW SILK EXPORTS IN THE  
FIRST THIRD OF THE 19TH CENTURY  
(IN PICULS)

	Britain	U.S.	Other	Total
1801	862	138		1,000
1803	2,437	11	87	2,535
1805	527	55		582
1807	1,126	43		1,169
1809	1,267	14	172	1,453
1811	912			912
1813	2,062			2,062
1815	642			642
1817	2,117			2,117
1819	3,613	507		4,120
1821	6,032			6,032
1823	3,211			3,211
1825	6,985	545		7,530
1827	2,570	267		2,837
1829	5,990	347	130	6,467
1831	8,451	109		8,560
1833	9,920			9,920

SOURCE: Chen Zhen, IV, 122.

crease in exports. Trade in such commodities as raw silk would not increase dramatically until foreign demand rose sharply and intercontinental transportation and communication was made faster and easier. By the beginning of the nineteenth century the nature of demand for silk goods in the West had changed. The spread of purchasing power among the French peasantry due to land reform, for example, boosted the demand for silk products. From the supply side, the invention of the Jacquard loom not only made possible the mechanical weaving of figured silks but also doubled productivity. Between 1825 and 1850, as a consequence of derived demand from silk piece goods, French sericulture reached unprecedented prosperity.<sup>29</sup>

<sup>29</sup> G. S. Boulger, *The History of Silk* (London, 1920), 13-4; Luce Boulnois, *The Silk Road* (New York, 1966), 214; Bacon and Schloemer, *World Trade in Agricultural Products* (Rome, 1940), 452.

TABLE 2.4  
RAW SILK EXPORTS FROM CANTON AND SHANGHAI, 1830-59 (BALES)

Fiscal Year	Canton	Shanghai	Total
1830-33	5,434*	—	5,434*
1834-37	12,497*	—	12,497*
1838-42	3,190*	—	3,190*
1843	1,787	—	1,787
1844	2,604	—	2,604
1845	6,787	6,433	13,220
1846	3,554	15,192	18,746
1847	1,200	21,176	22,376
1848	—	18,134	(18,228)†
1849	1,061	15,237	16,298
1850	4,305	17,243	21,548
1851	2,409	20,631	23,040
1852	3,549?	41,293?	31,925?
1853	4,577	58,319	62,896
1854	—‡	54,233	—
1855	—‡	56,211	—
1856	—‡	79,196	—
1857	—‡	59,986	—
1858	—‡	85,970	—
1859	—‡	67,874	—

SOURCE: H. B. Morse, *The International Relations of the Chinese Empire* (London, 1910), I, 366, Table F.

NOTE: Figures for Canton include shipments of silk produced at Canton but shipped from Hong Kong. The conventional equivalent of a bale is 133 1/3 lbs. or 60 kgs. for Shanghai, and 106 2/3 lbs. or 48 kgs. for Canton.

? Figures from source do not add up correctly.

\* Annual average.

† Based on insufficient and unsatisfactory data.

‡ Silk originating from Canton and Shanghai but exported from Canton inextricably mixed.

From 1854 on, however, the silkworm crops of Europe were devastated by pebrine, a silkworm disease caused by microorganisms and analogous to consumption in humans. In 1855, total cocoon crops in France still amounted to 19.8 million kilograms; thereafter output fell drastically, to 7.5 million kilograms in 1856 and 5.5 million kilograms in 1865. In that year the French government asked Louis Pasteur to investigate the cause of the epidemic and to seek its remedy. After five years

of painstaking research, Pasteur found the cause and the solution: cellular incubation.<sup>30</sup> But even with the checking of the epidemic and the importation of huge quantities of Asiatic eggs, French sericulture never recovered; mulberry trees had been left to die by the hundreds of thousands. Later government efforts to promote sericulture by a system of bounties proved ineffectual.<sup>31</sup> After 1876, fresh cocoon production never exceeded 10.6 million kilograms; it declined drastically after 1909, averaging 5.0 million kilograms per annum for 1910–14.<sup>32</sup>

Even as French sericulture suffered, however, French silk-weaving continued to prosper.<sup>33</sup> Under the Second Empire (1852–70) France was once again the center of European fashion, and in 1860 the first large silk mill utilizing power looms under the factory system was established at Adlismeil in Switzerland, and the new technology soon spread to France and other parts of the Continent. In that same year the Cobden Treaty sealed the doom of the British silk-weaving industry by opening it to French and Italian competition through the abolition of British silk import duties, which had been set at 15 percent ad valorem.<sup>34</sup> France soon became the world's leading producer and exporter of woven silk goods. In 1874 the country consumed about one-third of the world's total supply of raw silk; at the same time, however, it had to import about two-thirds of its needs.<sup>35</sup>

The American silk-weaving industry was furthered at about the same time, but unlike the French industry, through the erection rather than the abolition of a tariff wall against silk goods. The levying of a war duty on all silk goods as one of the federal measures to raise revenue to finance the Civil War in 1861 proved to be a boon to the burgeoning American silk-weaving industry centered at Patterson, New Jersey, and South Manchester, Connecticut. In 1864 the tariff on silk goods was raised to 60 percent, while beginning in 1865, raw silk was admitted free of duty. The growth of the silk-weaving industry was rapid between 1870 and 1890, although up to 1880 domestic production could supply

<sup>30</sup> Pierre Clerget, *Les industries de la soie en France* (Paris, 1925), 11; Boulger, 14. The name pebrine was given by Pasteur to the disease from "pebre," the provençal name for pepper.

<sup>31</sup> William F. Leggett, *The Story of Silk* (New York, 1949), 274; Bacon and Schloemer, 450.

<sup>32</sup> Computed from République française, Statistique générale de la France, *Annuaire statistique*, LI (1935) (Paris, 1936), 85.

<sup>33</sup> Bacon and Schloemer, 452.

<sup>34</sup> Matsui, 30.

<sup>35</sup> Computed from Ishii Kanji, *Nihon sanshigyō shi bunseki* (Tokyo, 1972), 20.

only a small portion of home demand.<sup>36</sup> As the United States became an industrial power, the rise in purchasing power and the demand for silk goods, in conjunction with import restrictions, stimulated the domestic weaving industry. At the same time, the scarcity of labor also prompted the industry to become mechanized. The number of power looms in the United States increased about tenfold between 1874 and 1890, from 2,077 to 20,822, and more than doubled again during the next decade, reaching 44,527 by 1900.<sup>37</sup> Raw silk consumption increased 16 times between 1874 and 1910.

Even more than the French industry, the American had to import virtually all the raw silk it needed. The numerous attempts during the nineteenth century to raise silkworms in the United States failed, not because of the unsuitability of the soil and climate for the cultivation of mulberries and silkworms, but because of prohibitively high labor costs in a labor-scarce economy.<sup>38</sup> Even to the present, sericulture has defied mechanization and requires vast amounts of human labor. Although mechanical reeling of cocoons is possible, human labor has yet to be successfully replaced by machines as incubators, brooders, and feeders.<sup>39</sup>

Clearly neither the French nor the American industries could have developed in the absence of a secure supply of raw silk. The rise in French and American demand for raw silk led to an upsurge in Chinese exports and changes in the mode of production. In the first half of the nineteenth century the sericultural sector of France had supplied most of the needs of its weavers. It was not until 1852 that Lyon, the center of French silk-weaving, bought 85 bales of silk directly from China. Thereafter, the pebrine epidemic forced France to seek foreign sources of raw silk, and during the 1860s the country depended on the Levant to supply its needs. However, this source was curtailed by the spread of pebrine to the whole of Europe and the Near East by 1864. Thereafter Sino-French trade relations increased rapidly. While in 1865 only 15 percent of silk registered at the Lyon Conditioning House came from China, in 1880 the proportion rose to 38 percent.

Contrary to the opinions held by other scholars of European imperialism, Laffey has argued that the main motivation for French expansionism in the Far East in the nineteenth century was economics, not national pride. The Lyon Chamber of Commerce sought not only to secure

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<sup>36</sup> Matsui, 30–1.

<sup>37</sup> Matsui, 34.

<sup>38</sup> Leggett, 337.

<sup>39</sup> Leggett, 16–7.



a reliable supply of East Asiatic silk but also to open the China market to offset the trade deficit. The French government worked closely with the Lyon silk interests and objected vigorously and successfully to the proposal in the Alcock Convention in 1869 to raise silk export duties. In 1894 the French consul in China reported to Lyon on Sichuan silk production. Tonkin became an object of acquisition as a gateway to China. The chamber sponsored an exploration of the Tonkin in 1884 and an expedition to Yunnan in 1895, as well as a report on the Japanese silk industry in 1895. In 1896 the chamber held a reception for Li Hongzhang on his world tour, and railway and mining concessions were discussed.<sup>40</sup>

In the United States by the 1870s, free duty and the prospering of the domestic weaving industry combined to spur an upsurge in Chinese raw silk imports. In 1869 imports from China amounted to 102,000 pounds; a decade later this figure had increased tenfold.<sup>41</sup>

The expansion of Chinese exports to France and the United States was facilitated by the revolution in transport and communications between east and west in the second half of the nineteenth century. In 1867 the opening of direct service to China by the Pacific Mail Steamship Company made possible the direct import of raw silk into the United States from the Far East.<sup>42</sup> In 1869 the Suez Canal was completed; the nautical distance between Europe and China was cut by one quarter, and the displacement of clippers by steamboats, which traveled at twice the speed, was accelerated. At the instigation of the Chamber of Commerce of Lyon, the French government created a steamship line in the China seas, the principal freight of which was bales of raw silk. In 1871 the completion of the Far Eastern section of the submarine telegraph cable, linking Shanghai, Hong Kong, and Singapore, put Shanghai into direct telegraphic communication with London, which was the center for the distribution of Far Eastern silk to Europe. However, with the eclipse of the British weaving industry, Lyon supplanted London as the central market for the distribution of Asiatic silk by 1880.<sup>43</sup>

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<sup>40</sup> John Laffey, "Les racines de l'impérialisme français en Extrême-orient, à propos des thèses de J. F. Cady," *Revue d'histoire moderne et contemporaine*, XVI (April-June 1969).

<sup>41</sup> Figures from U.S. Department of Commerce, annual reports, *Commerce and Navigation of the U.S.*

<sup>42</sup> Leggett, 338.

<sup>43</sup> Wang Jingyu, "Shijiu shiji waiguo zaihua yinhang shili de kuangzhang ji qi dui Zhongguo tongshang kouan jinrong shichang di kongzhi," *Lishi yanjiu* (1963:5), reprinted in JSBN, IV, 310; Silk Association of America, 3rd Report (1875), 61; T. R. Banister, "A History of the External Trade of China, 1834-81," *Decennial Reports, 1922-31*, 173; Beauquis, 473; Rawley, 330-1.

Another exogenous factor that favored the expansion of Chinese exports in general was the decline in the price of silver relative to gold from the second half of the nineteenth century to the early twentieth century.<sup>44</sup> Since Chinese currency was silver-based, this fall meant its devaluation and the lowering of the prices of Chinese goods on the foreign market, thereby boosting demand for them.<sup>45</sup>

### **Disruptions and Expansion of Silk Exports**

Despite these favorable exogenous factors, however, Chinese silk export trade was disrupted by internal and foreign wars from the second half of the nineteenth century on. Ironically, the Taiping upheaval initially caused a boom in raw silk exports; the destruction of looms at Nanking and at other Jiangnan weaving centers and the curtailment of home demand rechanneled the surplus raw silk into the foreign market. In 1851, 20,631 bales were exported from Shanghai; by 1855, the total had jumped to 56,211 bales. In 1858 total exports reached almost 86,000 bales (see Table 2.4). But eventually, widespread devastation of mulberries in the Jiangnan region during the Taiping upheaval took its toll on the silk trade (see Table 2.5). During the 1860s raw silk exports stagnated. It was not until around 1879 that exports recovered the former high level of about 86,000 piculs, attained in 1858. Five years later the outbreak of the Sino-French War put a brake on exports. After 1885, however, raw silk exports expanded more or less steadily under the stimulus of rising foreign demand (see Figure 2.1).

Customs statistics are among the more reliable ones available for the quantitative study of the economic history of China. Nonetheless, exports might well have been undervalued, particularly for the period before the last decade of the nineteenth century. Before the opening of two customs houses at Kowloon and Lappa in 1887, most of the China-Hong Kong trade escaped duty collection by the Inspectorate General of Customs because it was carried on in native crafts under license by the native customs authorities.<sup>46</sup> Much of the silk produced in the Canton region possibly found its way on Chinese junks to Hong Kong and from there overseas. With this reservation in mind, we can conclude that expansion in silk exports must have begun no later than 1890, and probably quite some time before.

<sup>44</sup> Banister, 97.

<sup>45</sup> Between 1869 and 1915, the exchange rate of the Haiguan tael fell from U.S.\$1.60 to \$0.62. Hsiao Liang-lin, *China's Foreign Trade Statistics, 1864-1949* (Cambridge, Mass., 1974), 190-1, Table 9a.

<sup>46</sup> C. F. Remer, *The Foreign Trade of China* (Shanghai, 1926), 44.

TABLE 2.5  
RAW SILK EXPORTS FROM CANTON AND SHANGHAI, 1859-71

	Quantity (piculs)	Value (1000 taels)	Average Price at Shanghai (taels/picul)
1859*	52,400	17,549	340
1860	62,800	21,810	355
1861	51,400	17,768	350
1862	61,400	23,857	400
1863	30,200	10,121	350
1864	23,800	9,455	410
1865	40,900	16,405	420
1866	30,900	14,226	500
1867	39,300	15,724	400
1868	50,800	24,421	480
1869	43,800	19,080	435
1870	45,800	21,272	465
1871	55,900	25,174	450

SOURCE: Maritime Customs, *Decennial Reports*, 1922-31, I, 91.

\*Canton only.

As late as 1885 tea had contributed close to one half the value of all Chinese exports. But in 1887 silk (37 percent of total value) overtook tea (35 percent) as the leading export. Thereafter the tea trade declined drastically, and after World War I it accounted for less than 5 percent of the value of all Chinese exports. Silk, on the other hand, accounted for 30-40 percent of Chinese exports until just before the 1911 Revolution; after 1900 its share in total exports declined gradually, as exports of other commodities expanded more rapidly, but even as late as the 1920s its share was between one-quarter and one-fifth (see Table 1.1). Throughout the period 1882-1931 manufactured silk goods represented no more than one fifth of the value of all silk exports; it was principally the expansion of raw silk exports that kept silk in its leading position in China's foreign trade sector until the 1930s. •

Between 1890 and 1929 raw silk exports rose from about 80,000 piculs to an all-time high of about 190,000 piculs, a more than twofold increase. To what extent this steady, 2 percent per annum rise in exports reflected an increase in domestic production rather than a diversion from

the needs of domestic weaving is a question that cannot be answered with any statistical precision. Time series of silk production are lacking, with the exception of the one extracted from the statistical annals of the Ministry of Agriculture and Commerce under the Peking warlord (Beiyang) governments between 1914 and 1921 (see Table 2.6).

TABLE 2.6  
SILK PRODUCTION STATISTICS OF THE MINISTRY  
OF AGRICULTURE AND COMMERCE, 1914-21

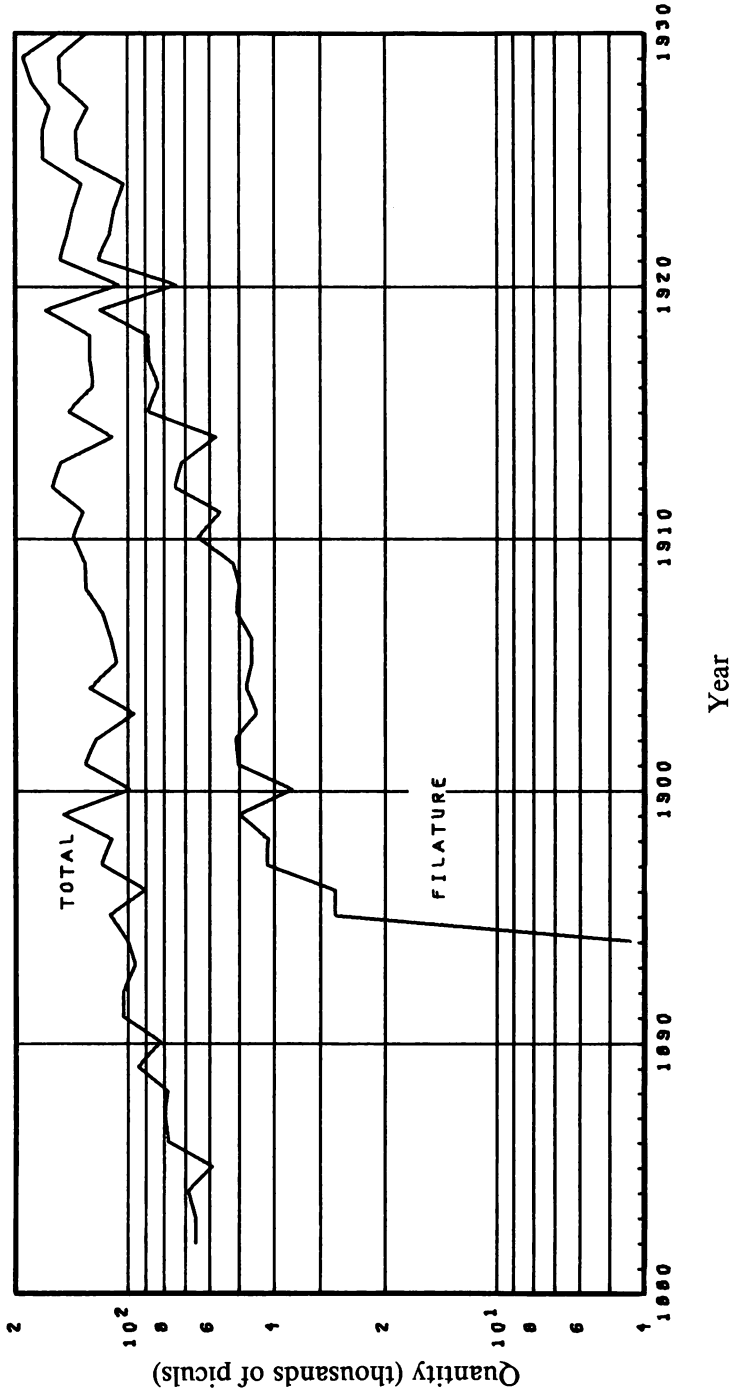
Year	Mulberry Acreage (1,000 <i>mu</i> )	Production		Cocoons/Silk (1,000 piculs)	Number of Provinces
		Cocoons (1,000 piculs)	Silk		
1914	4,290	14,935	731	20.4	24
1915	5,393	5,806	5,043	1.2	23
1916	13,642	2,565	545	4.7	21
1917	13,519	9,051	358	25.3	22
1918	4,276	2,089	302	6.9	20
1919	2,487	1,894	304	6.2	12
1920	2,468	1,291	178	7.3	10
1921	2,281	1,173	168	7.0	6

SOURCE: Adapted and computed from D. K. Lieu, *China's Industries and Finance* (Peking, 1927), 90.

Unfortunately, Beiyang government statistics are notoriously inaccurate, plagued by incomplete reporting due to the lack of centralized control over the provinces and filled with gross errors in compilation and computation. This series is no exception. To begin with, more and more provinces did not report. These defaulters included several important silk-producing provinces: Sichuan beginning in 1915, Guangdong in 1918, and Zhejiang in 1921. Thus, not only are the years not complete, they are not even comparable: there are differences in breadth of coverage, and often one or more important silk regions are omitted. Moreover, as D. K. Lieu has pointed out, there were many obvious errors in compilation and reporting: silk production in Jiangsu was reported as 11 million catties in 1914 and 447 million catties in 1915, while for these same years cocoon production in thousands of catties was reported as 997 and 67 for Zhejiang, 207 and 0 for Yunnan, and 45 and 234 for Jiangsu.<sup>47</sup> Nor are the statistics for any single year self-consistent, as

<sup>47</sup> Lieu, 90.

Figure 2.1. Raw Silk Exports from China, 1882-1930



computation of the weight ratio of cocoons to silk reveals: normally the ratio should be about 15, but only that for 1914 is reasonably close.

Thus, we are forced to fall back on the estimates by various foreigners who did on-the-spot investigations of Chinese sericulture at various dates—Natalie Rondot, a French silk expert who toured China from 1873 to 1875; Jierboman, a German who surveyed Chinese sericulture in 1898; Akeda Hirome, sent to China by the Japanese Ministry of Agriculture, Commerce, and Industry in 1918; the Shanghai International Testing House in 1925; and Uehara Shigemi, an official of the Central Organ of the Japanese Silk Industry Association stationed in China until 1927 (see Table 2.7). The estimates of Akeda and Uehara appear to be the most carefully worked out.<sup>48</sup> Even their figures, however, are subject to wide margins of error; computations were usually based on quantities of silk or cocoons exported from the region as determined by transit tax receipts, which may well be underreported, and on assumed proportions exported.

From these estimates, and with the assumption that the overall ratio of cocoons to silk by weight is 15 to 1, we estimate that silk production was about 10 million kilograms in 1875, 11 million kilograms in 1898, 12 million kilograms in 1918, and 15 million kilograms in 1927. Comparing these estimates to export figures, the proportion exported was about 40 percent in 1875 and around 60 percent at the three later dates.<sup>49</sup> These figures suggest that silk production might have increased at the rate of about 1 percent per annum between 1875 and 1927 and that the proportion exported might have risen to about 60 percent between 1875 and the turn of the century, stabilizing at that level thereafter; if so, then exports might have expanded at the expense of domestic weaving in the last quarter of the nineteenth century, but rise in domestic production was about commensurate with the rise in exports after about 1900. However, the large margins of error preclude any determinate conclusions. Moreover, there may be wide regional variations. The question of the impact of export growth on silk weavers cannot be settled with macroeconomic statistics, but we hope to answer it later with the help of local qualitative and quantitative information.

<sup>48</sup> For details of Akeda's estimate, see Chen Zhongmin, pt. II, 2-4; an excerpted translation of Chen's chapter on silk appears as "The Silk Export Trade of China," *Chinese Economic Journal*, III:5 (Nov. 1928), 942 ff. For details of Uehara's estimate, see Uehara Shigemi, *Shina sanshigyō taikan* (Tokyo, 1929), 10-5.

<sup>49</sup> Most estimates of proportion of raw silk exported range from 45 percent to 55 percent, but they are at best informed guesses. See for example Fujimoto Jitsuya, *Shina sanshigyō kenkyū* (Tokyo, 1943), 5-6.

TABLE 2.7  
VARIOUS ESTIMATES OF CHINA'S SILK PRODUCTION (1,000 PICULS)

Province	c. 1875 Silk	c. 1898 Cocoon	c. 1918 Cocoon	c. 1925 Cocoon	c. 1927 Cocoon	Silk
Zhejiang	63.5	1,017	877	1,000	1,140	89
Jiangsu	21.2	350	267	350	545	31
Anhui	0.8	30	30	30	97	6
Hubei	6.1	102	100	100	123	9
Sichuan	15.8	317	640	600	468	35
Shandong	1.9	45	70	60	110	8
Guangdong	44.3	717	768	1,000	1,057	67
Henan	7.8	142	—	100	43	3
Others	1.8	99	28	90	79	4
	163.2	2,819*	2,994†	3,330*	3,662	252

SOURCES: Rondot's estimates for c. 1875 converted into piculs from Zeng Tongchun, *Zhongguo siye* (Shanghai, 1933), 79; Jierboman's estimates for c. 1898 and Akeda's estimates for c. 1918 from Chen Zhongming, *Jinshi Zhongguo maoyi tongzhi* (Shanghai, 1927), pt. II, 4; Shanghai's International Testing House's estimate for c. 1925 from *A Survey of the Silk Industry of Central China* (Shanghai, 1927); Uehara's estimates for c. 1927 from Uehara Shigemi, *Shina sanshigyō taikan* (Tokyo, 1929), 10–5.

NOTE: Rondot's total is slightly below 10.6 million kgs., or 175,000 piculs, the total of his estimates published in Maritime Customs, *Silk*. However, I have used the figures from Zeng because they are broken into provincial subtotals clearly. The discrepancy between the two sets of Rondot figures is probably due to the possibility that the figures from Zeng were earlier ones, prior to revision as published in *Silk*.

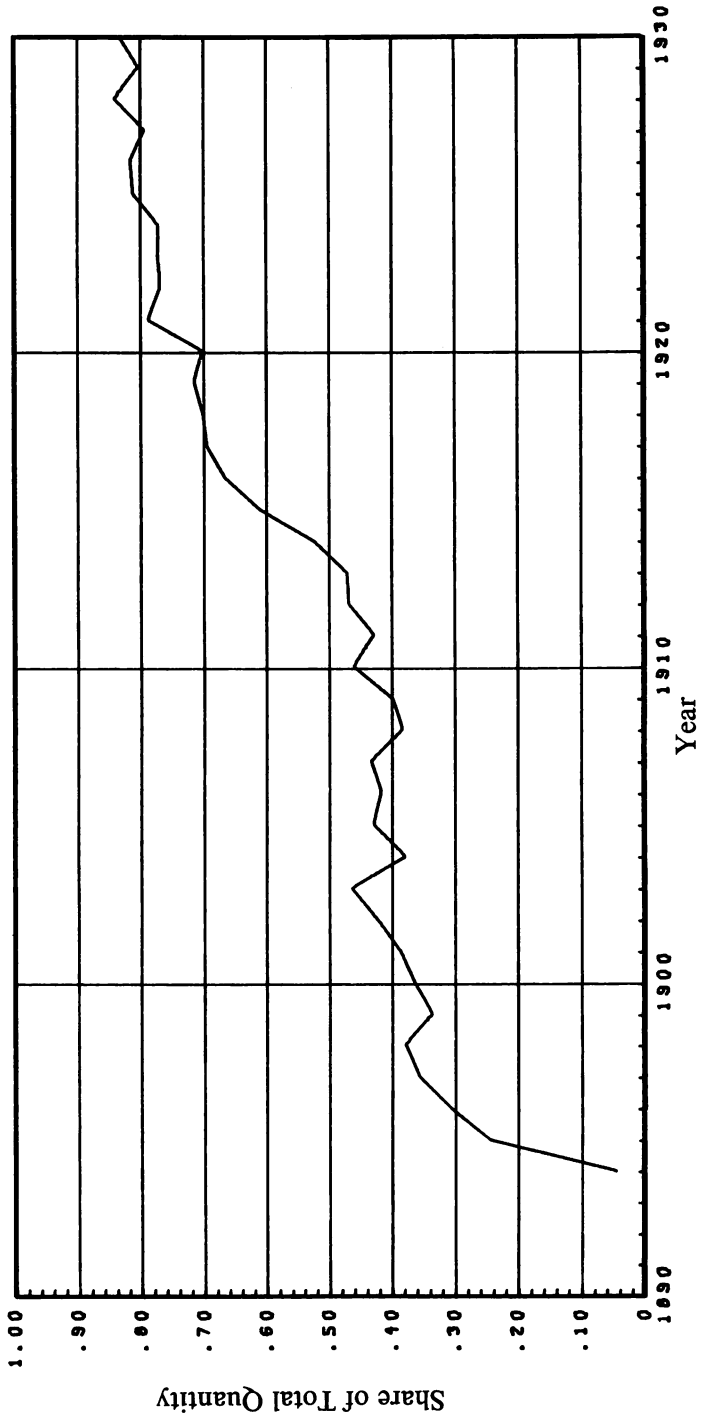
\* Corrected from the original total of 2,833.

† Individual figures add up only to 2,780; the discrepancy is probably due to Akeda's failure to report his estimate for one or more provinces, since his figure for the other provinces (28 piculs) is much lower than the corresponding figure of any other estimate.

Even more significant than the rise in quantity of exports and production was the structural change in the silk-reeling industry as indicated by the rise in the proportion of filature silk in total Chinese raw silk exports (see Figure 2.2). This change was prompted by the demands of the foreign weaving industry, for Chinese silk hand-reeled by traditional methods lacked the uniformity in quality, thickness, and cleanliness required for mechanized weaving.

Just as in the cotton industry steam power was used earlier in spinning than in weaving, so too in the silk industry, power was applied to reeling before weaving. Soon after its invention, the steam engine was

Figure 2.2. Share of Steam Filature Silk in Total Chinese Raw Silk Exports, 1894–1930





adapted for silk reeling, and in 1785 the first steam filature was established in Europe.<sup>50</sup> From the 1830s steam filatures became widely established in France;<sup>51</sup> by 1850, there were about 600 filatures with about 30,000 reels. However, this sector declined alongside sericulture. By the early 1880s total production capacity fell below half the level that it had been before the epidemic in the 1850s.<sup>52</sup> If the French silk-reeling industry declined to a point where it could supply only a minuscule portion of its weavers' demand, in the United States reeling was never even established.

In response to the foreign demand for a higher quality silk, steam filatures were founded in China in the late nineteenth century. Filature silk first appeared as a separate entry in the *Returns of Trade* of the Imperial Maritime Customs in 1894. In fact, the abrupt rise of filature silk exports in the 1890s was exaggerated because data were either incomplete or nonexistent; steam filatures began producing for export in Guangdong in the 1870s and in Shanghai around 1880. Nonetheless, the trend of the rising proportion of filature silk in total silk exports was a real one. Except for the decade 1903–1913, this rise continued unabated; by 1930 steam filature silk accounted for well over 80 percent of all raw silk exports.

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<sup>50</sup> Tsing Tung Chun, *De la production et du commerce de la soie en Chine* (Paris, 1928), 70.

<sup>51</sup> Clerget, 20.

<sup>52</sup> République française, *Annuaire statistique*, LI (1935), 85.

### III

## The Growth of Silk-Reeling in Guangdong and Shanghai

The first steam filature in China was established in 1861 at Shanghai by the prominent British import-export firm of Jardine, Matheson and Company. Despite producing superior quality silk which sold at higher prices than European silk on the British market, the Ewo Filature was hampered by difficulties in securing a reliable supply of high-quality cocoons, in large part because of opposition from the guild of Chinese silk merchants. Moreover, the efforts of its manager, John Major, to promote the use of steam power in silk-reeling by demonstrating its advantages were unsuccessful. After Major's death in 1869 while collecting cocoons near Jiaying, Jardine, Matheson decided to close the filature, which lost HK\$276,000 during the dozen years of its existence.<sup>1</sup>

In 1866 a small foreign filature of ten reels, probably of French origin, was set up at Shanghai, but it moved to Japan after a few months. It was not until 1878 that another filature was founded at Shanghai, this time by the American import-export firm of Russell and Company. A French silk expert, Paul Brunat (1840–1908), was hired as the manager of the Kee Chong Silk Filature.<sup>2</sup> In 1881 the first Chinese filature at Shanghai, Chang Kee, was inaugurated on the north bank of the Suzhou River by Huang Zuoqing (?–1903).<sup>3</sup> In that year Jardine, Matheson made a second effort and reestablished the Ewo Filature. The Kee Chong Filature doubled its capacity and hired additional Italian techni-

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<sup>1</sup> Shannon Brown, "The Ewo Filature: A Study in the Transfer of Technology to China in the Nineteenth Century," *Technology and Culture*, XX:3 (July 1979), 550–68.

<sup>2</sup> GYS, I, 65–9; Sun Yutang, *Zhong-Ri jiaowu zhangzheng qian waiguo ziben jai Zhong-guo jingying de jindai gongye* (Shanghai, 1955), 23. Brunat had served as the manager of the Tomioka Filature, a model plant set up by the Japanese government in 1872. In 1884 he was sent by the Lyon Chamber of Commerce to explore the Tonkin (Laffey, 289).

<sup>3</sup> GYS, I, 971.

cians and supervisors. The British firm of Iveson and Company too set up a filature.<sup>4</sup>

As in the 1860s, the establishment of the filatures in the early 1880s aroused the opposition of the Chinese silk merchants, who feared that they would be losing the lucrative silk export trade to the filatures; they argued against the filatures not in terms of their self-interest, but on the grounds that the welfare of the rural silk producers would be endangered. In 1882 an advertisement denouncing the filatures was taken out in Shanghai's *Shenbao*.<sup>5</sup> The author charged that the silk filatures were robbing the peasants of profits from silk-reeling, insinuated that the residence of woman filature workers at Shanghai would lead to immoral practices, appealed to the self-interest of the officials by claiming that the filatures were evading taxes on cocoons, and urged that the factories be shut down.

This attack triggered an immediate editorial rebuttal in *Shenbao*. The rebuttal refuted the idea that the filatures were siphoning off profits from China: the displacement of Chinese silk by foreign silk on the international market was due to the latter's higher quality, lower tax burdens, and production costs; only if the Chinese were to establish filatures manufacturing good quality silk could profits lost to foreign competition be recouped and the possibility that foreigners would begin to export Chinese cocoons overseas be forestalled. As for taxes, large quantities of silk had been evading them anyway.<sup>6</sup>

In a further series of editorials in *Shenbao* in 1882, the establishment of filatures at Shanghai was vigorously defended. The idea that filatures displaced workers in the interior was rejected. It was pointed out that only three filatures were operating, each employing at most 300 workers; moreover, sericultural households in the hinterlands would like to expand their cocoon production but had been discouraged from doing so for a number of reasons: since the interval of time between the end of the silkworm season and the beginning of rice planting was short, reeling silk from large quantities of cocoons could lead to the neglect of farming; besides, the sericultural households were reluctant to hire the additional workers needed to reel silk because of the latter's high wage and extravagant food demands. With the filatures demanding more cocoons, the money that would have gone to hiring additional reelers could be used

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<sup>4</sup> GYS, I, 69–71, 971.

<sup>5</sup> "Jichi saosi wei hai lun," advertisement in nos. 3262 and 3263 of *Shenbao* (June 2 and 3), 1882.

<sup>6</sup> *Shenbao*, no. 3264 (June 4, 1882), 1.

by the sericultural families to purchase mulberry leaves and thus raise more silkworms; since they would be selling the cocoons rather than reeled silk, they would not have to worry about the interference of reeling with farming. Finally, the filatures provided work for both Shanghai women and unemployed workers in the interior.<sup>7</sup> If indeed the filatures did damage the silk industry, sericultural families always had the option of keeping the cocoons for their own use. That the buyers from the filatures never returned empty-handed from their trips to Jiaying and Huzhou proved that the peasants did not think that the filatures were taking away their profits. Those who argued that the filatures caused injury to the sericultural households were not peasants, said the editorial, but silk merchants, whose ability to hoard silk would be compromised if cocoons were sold to filatures at Shanghai and the quantity of silk production became known. Drawing the analogy between sericultural households and farming families on the one hand and silk merchants and rice merchants on the other, the *Shenbao* editorialist invoked the Confucian argument that rulers should seek the welfare of all the people and not that of a few individuals and one profession; since antiquity those caring about the benefits to the people looked after the interest of the farmers but not the rice merchants. Besides, the losses and bankruptcies of the silk merchants were due not to the filatures but to their overstocking and the refusal of the foreign merchants to buy. Institutions must change over time; Western goods and methods could not be prevented from coming into China and being taught to the Chinese; Western machinery had benefited the West and could not harm China. The importation and adoption of machines in general and the establishment of mechanized silk-reeling factories were thus good.<sup>8</sup>

Thus, the antifilature group appealed to the Confucian duty and self-interest of the officials, while the profilature group also based their argument on a Confucian policy, that of “emphasizing the peasants and suppressing the merchants” (*zhongnong yishang*): mechanization was defended on the grounds that it would not only benefit the peasants but also promote agriculture.

The controversy over the establishment of filatures at Shanghai took place during a series of diplomatic attempts from 1881 by the Zongli Yamen (Office for General Management), the Qing diplomatic office created in 1861, to negotiate the closure of the illegally opened

<sup>7</sup> “Jichi saosi suo,” *Shenbao*, no. 3151 (Feb. 5, 1882), 1; “Yue xiyou lun saosiju shu hou,” *Shenbao*, no. 3443 (Nov. 30, 1882), 1.

<sup>8</sup> “Zai lun jichi saosi,” *Shenbao*, no. 3446 (Dec. 3, 1882), 1.

foreign enterprises in China in an effort to preserve Chinese official monopolies in the modern industrial field. In 1882 Zuo Zongtang, then serving as the governor-general of Jiangsu-Anhui, ordered the Shanghai *daotai* (Circuit Intendant) to negotiate the closing down of several foreign industries in Shanghai. Although the opening of an American cotton mill and a British silk mill was prevented, the foreign establishments continued their operations.<sup>9</sup>

In 1884 another Chinese filature, Kunji, was founded with a capitalization of 240,000 taels and 232 reels. Yet progress was extremely slow: from 1882 to 1887, Chang Kee, Ewo, and Iveson filatures all suffered heavy losses. After 1887 business conditions began to improve, and Huang Zuoqing was able to expand his Chang Kee filature considerably, from 100 to about 900 reels. But in 1891 only three filatures remained in operation: Ewo, Chang Kee, and the Shanghai Filature Company,<sup>10</sup> which was reorganized from the Kee Chong Filature after the closure of its parent firm, Russell and Company. Brunat, who had managed the latter enterprise, became the chief new owner. In 1892 some Americans established the Qiankang Filature with 280 reels but sold it to Chinese merchants soon after. In 1893 a group of Frenchmen founded the Sin Chong Filature Company with 530 reels and capitalization of 530,000 taels.<sup>11</sup> Three more Chinese filatures were organized in 1893 and 1894. By 1896 there were 27 filatures in Shanghai, with about 4,000 reels and a production of some 13,000 piculs of silk per annum.<sup>12</sup>

Capacity remained little changed until about 1907, after which year the number of filatures and the number of reels rose slowly until after the onset of World War I (see Figures 3.1 and 3.2). As the industry expanded, the Steam Filatures and Cocoon Merchants Guild of Jiangsu-Zhejiang-Anhui was formed in 1910, with headquarters at Shanghai and branch offices in all important cocoon counties of the three provinces. Besides regulating affairs within the trade, the guild also handled communications with the foreign merchants and negotiations with the central and provincial governments regarding taxes and regulations.<sup>13</sup>

The 1920s was the next and the last period of expansion of Shanghai filatures, which numbered more than 100 by the end of the decade. With the deepening of the world depression, the increasing com-

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<sup>9</sup> Sun Yutang, 24-5.

<sup>10</sup> GYS, I, 971-2.

<sup>11</sup> Sun, 73-4.

<sup>12</sup> GYS, II, 963.

<sup>13</sup> Ralph E. Buchanan, *The Shanghai Raw Silk Market* (New York, 1929), 41-2.

Figure 3.1. Number of Silk Filatures in Shanghai, 1890-1935

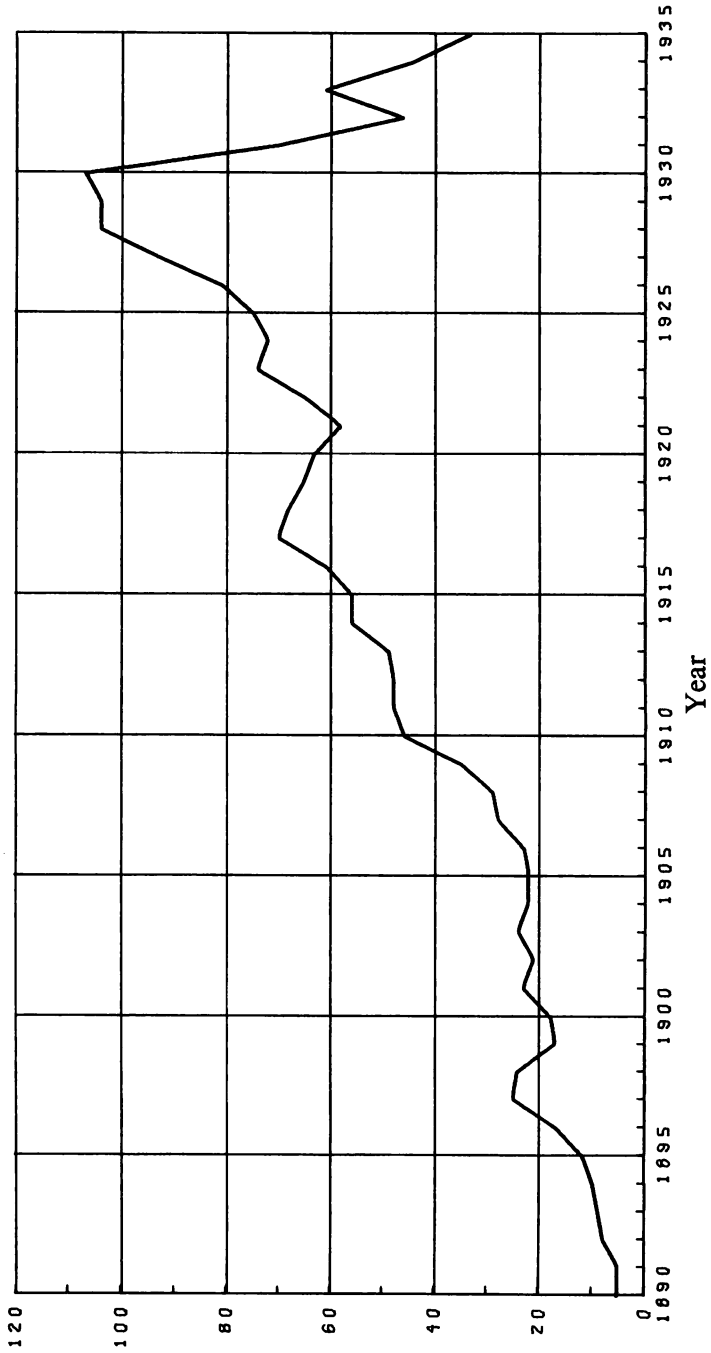
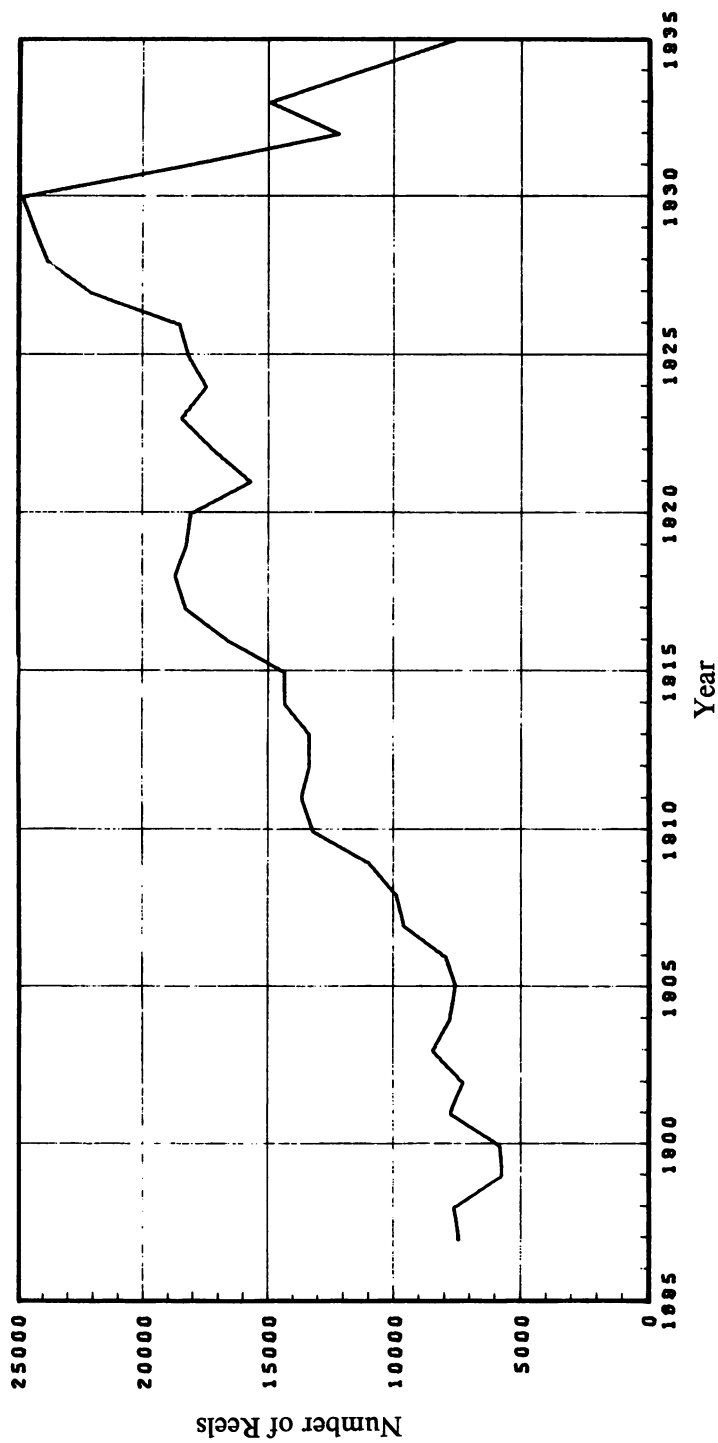


Figure 3.2. Production Capacity of Shanghai Filatures, 1897-1935



petition of such artificial fibers as rayon, and dumping by the Japanese industry, the silk industry suffered a disastrous contraction during the 1930s not only in Shanghai but in all of China.

Elsewhere in Jiangsu, the modern silk-reeling industry did not become established until around the turn of the century (see Tables 3.1 and 3.2). In Wuxi the first filature, Yuchang, was founded in 1904 by Zhou Shunqing, a member of the local gentry; Zhou had made a fortune in the iron trade and could manufacture his own reeling machinery.<sup>14</sup> Two more filatures followed in 1908, and two in 1909.

In 1913 Xue Nanming, of the prominent Xue lineage of Wuxi, first entered the silk reeling business by purchasing a filature set up two years earlier. The Xue lineage had been major landowners at Wuxi in the first half of the nineteenth century, with holdings of about 40,000 *mu*, 13 pawnshops, and more than 40 ships that carried grain from Yixing, Jintan, and Liyang to Suzhou, Changzhou, and Zhejiang. Although the lineage was uprooted during the Taiping wars and lost much of its land,<sup>15</sup> one member of the lineage did gain eminence thereafter. Xue Fucheng was one of the foremost proponents of Westernization and industrialization in the late Qing; he served as advisor to both Zeng Guofan and Li Hongzhang, and as ambassador to several European countries. His son Nanming became an extremely influential silk merchant who came to operate 18 filatures and own more than ten cocoon brokerages as well. In addition, Nanming became a partner in several Shanghai filatures, and the Wuxi group under his leadership challenged the dominant Huzhou group in the Shanghai silk business after 1911. The Xue family also built up important political and economic connections through marriage alliances: Nanming's wife was the younger sister of the influential bureaucratic capitalist Sheng Xuanhuai; his second son, Huidong, married Yuan Shikai's daughter; and his third son, Shouxuan, who succeeded to the silk business, married the daughter of Rong Zongjing, a wealthy merchant of Wuxi.<sup>16</sup>

By 1925 there were 19 filatures in Wuxi; in 1926, 22; in 1928, 37; and in 1930, 42.<sup>17</sup> Thus, by the 1920s Wuxi became a second major reeling center in Jiangnan, with about one-third of the production capacity in Shanghai. Elsewhere in Jiangsu the industry was never highly

<sup>14</sup> GYS, II, 952.

<sup>15</sup> Feng Hefa, ed., *Zhongguo nongcun jingji ziliao* (Shanghai, 1935), 416-7.

<sup>16</sup> GYS, II, 944-5.

<sup>17</sup> "Wuxi sichangye xianzhuang," *Gongshang banyuekan*, II:1 (Jan. 1930), 2; H. D. Fong, "China's Silk-Reeling Industry," *Monthly Bulletin on Economic China*, VII:11 (Nov. 1934), 496.



TABLE 3.1  
SILK REELING IN JIANGNAN, 1897-1927  
(NUMBER OF FILATURES)

	1897	1901	1911	1915	1916
<b>Jiangsu:</b>					
Shanghai	31	28	46	56	61
Wuxi			5	8	9
Suzhou	2	3	3	3	1
Zhenjiang		2	2	2	2
<b>Zhejiang:</b>					
Hangzhou	1	1		1	1
Xiaoshan	1		1	1	1
Huzhou			1	1	1
Shaoxing	1	1			
Tangqi			1		
<b>Total</b>	<b>36</b>	<b>35</b>	<b>59</b>	<b>72</b>	<b>76**</b>
	1917	1918	1922	1925	1927
<b>Jiangsu:</b>					
Shanghai	71	55	64	68	91
Wuxi	9	5	15	18	21
Suzhou	3	3	3	3	3*
Zhenjiang	2	2	2	2	2
<b>Zhejiang:</b>					
Hangzhou	1	1	1	4	4
Xiaoshan	1	1	1	1	1
Huzhou	1	1	1	1	1
Shaoxing		1			
Jiaxing					1
<b>Total</b>	<b>88</b>	<b>69</b>	<b>87</b>	<b>97**</b>	<b>124**</b>

SOURCES: Fujimoto, 127-8, 131-2; Gong Jun, *Zhongguo xingongye fazhanshi dagang*, 2nd ed. (Shanghai, 1935), 59, 160-1; *A Survey of the Silk Industry in Central China*, 94; *Chinese Economic Bulletin*, no. 123 (June 30, 1923), 3-7; Paul K. Whang, "Shanghai—The Filature and Silk Market Center," *China Weekly Review*, XLII:8 (Oct. 22, 1927), 209.

\* Excluding one Japanese filature with 200 reels.

\*\* Corrected from original totals.

TABLE 3.2  
SILK REELING IN JIANGNAN, 1897-1927  
(NUMBER OF REELS)

	1897	1901	1911	1915	1916
<b>Jiangsu:</b>					
Shanghai	8,194	7,900	13,062	14,424	16,288
Wuxi			1,372	2,118	2,530
Suzhou	312	630	736	736	736
Zhenjiang		330	416	448	456
<b>Zhejiang:</b>					
Hangzhou	208	240		276	276
Xiaoshan	208		336	208	208
Huzhou			200	200	200
Shaoxing	208	180			
Tangqi			276		
<b>Total</b>	<b>9,130</b>	<b>9,280</b>	<b>16,398</b>	<b>18,410</b>	<b>20,694**</b>
	1917	1918	1922	1925	1927
<b>Jiangsu:</b>					
Shanghai	18,802	14,482	17,396	18,576	21,598
Wuxi	2,660	1,184	4,188	5,536	6,762
Suzhou	736	741	736	736	788*
Zhenjiang	456	448	456	456	456
<b>Zhejiang:</b>					
Hangzhou	276		276	972	972
Xiaoshan	208		208	340	340
Shaoxing		1,036†			
Jiaxing				200	?
<b>Total</b>	<b>23,138**</b>	<b>17,891</b>	<b>23,260**</b>	<b>26,816**</b>	<b>?</b>

SOURCES: Fujimoto, 127-8, 131-2; Gong Jun, *Zhongguo xingongye fazhanshi dagang*, 2nd ed. (Shanghai, 1935), 59, 160-1; *A Survey of the Silk Industry in Central China*, 94; *Chinese Economic Bulletin*, no. 123 (June 30, 1923), 3-7; Paul K. Whang, "Shanghai—The Filature and Silk Market Center," *China Weekly Review*, XLII:8 (Oct. 22, 1927), 209.

\* Excluding one Japanese filature with 200 reels.

\*\* Corrected from original totals.

† Total for Zhejiang Province.

developed. In Suzhou two Chinese filatures were founded in 1897, while in 1900 a filature under foreign management, the Chino-European Filature, commenced operations.<sup>18</sup>

The first filature in Zhejiang, Shajing, was established in Hangzhou by Pang Yuanji, whose family had been involved in the silk trade at Wuxing.<sup>19</sup> A second filature, Dalun, was organized in 1896 in Hangzhou with a capitalization of 100,000 taels. Unlike the Shanghai region, however, several of the filatures set up subsequently in Zhejiang were departments of weaving factories and were thus integrated with local weaving: the largest silk reeling and weaving factory in Zhejiang, Weicheng, was founded between 1914 and 1915 in Hangzhou with a capitalization of \$300,000; a branch was established in Jiaxing in 1920. The silk weaving factories of Hulin, Tianzhang, and Qingcheng also operated their own filatures.<sup>20</sup> However, the silk-reeling industry in Zhejiang was dwarfed by Shanghai and even by Wuxi; in 1925 total production capacity in the entire province was only 8 percent of Shanghai's and 27 percent of Wuxi's.

As in Jiangsu, the filatures in the Canton area were export-oriented; local weavers continued to rely on hand-reeled silk.<sup>21</sup> Surprisingly, the growth of the silk-reeling industry in the Canton region took place earlier and more rapidly than in Shanghai. The pioneer was Chen Qiyuan. Both he and his older brother Qishu were poor teachers in their native village of Jiancun in Nanhai county. Around 1851 Qishu went to Annam to seek his fortune in commerce; he brought his brother over in 1854. Within a decade the two brothers became wealthy from their businesses in grocery, silk goods, and pawnbroking. Qiyuan became acquainted with French-style steam filatures at Hanoi and Siam, and studied the machinery design for six or seven years.

In 1872 Chen Qiyuan returned to his home village in Nanhai county and founded the first Chinese-run filature (Jichanglong) and probably the first Chinese-run modern factory of any kind in China. He had rejected Canton as the location for his filature for three reasons. Not only would he likely encounter bureaucratic interference at Canton, the political center of Guangdong, but there would be difficulties in labor recruitment and cocoon collection as well. On the other hand, at his home village, situated in the heart of the sericultural region, cocoon collection would present no problem. Further, local women could easily be recruit-

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<sup>18</sup> Fong, 496-7.

<sup>19</sup> GYS, II, 417.

<sup>20</sup> *Chinese Economic Bulletin*, X, 312 (Feb. 12, 1927), 81-2.

<sup>21</sup> *Nanhai xianzhi*, juan 4:41a.

ed to work, as their parents would trust a fellow kinsman, and there would be no need to build dormitories. Finally, as a former teacher, Chen had local respectability and would not encounter any outright opposition.

After two years of preparation and construction, Jichanglong finally began production in 1874. Young girls between the ages of 13 and 24 were recruited from Jiancun and other neighboring villages. Cocoon agents were sent to the Xichao region and even further afield in Shunde, Dongguan, and Xiangshan counties; they rented space in local shops or ancestral halls, bought and dried cocoons, and transported them back to the filature. Jichanglong was entirely self-financed, with the initial capitalization supplied by funds repatriated from Annam by Chen Qishu. Chen Qiyuan also concurrently set up rice, meat and grocery stores at Jiancun.<sup>22</sup>

Soon the filature, producing silk superior in quality to hand-reeled silk, found expanding markets in Europe and the United States.<sup>23</sup> Within two years Chen's success prompted the establishment of four more filatures in the area. By 1881 there were eleven steam filatures employing more than 4,000 women in Nanhai county.<sup>24</sup> In neighboring Shunde county the first known filature dated from 1874.<sup>25</sup> By 1887 there were 42 filatures in that county.<sup>26</sup>

The establishment of these filatures, however, was not without opposition. Some people foresaw or imagined evil consequences from the replacement of manual by mechanical labor and from men and women working together in the filatures. Others complained about the noise of the machinery and the damage to the local geomantic configuration (*fengshui*) by the presence of smoke stacks. Still others were opposed because the workers, unfamiliar with the machinery, risked injury.<sup>27</sup> As we have seen, the strongest opposition came from the silk weavers, whose livelihood was threatened by a growing scarcity and rising prices of their raw material, hand-reeled silk, brought about by the increasing diversion of cocoons to the use of these export-oriented filatures. The weavers who attacked the filature at Xuetang village in 1881 also tried to storm Jichanglong across the river, but Chen Qiyuan, with prior warning, post-

<sup>22</sup> Chen Tianjie and Chen Qitong, "Guangdong diyijian jingqi saosichang Jichanglong ji qi chuangbanren Chen Qiyuan," *Guangzhou wenshi ziliao*, 8 (1963), 58-67.

<sup>23</sup> GYS, I, 957-9; SGYS, II, 43-5.

<sup>24</sup> GYS, I, 964-5.

<sup>25</sup> *Longshan xiangzhi* (1930), *juan* 3:26a.

<sup>26</sup> Shunde dang'anguan, *Shunde xianzhi* (1972), 99.

<sup>27</sup> GYS, I, 959.

ed braves to protect his village and filature.<sup>28</sup> The subsequent crackdown by the county magistrate, however, forced Chen and other filaturists to move their factories to Macao. Not until three years later were filatures permitted to open again in the disturbance area.<sup>29</sup>

Despite and after this temporary setback the number of steam filatures continued to grow in Guangdong province, particularly in Shunde county near Canton (see Tables 3.3 and 3.4). By 1891 there were 50 or 60 filatures in the province.<sup>30</sup> By the end of the century there were more than 100 filatures in Shunde county alone.<sup>31</sup> The number of filatures in Guangdong totalled over 100 by 1910; it approximately doubled between 1910 and 1913, and stabilized at about 200 until the late 1920s. These filatures were situated not at the port of Canton, but in the villages and market towns close to or within the cocoon-producing areas. In a visit to

TABLE 3.3  
SILK REELING IN THE CANTON DELTA, 1880–1929

	Number of Filatures	Number of Reels
c. 1880	10	2,400
1902*	86	34,600
1910	109	42,100
1912	162	65,000
1913	194	
1918	147	72,200
1921	180	90,064
1922	202	95,215
1926	202	95,215
1929	147	72,422

SOURCES: Uehara, 943–4; Fujimoto, 152; Gong Jun, *Zhongguo dushi gongyehua chengdu zhi tongji fenshi* (Shanghai, 1934), 133; “A General Survey of the Raw Silk and Silkworm Industry in China,” *Chinese Economic Monthly*, II:6 (March 1925), Table I.

\*For Shunde only.

<sup>28</sup> Chen Tianjie and Chen Qitong, 69.

<sup>29</sup> GYS, I, 59–65; SGYS, II, 45–50.

<sup>30</sup> GYS, I, 967.

<sup>31</sup> China, Maritime Customs, *Decennial Reports, 1892–1901* (Shanghai, 105), II, 262.

TABLE 3.4  
SILK REELING IN THE CANTON DELTA, 1926-1934

	Shunde (filatures)	Nanhai (filatures)	Panyu (filatures)	Sanshui (filatures)	Total (filatures)
1926	154	45	1	2	202
1929	99	45	1	1	146
1930	81	38	1	1	121
1931	73	36	1	1	111
1932	39	18	—	1	58
1933	32	14	—	—	46
1934	24	12	—	1	37

	Shunde (reels)	Nanhai (reels)	Panyu (reels)	Sanshui (reels)	Total (reels)
1926	71,235	22,330	650	1,000	95,215
1929	47,848	23,677	450	480	72,455
1930	41,226	20,106	480	480	62,292
1931	37,210	19,085	460	500	57,255
1932	19,677	10,066	—	500	30,243
1933	16,350	7,690	—	—	24,040
1934	13,166	6,780	—	450	20,396

SOURCES: Ide Kiwata, *Minami Shina no sangyō to keizai* (Tokyo, 1939), 327; Uehara, 945.

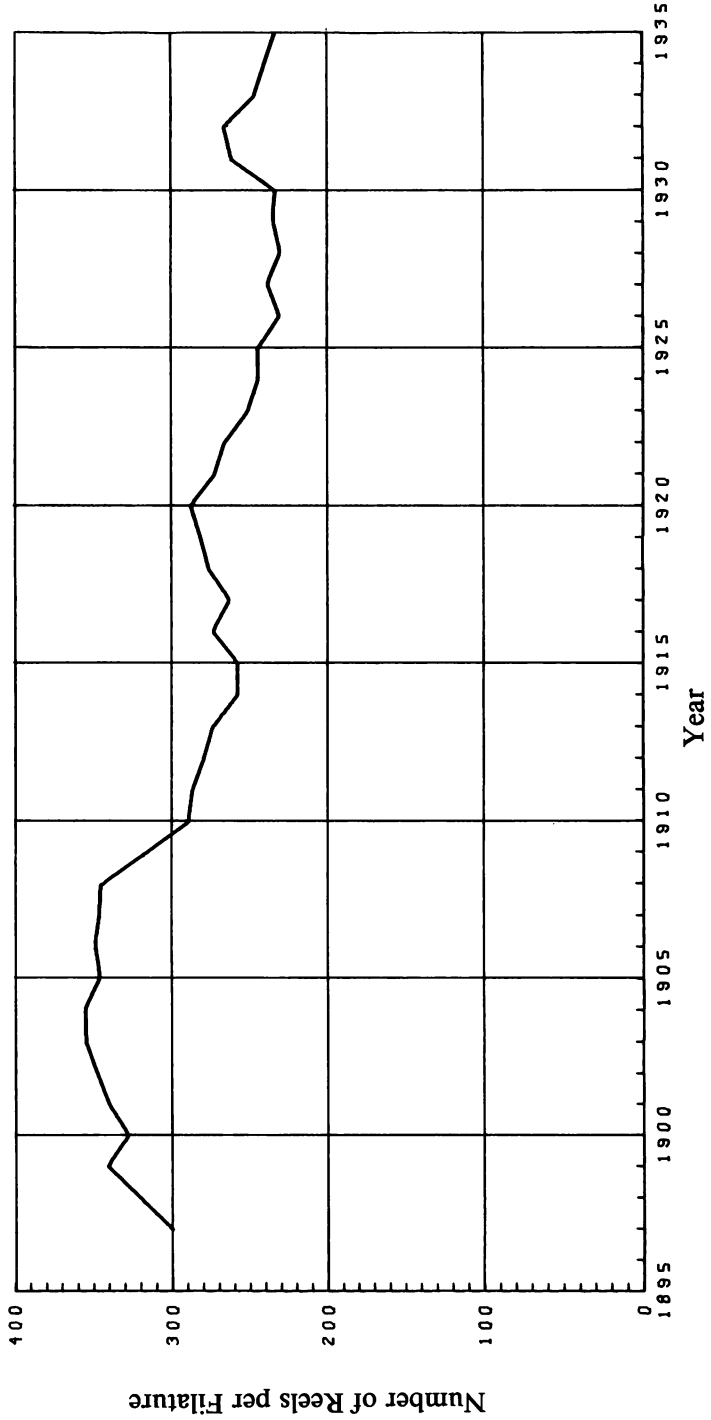
the Shunde sericultural region in 1904, Feng Xiaoqing, the county magistrate, found that Gean village, which had fewer than 200 households, had four filatures with a total capacity of about 1,900 reels.<sup>32</sup> The market towns of Daliang, Rongqi, Guizhou, and Shuiteng had the highest concentration of filatures.<sup>33</sup>

Moreover, from the 1910s on Canton filatures had a total production capacity several times that of Shanghai, and a larger average plant size. By the beginning of the twentieth century a typical Cantonese filature had 400 to 500 reels, and this remained the norm over time.<sup>34</sup> Shanghai filatures, on the other hand, declined in scale of production over time, from more than 300 reels per filature before 1910 to 237 in 1929 (see Figure 3.3).

<sup>32</sup> *Nongxue bao*, juan 245:1a.

<sup>33</sup> *Shunde xianzhi* (1972), 165.

Figure 3.3. Average Scale of Production in Shanghai Filatures, 1897-1935



In addition, Cantonese filatures seemed to have been more stable than Shanghai filatures, although in both regions filatures were plagued by chronic instability and frequent closures. Turnover in Shanghai was rapid: in 1899 Fukazawa, a Japanese silk expert, visited Shanghai twice over a three-month interval, during which 8 of 20-odd filatures closed down.<sup>35</sup> The average number of years in business for Shanghai filatures was 4.3 in 1897, 5.4 in 1925, 4.7 in 1928, 5.1 in 1929, 4.9 in 1931, and 1.1 in 1932; the percentages of filatures operating for 10 years or more were 16, 10, 12, 17, 15, and 2 for the respective years.<sup>36</sup> On the other hand, the Cantonese silk-reeling industry appeared to have been much more stable: although many filatures did go out of business soon after getting started, those that continued did so over a long period. Of the 86 filatures operating in Shunde county in 1911, 19 (22 percent) had been established in the 1880s and 42 (49 percent) in the 1890s. The whole group had been in business for an average of 15.0 years; 30 percent were still open 14 years later in 1925. In that year 9 percent of all Shunde filatures had been founded before 1900, whereas only 3 of 158 Shanghai filatures (2 percent) dated from the nineteenth century.<sup>37</sup>

This temporal and quantitative gap in production scale and capacity and in industrial stability between the two regions was reflected in quantity of exports. Filature silk began to displace hand-reeled silk at Canton at an earlier date: starting with 13 percent of all exports in 1882–83, filature silk cornered more than three-quarters of the market by 1890. This increase in filature silk exports was responsible for the increase of more than 20,000 piculs of silk exports over the previous de-

<sup>35</sup> *Nongxue bao*, *juan* 77:5a.

<sup>36</sup> This is computed from my longitudinal reconstruction of 495 Shanghai filatures operating between 1897 and 1932 from the following sources which contained surveys of the industry at different times: Fujimoto Jitsuya, *Shina sanshigyō kenkyū* (Tokyo, 1943), 162–8, 136–41; Tōa dōbunkai, ed., *Shina keizai zensho* (Tokyo, 1907–8), XII, 30–2; *Shanghai zhinan*, 7th ed. (Shanghai 1912), *juan* 6:1a; Tōa dōbunkai chōsa kensambu, ed., “Genka Shina kōgyō no taisei,” (II) *Shina*, VII:11 (June 1916); Li Jiayuan and Huang Gongmai, “Jiangzheyue siye diaocha baogao,” *Nongshang gongbao*, III:9 (April 15, 1917), 12–3; “A General Survey of the Raw Silk and Silkworm Industry in China,” *Chinese Economic Monthly*, II:6 (March 1925), Table V, 18–20; “Shanghai Silk Filatures,” *Chinese Economic Bulletin*, no. 123 (June 30, 1923), 3–6; Tōa dōbunkai, comp., *Shina nenkan* (Tokyo, 1927), 928–30; “Steam Filatures in Shanghai District,” *Chinese Economic Monthly*, III:10 (Oct. 1926), 423–32; *Shanghai zhi gongye* (Shanghai, 1930), 17–26; D.K. Lieu, *The Silk Reeling Industry in Shanghai* (Shanghai, 1933), App. A, 123–7.

<sup>37</sup> Cheng Yaoming, “Qing mo Shunde xian jiqi saosiyede fasheng, fazhan jiqi yingxiang,” paper delivered at “Guangdong Ming-Qing jingjishi xueshu taolunhui” (Canton, December, 1982), Table 1; and Jiqing, “Saosiyede diaocha,” *DFZZ*, XXII:18 (Sept. 1925), 53–60.



cade (1872–1881).<sup>38</sup> The export of filature silk continued to grow dramatically over the next decade, by the end of which total annual export of raw silk was over 30,000 piculs, double the level at the beginning of the decade (see Table 3.5).

TABLE 3.5  
SILK EXPORTS AT CANTON, 1881–1900 (IN PICULS)

Fiscal Year	Hand-reeled Silk	Steam Filature Silk	Percent of Total	Total Exports
1881	11,526	—	—	11,526
1882	8,302	1,254	13.1	9,556
1883	8,978	2,857	24.1	11,835
1884	3,116	3,437	52.4	6,553
1885	2,567	4,457	63.5	7,024
1886	8,462	7,158	45.8	15,620
1887	4,207	8,720	67.5	12,927
1888	1,760	5,123	74.4	6,883
1889	4,928	10,219	67.5	15,147
1890	3,278	10,317	75.9	13,595
1891	4,659	12,146	72.3	16,805
1892	4,171	18,687	81.8	22,858
1893	1,951	16,438	89.4	18,389
1894	2,159	18,179	89.4	20,338
1895	2,474	20,629	89.3	23,103
1896	2,411	22,210	90.2	24,621
1897	1,933	22,727	92.2	24,660
1898	2,655	34,055	92.8	36,710
1899	2,375	34,612	93.6	36,987
1900	1,037	31,038	96.8	32,075

SOURCES: Tabulated and calculated from Imperial Maritime Customs, *Decennial Reports, 1882–1891*, 554; and *Decennial Reports, 1892–1901*, II, 177.

In contrast, in Shanghai as late as 1894 only 9 percent of white silk exported was filature silk. It was not until 1911 that exports of white filature silk surpassed exports of white hand-reeled silk. Thereafter white hand-reeled silk was displaced rapidly at the export market by white fila-

<sup>38</sup> China, Maritime Customs, *Decennial Reports, 1882–91* (Shanghai, 1893), 554.

ture silk: quantity exported fell from close to 19,000 piculs in 1911 to barely over 10,000 piculs the next year, and to under 1,000 piculs by 1914. White filature silk exports, starting at a level of about 10,000 piculs in the early 1900s, doubled in quantity by the early 1910s, doubled again by 1925, and reached an all-time high of over 54,000 piculs by 1929. Nevertheless, throughout this period Cantonese white filature silk exports remained significantly above the level of Shanghai exports, which had been about three times as large before 1908. Thereafter, the faster expansion of Shanghai white filature silk exports closed the gap, but except for 1915 Canton always exported more annually before 1929 than did Shanghai (see Table 3.6).

TABLE 3.6  
ORIGINAL EXPORT OF WHITE SILK FROM SHANGHAI AND CANTON 1894-1933  
(IN PICULS)

Year	Shanghai		Canton		Year	Shanghai		Canton	
	Hand	Steam	Hand	Steam		Hand	Steam	Hand	Steam
1894	44,027	4,344			1914	871	19,339	1,803	33,042
1895	47,500	6,276	3,596	20,780	1915	455	29,911	6,270	26,955
1896	31,782	5,293	1,538	21,748	1916	366	26,140	1,155	36,198
1897	41,985	11,429	752	29,965	1917	412	27,650	992	38,951
1898	37,686	7,207			1918	202	25,486	1,387	33,457
1899	52,883	11,422	647	36,526	1919	467	35,556	1,733	44,992
1900	27,447	6,242	598	27,623	1920	561	20,167	1,336	32,164
1901	38,620	12,601	1,249	35,200	1921	532	28,027	764	48,750
1902	33,871	12,338	1,048	36,466	1922	767	29,458	529	49,351
1903	15,340	9,147	1,408	33,301	1923	832	24,649	495	43,153
1904	27,460	10,816	2,915	34,521	1924	1,226	24,776	731	45,746
1905	19,306	11,114	1,853	32,378	1925	251	39,854	806	53,482
1906	23,582	10,643	1,127	33,622	1926	105	39,358	880	52,088
1907	23,296	12,205	1,342	36,746	1927	648	41,161	687	46,795
1908	24,897	13,212	1,964	34,558	1928	1,672	52,701	511	48,688
1909	25,749	15,921	1,416	34,590	1929	1,497	54,126	528	52,852
1910	25,018	20,412	1,600	42,453	1930	1,057	42,062	523	46,582
1911	18,798	20,306	2,250	34,178	1931	1,143	28,155	599	39,480
1912	10,360	20,430	2,426	33,721	1932	3,945	17,155	1,001	23,122
1913	2,136	20,652	2,232	45,429	1933	2,493	25,418	1,004	25,749

SOURCE: H. D. Fong, "China's Silk Reeling Industry," *Monthly Bulletin on Economic China*, VII:11 (Nov. 1934), 491, Table V.

Why Canton should expand its silk-reeling industry earlier and initially faster than Shanghai, since the latter seemed to enjoy most of the favorable preconditions for expansion, is at first puzzling. To begin with, Shanghai was situated within Jiangsu-Zhejiang, the leading silk producing region of China in terms of both quantity and quality; the Pearl River Delta around Canton was by comparison only of secondary importance.

Before the Opium War all Sino-Western trade had been confined to Canton alone; tea and silk produced in Zhejiang, Anhui, and other provinces had to be transported overland through mountain passes to Canton for export. After the opening of Shanghai in 1843, however, tea and silk quite naturally went by the shorter and easier water route to Shanghai.<sup>39</sup> Situated at the mouth of the easily navigable Yangtze River and thus with relatively easy access to some of the wealthiest regions of China, Shanghai quickly supplanted Canton as the center of Sino-Western commerce<sup>40</sup> and by the late 1840s had cornered most of the silk export trade; in 1847, for example, 95 percent of the total Chinese exports of about 19,000 bales of silk was exported from Shanghai.<sup>41</sup> Moreover, silk from not just the Jiangnan area but also from all parts of north and central China, including the yellow silk of Hubei, Sichuan, and Shandong and the wild silk of Manchuria, found outlet overseas at Shanghai.

Chinese antirealism developed earliest in Guangdong. During the Second Opium War (1856–1860) many Western merchant houses at Canton were looted and subsequently moved to Hong Kong.<sup>42</sup> Thereafter foreign enterprises stayed away from Canton. Before 1894 Westerners established very few enterprises in Canton; these included a ship repair dockyard sometime before 1867 and an ice-making factory founded in 1883 and destroyed by the Cantonese in the same year.<sup>43</sup>

At the same time when foreign trade was rechannelled to Shanghai, foreign capital was diverted there and to Hong Kong. Thus, the Shanghai silk-reeling industry was begun by Western entrepreneurs. At first all Shanghai filatures, Chinese or foreign, imported European techni-

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<sup>39</sup> Huang Wei, *Shanghai kaibu chuqi duiwai maoyi yanjiu* (Shanghai, 1961), 77.

<sup>40</sup> D. K. Lieu, *China's Industries and Finance* (Peking, 1927), 30; Huang Wei, 77.

<sup>41</sup> Calculated from Table 2.4.

<sup>42</sup> Peng Zeyi, "Zhongyin wukou tongshang yange kao," *Zhongguo shehui jingji shi jikan*, VIII:1 (Jan. 1949), 138–9.

<sup>43</sup> Sun Yutang, *Zhong-Ri Jiawu zhangzheng qian waiguo ziben zai Zhongguo jingying de jindai gongye* (Shanghai, 1955), 77–9; Wu Jie, *Zhongguo jindai guomin jingjishi* (Peking, 1958), 317; Ming Kou Chan, *Labor and Empire: the Chinese Labor Movement in the Canton Delta, 1895–1927* (Ph.D. dissertation, Stanford University, 1975), 84.

cians; some even employed skilled French workers. All equipment was imported.<sup>44</sup> Cantonese filatures, on the other hand, were from the outset an exclusively Chinese affair; even the machinery was manufactured locally.<sup>45</sup>

Can this difference in relationship to the foreign sector between the two treaty ports account for the early success of the Cantonese silk-reeling industry and for the slow start of the Shanghai industry? Was the advantage of availability of Western capital, entrepreneurship, and technical personnel outweighed by the disadvantage of Western competition, which inhibited Chinese enterprise?

Direct foreign competition was certainly not responsible for the retardation of the development of Chinese filatures in Shanghai, because the foreign share of the Shanghai silk-reeling industry soon faded into insignificance. According to a survey of Shanghai filatures in 1897 by Matsunaga, a technician from the Japanese Ministry of Agriculture, Commerce and Industry,<sup>46</sup> of the 31 filatures in operation then, only the Ewo Filature and the two branches of the Shanghai Filature were owned outright by foreign firms, respectively the British firm of Jardine, Matheson and the Frenchman Brunat. The Qiankang Filature was under Sino-Western ownership; the remaining filatures were all Chinese-owned, including the Sin Chong Silk Filature, presumably founded by the French in 1893, and the Ruilun Filature, presumably founded by the Germans in 1894.<sup>47</sup> In fact, these last two filatures were organized by Chinese capitalists but registered under Western ownership.

In the following year the French-owned Shanghai Filature was closed. By 1911 the Ewo Filature was the only one under foreign ownership and management.<sup>48</sup> According to a list of mills and factories compiled by the Child Labour Commission of the Municipality of Shanghai in 1924, of 65 filatures 38 were registered as Chinese, 6 American, 5 French, 7 Italian, and 9 British. But the commission noted that little foreign capital was actually invested in silk filatures; in almost all the filatures listed under foreign ownership, a Westerner had merely lent his name in exchange for an honorarium.<sup>49</sup>

<sup>44</sup> GYS, I, 66.

<sup>45</sup> *Nanghai xian zhi*, juan 39:4a; China, Imperial Maritime Customs, *Decennial Reports, 1892-1901*, II, 264.

<sup>46</sup> Fujimoto, 126-8.

<sup>47</sup> Sun Yutang (1955), 81.

<sup>48</sup> China, Maritime Customs, *Decennial Reports, 1902-11* (Shanghai, 1913), II, 18.

<sup>49</sup> A. Kotenov, *Shanghai: Its Municipality and the Chinese* (Shanghai, 1927), 306-10; "China Raw Silk Trade Changing," *Silk*, XIII:3 (March 1920), 49.

There were several reasons for Chinese firms to register themselves under foreign nationalities. With a foreigner as dummy owner, the firm could rely on a foreign consul to intervene in the event of litigations over business disputes and over war, riot, or fire damages. The firm was also protected from civil war hostilities: in 1925, when fighting broke out between the provinces of Jiangsu and Zhejiang, all the filatures with foreign registration and even some without hoisted the corresponding national flags.<sup>50</sup> The biggest reason for foreign registration, of course, was freedom from official extortion and taxation, as will be discussed in detail later.

Even the few genuinely foreign filatures that were in operation probably relied in large part on Chinese capital. Sixty percent of the stock of Ewo Filature, for example, was sold to Chinese investors when it was established, and half of the board of directors were Chinese.<sup>51</sup>

Before the 1860s the merchant houses dominated the financial market at Shanghai and handled the remittance of funds between the treaty ports. The few foreign banks then in operation played a marginal role. As home investment opportunities opened in the West, particularly in the United States, capital was withdrawn from many of these houses to finance domestic industrialization.<sup>52</sup> Accordingly, the foreign banks assumed the financial functions given up by the merchant houses. At the same time, many of the Westerners who went to seek their fortune in China during the late nineteenth century were adventurers with limited financial resources. The linkage of China by telegraph lines in the early 1870s made possible the telegraphing of import-export orders on commission, and rendered unnecessary the purchase and storage of goods by a merchant months before they could be sold.<sup>53</sup> The resultant increase in the velocity of money, the rise of foreign banks in Shanghai, and the willingness of Chinese merchants with capital to place it at the disposal of foreign nationals with extraterritorial rights and privileges all enabled the small Western firm with little capital to operate successfully and to eclipse the old Western merchant houses in Shanghai. According to Wang Jingyu, Chinese mercantile capital amounting to about 40 million

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<sup>50</sup> Uehara, 333–4.

<sup>51</sup> Sun Yutang (1957), 69.

<sup>52</sup> Wang Jingyu (1963), 303–4.

<sup>53</sup> T. R. Banister, "A History of the External Trade of China, 1834–81," *Decennial Reports, 1922–31*, I, 94; G. C. Allen and Audrey G. Donnithorne, *Western Enterprise in Far Eastern Economic Development: China and Japan* (London, 1954), 42; U.S. Treasury Department, *Commercial China in 1899* (Washington, D.C., 1900), 2216; China, Maritime Customs, *Decennial Reports, 1882–91*, 323.

taels was absorbed into Western enterprises and banks in China in the nineteenth century.<sup>54</sup> Even in the cotton spinning industry, which attracted much direct Western and Japanese investment after the Treaty of Shimonoseki, many of the foreign mills probably “absorbed a considerable amount of Chinese capital”: for example, 97 percent of the stocks of the Ewo Cotton and Weaving Company was sold to the Chinese.<sup>55</sup>

Not only did many foreigners depend in part on Chinese capital and thus divert it from native investment, but even the foreign banks siphoned off much Chinese capital, private as well as public: in the wake of several disastrous defeats at the hand of the imperialist powers (notably the Sino-Japanese War of 1894–95 and the Boxer Uprising of 1900), the Chinese government was forced to contract huge foreign loans to pay off indemnities, and by treaty stipulations all customs and salt revenues had to be deposited with the foreign banks, principally the Hongkong and Shanghai Banking Corporation.<sup>56</sup> Therefore, although direct foreign competition did not inhibit Chinese enterprise in silk-reeling at Shanghai, the advantage of Shanghai in the availability of foreign capital was illusory.

Nonetheless, Shanghai’s slower growth still remains to be explained, for Shanghai filature silk was superior to Cantonese filature silk and commanded higher overseas prices. Was its qualitative superiority outweighed by restraints on supply factors? In the next two chapters we will examine technology, labor, and capital in silk-reeling as well as cocoon production in the two regions to see whether Canton filatures enjoyed any advantages in these areas.

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<sup>54</sup> Wang Jingyu, “Shijiu shiji waiguo chinha qiyè zhong de huashang fugu huodong,” *Lishi yanjiu* (1965:4), reprinted in JSBN, IV, 321–56.

<sup>55</sup> Kang Chao, 135.

<sup>56</sup> Zhang Yulan, *Zhongguo yinhangye fazhan shi* (Shanghai, 1957), 9; Lieu (1927), 49.

## IV

# Labor, Capital, and the Foreign Sector in Silk-Reeling

### Technology

Whatever the cause of Canton's faster expansion, it did not lie in technological superiority. While Shanghai filatures were equipped with the newer Italian tavelle system, the Cantonese filatures used the older French chambon system (see Figure 4.1). In the chambon system, two silk threads were twisted or crossed on each other to dry the water and improve the cohesion. Immersion in hot water melted sericin, the gummy substance that held the cocoon together. The reeler drew out the coarse threads, called waste silk or frisons. The two clean ends were then passed through a hole and crossed on each other; this hole was pierced in the center of a glass ring to prevent the cocoons from jumping up.<sup>1</sup> While the chambon method was capable of producing regular silk, it had disadvantages: if one fiber was thicker than the other, it might pull the thinner thread over, causing loss of silk or the unbalancing of the reel. If one thread broke, so would the other. Thus, the efficiency of the reeler was reduced.<sup>2</sup>

In the tavelle system the twisting of the silk thread was done on one thread only. The ends of from one to eight cocoons were passed through the ring and then to a small wheel, down to a second wheel below, and up again, twisting in between; the strands were then passed through a third wheel, and finally reached the reel via a horizontal hook. The reeler could do more than two ends at a time and achieved a longer twist and better cohesion.<sup>3</sup> The tavelle system avoided the problems of the chambon system and could reel more cocoons at a time as well. Ex-

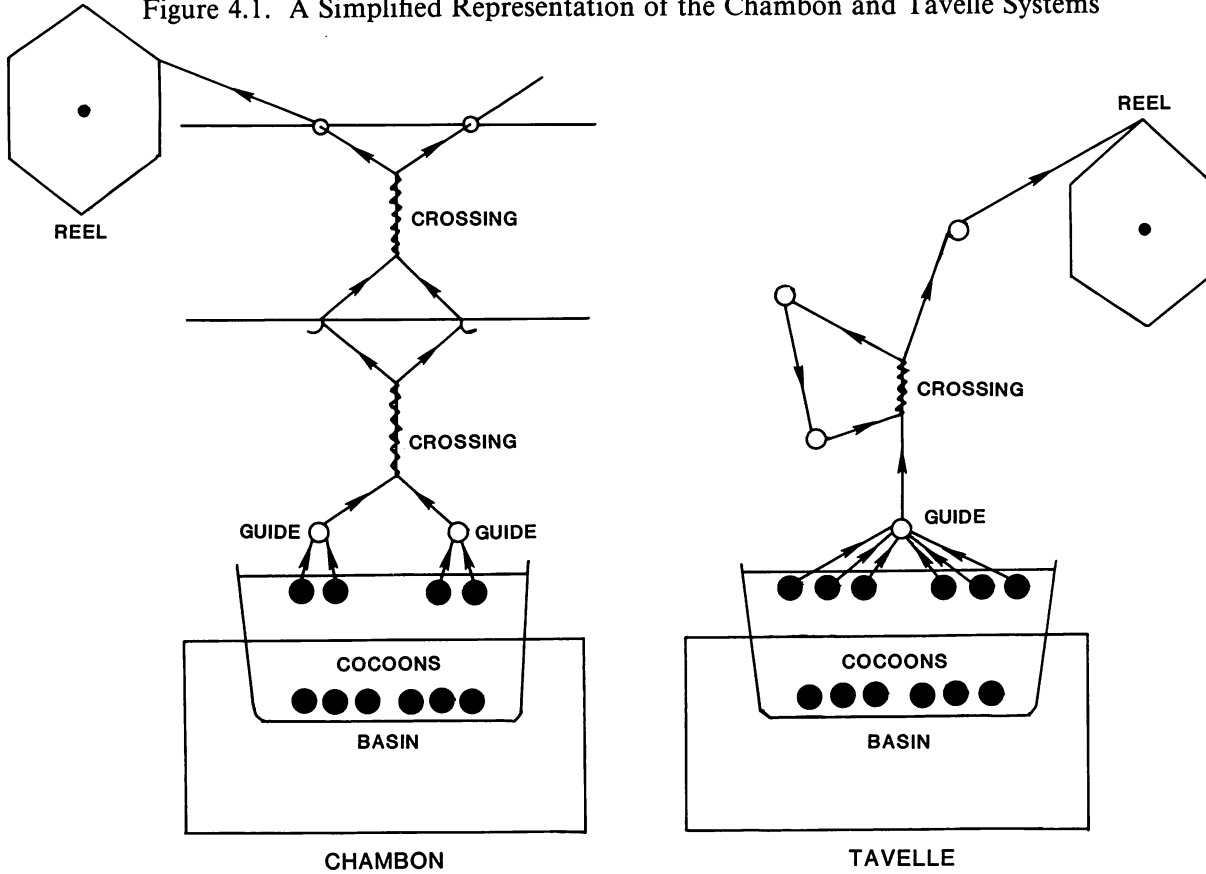
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<sup>1</sup> Leo Duran, *Raw Silk*, 2nd ed. (New York, 1921), 37.

<sup>2</sup> *Xinjianshe*, 3 (Oct. 1929), 97–8.

<sup>3</sup> Duran, 37; Silk and Rayon Users' Association, *The Silk Book* (London, 1951), 23–5.

Figure 4.1. A Simplified Representation of the Chambon and Tavelle Systems





perimental results by the Sericulture Improvement Bureau of Canton in 1929 suggested that labor productivity could be increased at least 6 percent by switching to the tavelle method.<sup>4</sup> Thus, capacity differences between the two regions were mitigated to some extent by the superior productivity of the tavelle system commonly used by Shanghai filatures. Nevertheless, even discounting this difference, Canton filatures remained larger in scale and in total capacity.

### Labor Supply and Labor Unrest

In both the Canton and Shanghai filatures, supervisors and workers in the steam engine room were usually men, but workers employed for cocoon peeling and sorting, silk reeling, finishing, rereeling, and waste preparing were mostly women. A large proportion of workers were children. According to a survey of various industries by the Shanghai Child Labour Commission in 1923–24, 16 percent of workers in 39 Chinese filatures were girls under 12, while the corresponding proportion for the foreign filatures was 39 percent.<sup>5</sup> As almost all of the foreign filatures were in reality Chinese-owned, another supplementary reason for registration under foreign ownership was probably to evade Chinese labor legislation.

Cantonese filatures enjoyed one big advantage in the supply of labor over Shanghai filatures. An important source of filature workers in the Pearl River Delta were women who resisted marriage. They were the “women who dress their own hair” (*zishunü*), sisterhoods of those vowing never to marry, and the “women who do not go down to their families by marriage” (*buluojia*), those who returned to their natal families soon after the marriage ceremony, for years and often for good. Unlike married women, they moved about and travelled freely. This unique phenomenon was found in many parts of Guangdong until the 1930s, particularly in the silk counties around Canton.<sup>6</sup> Its origins are obscure; early Qing sources mentioned the existence of the *zishunü* in Panyu county,<sup>7</sup> and B. C. Henry reported in the 1880s that the “Amazonian”

<sup>4</sup> *Xinjianshe* 3 (Oct. 1929), 108–9; C. W. Howard and K. P. Buswell, *A Survey of the Silk Industry of South China* (Hong Kong, 1925), 130–1.

<sup>5</sup> Jean Chesneaux, *The Chinese Labor Movement 1919–1927* (Stanford, 1968), 74.

<sup>6</sup> For an extremely interesting study of this fascinating phenomenon, see Majorie Topley, “Marriage Resistance in Rural Kwangtung,” in Margery Wolf and Roxanne Witke, eds., *Women in Chinese Society* (Stanford, 1975), 67–88; see also Chen Yuzeng, Li Sifu, and Wu Qingshi, “Zishunü yu buluojia,” *Guangdong wenshi ziliao*, 12 (1964), 172–88; Jin Sheng, “Yuegui de zishunü he buluojia,” *DFZZ*, XXXII:8 (April 1935), 89–90; Xu Ge, *Qing bai leichao*, bai 42 (Shanghai, 1917), 30–1.

<sup>7</sup> Chen Yuzeng et al., 172.

antimatrimonial league had long operated at Xichao in Nanhai county.<sup>8</sup> The movement must therefore have pre-dated the first filatures. Clearly one major factor that promoted it was the possibility of economic independence of these women through labor in sericulture, which had been thriving even before the construction of the filatures from the 1870s, or in some other form of work. The labor demand of the steam filatures provided many more additional avenues of employment for the woman marriage resisters. The independence and work experience of many of the *zishunü* in sericulture and hand-reeling of silk made them adaptable to filature work. Their decision to remain single made for a stable labor force, and simplified recruitment problems for Cantonese filatures. It was believed that single women had better attendance records because of fewer family obligations.<sup>9</sup> While the management might change hands many times, the woman labor force usually remained the same for a given filature.<sup>10</sup> By the twentieth century, therefore, the marriage resistance movement thrived especially in the sericultural region around Shunde county, where younger women worked in the filatures while older women toiled at mulberry leaf picking and silkworm raising; in non-sericultural areas, woman marriage resisters could be found only in the most prosperous sections.<sup>11</sup>

Another factor that facilitated the flourishing of the marriage resistance movement was large-scale emigration from the silk counties. Despite the fertility of the Pearl River Delta, by the mid-nineteenth century Guangdong was unable to feed itself because of population growth and had to import rice from other parts of China and from Siam. Many males emigrated from the silk counties of Nanhai and Shunde, which had among the highest population densities in the province, as well as from other counties. Male emigration made parents partially or wholly dependent on the income earned by their unmarried daughters, and they therefore encouraged or at least condoned their daughters' refusal to marry or to stay married.<sup>12</sup> Thus, in the biographical sections on "virtuous women" (*lienü*) in the Nanhai and Shunde gazetteers, there were examples of women who supported their families and parents by devotion to sericulture and other employment.<sup>13</sup> Moreover, the absence of her fa-

<sup>8</sup> B. C. Henry, *Ling-nam or Interior Views of Southern China* (London, 1886), 69.

<sup>9</sup> Topley, 72.

<sup>10</sup> Li Benli, "Shunde cansiye de lishi gaikuang," *Guangdong wenshi ziliao* 15 (1964), 115.

<sup>11</sup> Chen Yuzeng et al., 174, 179.

<sup>12</sup> Topley, 86.

<sup>13</sup> Shiba Sakuo, "Shinmatsu Kanton sankakusu no jōsan keiei to nōson kindaika," *Shikan*, nos. 57-58 (March 1960), 28.

ther or brother would have facilitated a woman's retaining the cash income she had earned. For the woman herself, her personal freedom, as signified not only by her renunciation of marriage but also by her life style, was predicated on economic freedom. Male emigration must therefore have contributed to the existence of the marriage resistance movement and compelled many women to seek work in the filatures and elsewhere to support themselves and their families.

On the other hand, recruitment at Shanghai filatures was much more ad hoc. Whenever a filature was ready to commence operations, it would paste a red paper on its door, stating the day it would open. On that day, swarms of prospective workers would gather at the door trying to get employed. Under this haphazard recruitment system, there was a correspondingly high turnover in the work force.<sup>14</sup>

If the Canton filatures enjoyed a unique and more stable source of labor, however, the low wage levels indicate the ready availability of a pool of female labor in both regions. In both Shanghai and Canton filatures women workers were paid on a daily wage basis. At many filatures basic wages were modified by penalties and bonuses, determined by the worker's productivity and the quality of the silk produced, as measured by its denier and evenness.<sup>15</sup> At Shanghai wage levels were set by the Silk Guild at the beginning of the spring cocoon season in June and at the first month of the lunar calendar, on the basis of trade prospects. These predetermined wage levels were maximum figures that were often not attained in actual practice.<sup>16</sup> Available wage data for Shanghai filatures suggest that real wages probably declined between 1900 and 1917; thereafter through the 1920s wages just barely kept pace with inflation (see Table 4.1). Wages in Cantonese filatures were allowed to fluctuate during the year according to seasonal demand; during the off-season wages might be half or less the level of the busy season.<sup>17</sup> At the height of the prosperity of the silk industry, daily wages were as high as \$1.50; but in 1929, when depression had already befallen the sector, wages were only 50 cents.<sup>18</sup> Also prevalent at the Canton filatures was a system of substitute labor whereby a regular employee had his or her work done by a substitute, who received only a portion of the former's regular wages.<sup>19</sup>

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<sup>14</sup> Yue Sibing, *Zhongguo cansi* (Shanghai, 1935), 101.

<sup>15</sup> Tōa dōbunkai, comp., *Shina keizai zensho*, XXII, 44–5; Uehara, 977; Lieu (1940), 125; Yue Sibing, 104.

<sup>16</sup> Uehara, 293.

<sup>17</sup> Lei Yue Wai and Lei Hei Kit, "Report on a Steam Filature in Kwangtung," *Lingnan Agricultural Review*, III:2 (April 1926), 145.

<sup>18</sup> *Xinjianshe*, no. 3 (Oct. 1929), 74.

<sup>19</sup> Jean Chesneaux, *The Chinese Labor Movement, 1919–1927* (Stanford, 1968), 64.

TABLE 4.1  
 WAGES OF FIRST CLASS WOMAN REELERS IN SHANGHAI,  
 1900-1928

	Daily Wage (cents)	Real Wage Index*
1900	27-30	100
1905	31-32	115
1917	32	79
1922	40	61
1923	45	67
	38†	56
1924	42	65
	43‡	66
1925	45	67
1926	45	48
1927	48‡	56
1928	46	67

SOURCES: *Decennial Reports, 1892-1901*, I, 512; *Shina, keizai zensho*, XXII, 41; *Shina shōbetsu zenshi*, XV, 704; Yue Sibing, 103; Uehara, 293-4; "Shanghai Silk Filatures" (1928), 598; Luo Zhiru, *Tongjibiao zhong zhi Shanghai* (Nanking, 1932), 100.

\* Calculated by deflating nominal wages by rice price indices in Luo.

† During spring.

‡ After strike.

Working conditions were atrocious. Most Shanghai filatures had only two days off per month, the first and sixteenth.<sup>20</sup> Women and young girls, some of whom were less than seven years old, were forced to toil for at least eleven hours a day in steam-filled rooms. With no ventilation, the atmosphere soon became suffocating and filled with the stench of dead cocoons. The eyes of the workers became swollen from the sickening steam vapors, and they were often scalded by the boiling water used to loosen the silk threads. Younger children were brought to the filatures by their working mothers, who lived in hovels or tenements usually a few blocks from the filature. Miserable as their wages were, not infrequently they earned more than their husbands, who were employed in such work as coolie trade, rickshaw peddling, factory labor, or transportation of goods, and whose low wages had forced their wives into seeking employment at the filatures.<sup>21</sup> The Canton filatures were notorious for

<sup>20</sup> Yue Sibing, 102.

<sup>21</sup> Zhu Bangxing, Hu Linge, and Xu Sheng, *Shanghai chanye yu Shanghai zhigong*

poor ventilation and lighting. Workers toiled seven days a week, eleven and a half hours a day; after a second meal at 9:30, they labored continuously for eight hours.<sup>22</sup> The temperature might rise above 90 degrees F. The strain was such that the eyesight of many workers were ruined by about age 25; they were then heartlessly dismissed by the filatures.<sup>23</sup>

Workers were responsible for their food and lodging. Few or no employee welfare institutions existed.<sup>24</sup> No formal training programs were provided. In Shanghai young girls were first put to work in miscellaneous odd jobs and later to the boiling of cocoons. They were trained by an older worker and learned by working as auxiliary reelers substituting for the regular reelers.<sup>25</sup> Children watching their mothers or older sisters at work in effect went through a training program.<sup>26</sup> In the Canton Delta a girl about 12 years old would select an old filature hand as a mistress (*shifu*) from whom she would learn the art of silk-reeling. An agreement of discipleship would be sealed by a religious ceremony and by gifts of fruit and other sundries to the mistress. At the filature the disciple (*sizai*) learned by observing and assisting her mistress. Upon completion of her "training" and subsequent employment she would be distinguished from other untrained workers by carrying an insignia identifying her as a "graduate" of the filature.<sup>27</sup>

It is not surprising that the filature workers rebelled against low wages and dismal working conditions. Available documentation is necessarily skimpy and incomplete, but it suggests that filature workers played no small part in the burgeoning labor movement of the early twentieth century. In both regions filature workers constituted the largest segment of the industrial labor force until the demise of the industry in the 1930s. In Guangdong around 1925, some 170,000 workers were employed in the industry.<sup>28</sup> In Shanghai by 1900 there were between

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(Shanghai, 1939), 168; Gertrude Binder, "Life in Shanghai's Silk Filatures," *China Weekly Review*, XLVIII:6 (April 6, 1929), 231-2; Chesneau, 75.

<sup>22</sup> Lei and Lei, 149.

<sup>23</sup> Huang Yongan, "Rongqi jingyou," *Nongshi shuangyuekan*, V:2 (Sept. 1926), 62; Howard and Buswell, 122.

<sup>24</sup> In an exceptional case, the Zhenlun filature in Daliang of Shunde county, which had been in operation for over 20 years by 1924, had a school for the children of its employees. Guo Xiuhua, "Wang Shunde diaocha cansang sichang ji," *Nongshi yuekan*, II:8 (Feb. 1924), 23.

<sup>25</sup> "Shanghai Silk Filatures," *Chinese Economic Journal*, III:1 (July 1928), 597; Yue Sibing, 102.

<sup>26</sup> Binder, 232.

<sup>27</sup> Uehara, 976.

<sup>28</sup> "Production of Raw Silk in Kwangtung," *China Weekly Review*, XXXVI:11, 287.

18,000 and 20,000 filature workers.<sup>29</sup> At the height of the industry in 1929, at least some 63,000 workers were employed.<sup>30</sup> This exploited labor force needed only some organization to articulate its grievances.

If the desire for economic self-sufficiency made the Cantonese woman receptive to factory employment, her independence of spirit made her prone to rebellion. In 1912, 5,000 women workers at Rongqi in Shunde went on strike to protest mistreatment and payment by depreciated paper currency. The scale of the strike was reported in the contemporary press as unprecedented.<sup>31</sup> The most serious incident occurred in early 1925. In March women workers at Anzhan Filature in Guanshan of Shunde county demanded higher wages and the rescinding of the practices of body searches to prevent theft and wage deductions for alleged poor productivity. They destroyed some equipment and a quantity of silk in the ensuing argument with the management, which thereupon called on the magistrate to arrest the ringleaders. In the scuffle with the authorities, several workers were injured. By April the worker movement had spread to filatures in the Guanshan and Datong areas; a union was formed to demand 40 percent higher wages and discontinuation of management harassment. The owners, on their part, refused to entertain these demands and countered by closing shop. Some 100,000 workers were dismissed. Buying of cocoons was halted. The foreign minister of the Canton government, Wu Chaoshu, and the county magistrate of Shunde, Li Baoxiang, attempted to mediate between the two sides, but without success. Soon the worker movement spread to filatures in all of Shunde county, in Xiaolan of Xiangshan county, and in other parts in the delta as well.<sup>32</sup>

Faced with this crisis, the filature owners, the local gentry, and the lineage elders conferred on how to counter the workers' movement. Backed by the military force of the local self-defense bureaus (*ziweituanju*) or the public covenants (*gongyue*),<sup>33</sup> they issued public proclamations

<sup>29</sup> China, Imperial Maritime Customs, *Decennial Reports, 1892-1901*, I, 511.

<sup>30</sup> This is estimated from the number of reels in Shanghai filatures in 1929 and from data on the number of workers needed for various tasks per 100 reels in D. K. Lieu, *The Silk Reeling Industry in Shanghai* (Shanghai, 1932), 80-1. Several contemporary accounts of labor strife, including some quoted below, cited figures that exceeded 100,000, but these estimates might have been exaggerated.

<sup>31</sup> Zhao Qin, "Xinhai geming qianhou de Zhongguo gongren yundong," *Lishi yanjiu* (1959:2), 4.

<sup>32</sup> *Nongshi yuekan*, III:11 (May 1925), 83, 85; Uehara, 981-2; Jiaou, "Sijie baye wenti," *Nongsheng*, 51 (May 5, 1925), 920.

<sup>33</sup> These were gentry-dominated local militia that were formed during and after the Taiping Revolution. See *Shunde xian xuzhi*, *juan* III:5a, 11a-b.

forbidding the workers to join the union. The parents or brothers of the violaters would be held responsible and either expelled from the lineage or forbidden to take part in the ancestor worship ceremonies. The violaters themselves would be exiled from the village for perpetuity. Those who housed outside labor agitators would have their houses demolished and their possessions confiscated. The filatures then announced that they were ready to resume production and the buying of cocoons. As a carrot a 20 percent wage increase was granted.

Coming from families that depended for their livelihood on sericultural income that would be lost if the filatures continued to be shut down, the women workers were forced to yield. The Canton government intervened, ordering the filatures to recognize the union, to reinstate dismissed workers, and to reimburse all workers for the period when the filatures were closed and all injured workers for medical payments.<sup>34</sup> We do not know if the filatures complied with the government order.

At Shanghai filature workers also participated in numerous strikes. As early as April 1912, a union of silk workers was organized; however, promanagement workers became president and vice-president.<sup>35</sup> In 1923 the Silk Girls' Union was founded at Shanghai.<sup>36</sup> It appears that in this case also the union was a tool of management to control the workers: Mu Zhiying, who as the president of the union received \$300 per month from the Silk and Cocoon Guild, was considered by the workers to be a running dog of the management.<sup>37</sup>

In July 1924 a strike broke out among Shanghai filature workers, protesting the cutting of their daily wages from 45 cents the previous year to 38 cents. The filature operators blamed the fall of silk prices from 1,700–1,800 taels per picul to 900.<sup>38</sup> After several confrontations the two sides settled on a wage level of 43 cents and the release of arrested strike leaders.<sup>39</sup>

In 1926 a two-week strike at Wuxi filatures resulted in shortening daily working hours to eleven and raising daily wages from 45 to 50 cents. Labor unrest, which soon spilled over to Shanghai as well, was not limited to the silk-reeling sector. A strike at Yunyu Filature on June 6 spread to five other filatures and involved 3,500 workers. The filatures

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<sup>34</sup> *Nongshi yuekan*, III:12 (June 1925), 65–7; *Chinese Economic Bulletin*, no. 224 (June 6, 1925), 330.

<sup>35</sup> Zhao Qin, 5.

<sup>36</sup> "Silk Trade in 1926," *Chinese Economic Journal*, I: 3 (March 1927), 281.

<sup>37</sup> Uehara, 309.

<sup>38</sup> *Chinese Economic Bulletin*, no. 179 (July 26, 1924), 10.

<sup>39</sup> Uehara, 307.

agreed to allow one hour of rest at noon, an increase in wages of 5 cents per day, paid maternity leaves of one month before and after delivery for women who had worked for two years or more, and to reinstate one day's pay for the strike period.

Filature workers had become increasingly disenchanted with the union, believing that its president, Mu Zhiying, had conceded to management in several cases of labor disputes. A strike finally broke out as workers demanded her dismissal. In one confrontation with the police two workers were killed. A band of workers attacked the residence of Mu Zhiying, who fled. Eventually, 90 percent of filatures were affected by the strike. The managers finally agreed to Mu's dismissal, and the filatures were reopened with police aid.<sup>40</sup>

In 1927 conditions in Shanghai became highly unsettled as the Northern Expedition Army approached the city. The Communist-dominated General Labor Union presented demands for better conditions and higher wages to all industries, including the filatures. Most filatures stayed shut, and those remaining open did so only with police help. After Chiang Kai-shek's coup against the Communists in April, however, business began to return to normal and the filatures reopened. But on June 25 a worker was shot by a guard at Ruilun Filature, and 18 filatures were hit by a strike. It was resolved only after the filatures agreed to raise the pay to 48 cents per day. On September 15 another strike broke out, this time among the white-collar and male workers at the filatures; the women workers followed with a sympathy strike.<sup>41</sup>

Even with the purging of the Communists, the filature workers were apparently able to prevent the managers from dominating their unions again. The Shanghai Silk Filatures' Labor Union organized one of the largest-scale strikes ever in Shanghai between March 9 and 13, 1928, with the claimed participation of 6,000 men and 111,600 women employed in 93 filatures. On March 7 four workers at the Weilun Filature had been dismissed without cause, and in the ensuing scuffle a policeman had beaten one worker to death. The striking workers were persuaded to return to work when they were assured that the policeman and the sergeant in charge would be tried and, if found guilty, punished.<sup>42</sup>

The Chinese Court sentenced the constable to eight years' imprisonment but exonerated the filature manager and the sergeant, whom the workers accused of starting the fracas; two workers were sentenced to 18

<sup>40</sup> Uehara, 308-11; Zhu Bangxing et al., 169; "Silk Trade in 1926," 280-1.

<sup>41</sup> Uehara, 311-8.

<sup>42</sup> *Chinese Economic Bulletin*, XII:16 (April 21, 1928), 202-3; Zhu Bangxing et al., 170.



months in jail for stirring up trouble. Outraged by this judgment, the Shanghai Silk Filatures' Labor Union initiated a second strike, which lasted from June 7 to July 5, 1928, and mobilized 5,000 men, 50,000 women and 10,000 juveniles. The strike failed to win many of the workers' demands: punishment of the sergeant, reduction of working hours from eleven and a quarter to ten, release of their comrades, and union approval for worker dismissals. Although the workers demanded full pay during the strike period, they had to settle for four days' wages. While the Weilun Filature agreed to pay \$3,000 compensation to the victim's family, the fact that the sum was held in trust at a bank for a 30-year period made it virtually meaningless. Nevertheless, the workers did gain \$900 payment to the family for funeral expenses, \$1,700 to the union for compensation of losses, an increase of 2 cents per day in wages, and an increase from 20 cents to 30 cents in weekly bonuses for superior work.<sup>43</sup>

In August of the same year another strike broke out involving 4,500 women employed in 15 filatures north of Suzhou Creek. It was triggered by the management's refusal to shorten working hours during hot weather. While failing to gain compensation for wages lost during the strike, the workers did get their hours shortened by 15 minutes during hot weather.<sup>44</sup>

Apparently working conditions were no better in the remaining foreign-owned filature, the Ewo. It was hit by a strike between September 29 and October 3, 1927. The immediate cause was an incident involving a foreign foreman who had dismissed a Chinese worker for not obeying his orders to examine the silk filament by filament for defects. The workers only returned to work when the management agreed to all the demands: a guarantee that no similar incidents would occur in the future, full pay for the strike period, and treatment of workers identical to that prevailing in the Chinese filatures.<sup>45</sup>

The labor movement became especially intense in 1929, when five strikes occurred involving 18,964 women workers and 60 juveniles in 37 filatures; there were 17 incidents over wage increases.<sup>46</sup> Available sources suggest that while strikes plagued filatures in both the Shanghai and Canton regions, labor might have been less agitated in the Canton Delta. If so, then the Cantonese filatures might have enjoyed a considerable edge in labor supply that was not only steadier and more stable, but also less

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<sup>43</sup> *Chinese Economic Bulletin*, XIII:11 (Sept. 15, 1928), 138-9.

<sup>44</sup> *Ibid.*, 138.

<sup>45</sup> *Chinese Economic Bulletin*, XI:357 (December 24, 1927), 340.

<sup>46</sup> Shanghai tebieshi shehuiju, *Zenyang jiuji zhuyao gongye?* (Shanghai, 1930), 1-2.

restive.<sup>47</sup>

### **Undercapitalization of the Filatures and Their Reliance on Traditional Banks**

By the 1920s low wages and poor working conditions triggered numerous strikes and disrupted production. The filaturists, however, were not inclined to grant wage increases to boost worker morale, encourage productivity, and promote stability in personnel. They were induced to offer higher wages only by strikes or by unusually good trade prospects, which led to competition for workers. Short of capital, the filaturists were anxious to keep wages, the one expenditure over which they had a measure of control, as low as possible.

In Shanghai, partnerships were the most prevalent form of organization, as they were in most Chinese industrial and commercial organizations. In 1930, for instance, excluding 21 filatures the organizational form of which was unknown, of 86 filatures in Shanghai, 77 were partnerships, 5 individually financed, and 4 incorporations.<sup>48</sup>

While average plant size was decreasing over time, ownership remained dispersed and unconcentrated: in 1918, 17 filatures were owned by 9 separate individuals or families, and 54 filatures by 36 companies, including at least 5 real estate companies, 2 foreign import-export firms, 1 cotton mill, and 1 bank (Bank of Communications).<sup>49</sup>

Initially most Shanghai filatures were founded and run either by an individual or by a partnership. From about 1897 on, proprietors began leasing out their filatures instead of operating them themselves or through hired managers.<sup>50</sup> Filature owners had decided that, given the

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<sup>47</sup> Admittedly, the impression of a lower intensity of filature strikes in the Canton Delta might have been produced by incomplete or inadequate documentation. Nevertheless, this is highly plausible in view of the fact that all phases of the silk industry (including silk reeling) were integrated into the fabric of rural society. As the 1925 Shunde strike suggests, the work of labor agitators would have been hampered by the hold of the lineages on these villages, backed by military force partly financed by the cocoon likin tax and by investment in various stages of silk production (see below, p. 117ff.). Moreover, workers could not afford to keep the filatures shut down for long, as there were few avenues of rural employment outside the silk industry: the slump of the silk trade in the 1930s was to drive many women workers to seek domestic employment in Canton, Hong Kong, and Southeast Asia.

<sup>48</sup> Horie Eiichi, "Shina sanshigyō no seisan keitai," *Tōa keizai ronsō*, III:1 (Feb. 1943), 145.

<sup>49</sup> See the 1918 survey of Shanghai filatures in "A General Survey of the Raw Silk and Silkworm Industry in China."

<sup>50</sup> Shima Ichirō, "Sekai kyōkō to Chūgoku seishi kōgyō," reprinted in *Chūgoku kankei ronsetsu shiryō*, XVI, pt. 4:2 (1974), 68.

uncertainties of the market and the small differential in unit price between filature silk and hand-reeled silk (which roughly equaled the higher unit labor costs), it was safer to opt for rental income. Foreign filatures too adopted this expedient. After 1900 the Ewo Filature was rented to Zhu Jing'an, comprador of the parent firm, Jardine, Matheson.<sup>51</sup> In 1901 Iveson and Company advertised that its filature was available for rental.<sup>52</sup> Subsequently, some of the established merchants, including Zhou Shunqing of Wuxi, the Wang family of Nanxun, and Zhu Langfang, a comprador of Jardine, Matheson, as well as various traditional banks, seeing greater profits in filature rental than in direct management, constructed filatures that they rented out rather than managed directly.<sup>53</sup> The numerous real estate companies formed for these purposes were either individually owned or partnerships.<sup>54</sup> In 1922 some 40 percent of filatures were operated by entrepreneurs who did not own but merely leased the physical plant and the reeling equipment.<sup>55</sup> In 1928 only about 10 of some 93 filatures were managed by their owners.

Usually a rental contract covered the period from June to the following May, corresponding to the term of the partnership that would operate the filature. These partnerships, renewable at the harvesting of cocoons each year in late May, were commonly referred to as the "wild chicken filatures" (*yeji sichang*).<sup>56</sup> The owners would put up an amount equal to two weeks' to one month's wages in the event the company failed. By the mid-1920s the required contingency fund was increased to three months' wages. Any repair for damages under \$50 was the responsibility of the renter; the owner would only undertake repairs over \$50.<sup>57</sup> Rental was on the basis of the plant production capacity, and rose from 2 taels per reel per month before World War I to 3.5 taels to as high as 4.5 taels for a well-equipped plant. The average amount of capitalization per filature, however, covered only about 33–40 percent of the rental cost alone.<sup>58</sup> For many of the filatures, working capital borrowed from the local traditional banks often amounted to from five to more than ten

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<sup>51</sup> "Waishang yanghang lueduo huasi chukou de pianduan shiliao," *Wenshi ziliao xuanji* 23 (1979), 130.

<sup>52</sup> GYS, I, 70.

<sup>53</sup> "Waishang yanghang lueduo huasi chukou de pianduan shiliao," 130.

<sup>54</sup> Chen Zhen, IV:1, 152.

<sup>55</sup> *Chinese Economic Bulletin*, no. 123 (June 30, 1923), 2.

<sup>56</sup> "Shanghai Silk Filatures," *Chinese Economic Journal*, III:1 (July 1928), 590–1; Horie (I), 150.

<sup>57</sup> Uehara, 254.

<sup>58</sup> Shima, 68.

times the initial capitalization.<sup>59</sup>

The same separation between ownership and management prevailed at Wuxi. As at Shanghai, the desire to avoid risks prompted many Wuxi capitalists to build and rent out filatures rather than to manage them directly after 1920.<sup>60</sup> A peculiar feature of this filature rental system at Shanghai was that no matter how often a plant changed management, the engine room usually continued to be run by the same proprietor, who had been at it since the filature's construction; he was paid a fixed sum by whoever was the current manager. Because his technical skill and familiarity with the particular engine made him able to keep the machinery functioning better than anybody else, the engine room proprietor had longstanding tenure. Because of his seniority in the filature, he was known as the old devil (*laogui*).<sup>61</sup>

Indeed, one major element of the Shanghai silk-reeling industry was the machinery industry it spawned. At first machinery was imported from Italy and France, but beginning in the 1890s a small but thriving silk-reeling machinery industry arose at Shanghai, the success of which was assured by demand from the booming silk-reeling industry at Jiangnan on the one hand and by the nature of the machinery on the other: the bulkiness of the machines meant that the transport costs of importing them would be high, while the simplicity of the design made it easy to copy. Moreover, it was possible to parcel out subcontract work for the manufacturing of various spare parts to iron casting shops, copper and tin shops and the like, thus lowering the capital requirements for the opening of a new shop.

Usually the founders of these machine shops were machinists who had previous experience as apprentices. Yongchang Machinery Shop, originally a ship repair yard, went into the silk-reeling machinery business around 1890 and by 1895 employed about 100 workers, half of whom were apprentices; its products were sold to filatures in all parts of Jiangnan and even as far as Shandong. Thereafter the business declined; although the shop was reorganized in 1907, it closed down permanently in 1911. Between 1895 and 1913, however, seven silk-reeling machinery shops were established in Shanghai, most of which were directly or indirectly related to Yongchang; three were initiated by former employees

<sup>59</sup> Chen Zhen, IV:1, 153.

<sup>60</sup> Zhang Zhongbi, "Wuxi gongye diaocha (xu)," *Tongji yuebao*, II:7 (July 1930), 72; Gao Jingyue, "Wuxi saosi gongye de fazhan he qiye guanli de yanbian," *Zhongguo shehui jingji shi yanjiu* 4 (1983:1), 103.

<sup>61</sup> Lieu (1940), 113-4.

or apprentices, and one by a subcontractor. Most of these shops were founded with little capital, usually \$200 to \$1,000.

Demand for new reels declined after 1900; however, the shop owners found additional lucrative sources of revenue apart from the sale of machines. They took over the responsibility of maintaining and repairing the machinery in the filatures and of supplying spare parts and even raw materials like coal. In the 1920s each of the "Four Big Old Devils" (*sida laogui*) was in charge of the machinery of more than ten filatures. Because of the vital functions they performed for the filatures, they came to exert a strong influence on the course of the silk-reeling industry. Not only did these men design filatures in Shanghai, Wuxi, and other cities in the Jiangnan region, they also took charge of the machinery in these plants. The old devils were thus no mere employees of the filatures, but entrepreneurs in their own right. They seldom visited the filatures they took care of, instead delegating the routine responsibilities to the second devils (*ergui*) and other technicians. Not infrequently they supplied capital to the industry as well. The sale of reels, for example, could be arranged on a term payment basis. Depending on market conditions, an old devil might transport machinery from one filature under his care to another. Several of the old devils invested in the filatures, and in some instances even took over the management of the filatures that had been closed down, renting them out to other proprietors.<sup>62</sup>

One reason for the growing separation of ownership and management in the silk-reeling industry was rising construction costs and land values in Shanghai after about 1900. Most partnerships amassed a capital of between 30,000 and 60,000 taels; but by 1907, as urban real estate values boomed and as the wages of carpenters and bricklayers rose by more than 30 percent over the same period,<sup>63</sup> a filature that had cost about 50,000–60,000 taels to construct five or six years earlier now cost more than 70,000 taels. After the outbreak of World War I, the steep rise in iron and brick prices added to the cost. Before the war the construction cost per reel (including land and building) was 250 taels; after, it rose to 300–350 taels. To build a filature of 240 reels required about 80,000 taels.<sup>64</sup> In the 1920s Shanghai filatures tended to move from the foreign concessions to the Chinese sections, where land values were lower and where the workers resided. Thus, high real estate values in Shanghai was one factor in the faster development of the Wuxi silk-

<sup>62</sup> *Shanghai minzu jiqi gongye* (Shanghai, 1979), I, 99, 165–70, 322–7.

<sup>63</sup> Tōa dōbunkai, comp., *Shina keizai zensho*, XXII, 34–5.

<sup>64</sup> Uehara, 242–3.

reeling industry in the 1920s; other factors included a lower tax burden, easier access to cocoon supply, and a lower level of labor organization.<sup>65</sup>

The trend toward the separation of ownership and management was accentuated by the onset of World War I, when transport costs soared as Allied shipping was diverted to more urgent uses. This period proved a boon to many Chinese industries, which found themselves shielded from foreign competition, but for export-oriented industries and trades it was disastrous. As hostilities broke out in 1914 silk trade with Europe was completely cut off; many European dealers cancelled silk contracts with the plea of force majeure. Although the American market and, to a much lesser extent, the British market were kept open, prices fell 20–25 percent, making it unprofitable to manufacture silk at the current cocoon prices.<sup>66</sup> More than 10,000 longshoremen and 120,000 filature workers in Shanghai reportedly lost their jobs.<sup>67</sup> In January 1915 an export subsidy of 600,000 taels from the Peking government through the Bank of China to 72 filatures in Jiangnan helped to revive the industry.<sup>68</sup> The industry was also helped by the lessening of hostilities and by new uses of silk as other materials were in short supply: silk was used for the covering of parachutes and ammunition bags.

But in 1917 hostilities again erupted in full. Taking advantage of the war, Japanese shipping monopolized Chinese trade with the United States and Europe.<sup>69</sup> Facing soaring transport and insurance costs and coal prices and declining silk prices, the Shanghai silk industry as a whole lost over 4 million taels in 1917, more than 40 filatures were shut down, and many proprietors became insolvent and absconded.<sup>70</sup> A loan of one million taels from the Peking government again helped to bail out the industry.<sup>71</sup> The developments of this period must have intensified the trend toward the filature rental system: filatures of absconding proprietors fell into the hands of their debtors, traditional banks or other money-lenders, who, being unwilling to manage these plants themselves, rented them out. Increasing labor-control problems by the 1920s gave an additional incentive to people with capital to become rentiers, leaving

<sup>65</sup> Uehara, 349–50, 353–7.

<sup>66</sup> China, Maritime Customs, *Trade Returns, 1914*, 681, 997.

<sup>67</sup> Zhao Qin, 12.

<sup>68</sup> Uehara, 367–8.

<sup>69</sup> “Ribei longduan Taipingyang hangye zhi jihua,” *DFZZ*, XIV:12 (Dec. 1917), 48; “Minguo liunian Shanghai sicha maoyi zhi gaikuang,” *DFZZ*, XV:9 (Sept. 1918), 147.

<sup>70</sup> Y. L. Chang, “China’s Silk Industry and Reforms,” *Millard’s Review*, V:8 (July 20, 1918), 321.

<sup>71</sup> Uehara, 368.

filaturists short on capital to take on the yearly hassle with labor.

The separation of ownership and management considerably lessened the capitalization required for operating a filature and made entry into the industry easier, since fixed capital for construction of buildings and machinery had been borne by those who leased out the plants or by some former owners. At the same time, this structural change not only accentuated the lack of vertical integration of the industry, but also encouraged speculation and discouraged technical renovation and expansion of the plants.

Indeed, there are some parallels between land and filature rental. The same entrepreneur might be managing as many as six filatures, all at different locations, and with different owners. He might change plants, but he retained the name of his enterprise. Two or three filatures might share the same address: in 1926, for example, at least 36 of 81 filatures shared the same location with one or more other filatures;<sup>72</sup> this might have been due either to different entrepreneurs renting part of a physical plant or to different filatures operating at the same time during different times of the year. Like tenant farmers, a filaturist or filature syndicate usually did not possess enough working capital to carry it through the season, relying on either brash expectations or connections with the traditional banks when cash was needed for the purchase of cocoons and other inputs or for the payment of wages and rent.

Though they were larger on average than Shanghai filatures and included consortia of filatures,<sup>73</sup> Cantonese filatures remained on the whole just as dispersed in ownership and lacking in horizontal integration. Initially the local gentry and lineages impeded the construction and operations of the first filatures by charging exorbitant rents for the building sites, by extorting additional sums of money through allegations that the filatures disturbed the local geomantic configurations, and by buying refuse silkworms (which could be used as feed for fish cultures) at cheap prices.<sup>74</sup> Over time, the gentry and the lineages recognized the profitability of the silk filatures as industrial and real estate investment. The trailblazer Chen Qiyuan was himself originally an aspirant to scholar-gentry who failed twice at the examinations before turning to commerce;<sup>75</sup> after he became a successful entrepreneur, however, he steadfastly refused to purchase a degree,<sup>76</sup> thus serving as another exam-

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<sup>72</sup> See the list of filatures in "Silk Filatures in Shanghai," (1926), 423–32.

<sup>73</sup> See below, p. 84ff.

<sup>74</sup> Li Benli, 116.

<sup>75</sup> Alvin So, 168.

<sup>76</sup> For the biography of Chen Qiyuan, see *Nanghai xian zhi, juan* 21:4b–6b.

ple of how in the late Qing mercantile wealth had become an end in itself rather than an avenue to gentry status. The brothers Chen Zhiqu and Chen Zhishu, owners of the filature looted in the 1881 weavers' riot at Nanhai county, were provincial graduates (*juren*) under the Chinese examination system and hence members of the gentry. According to an 1887 report by the Likin Bureau of Guangdong (*Guangdong liwu zongju*) to the governor-general of Guangdong-Guangxi, most of the filatures were built by the collective capital of substantial gentry (*yinshi shenshi*).<sup>77</sup> In many localities, the lineages built and rented out the filatures:<sup>78</sup> in 1919, for example, the He lineage of Shuiteng in Shunde county organized a joint-stock company that constructed a filature and rented it to lineage members; in addition to the regular rent to be divided among the shareholders, the renters also had to pay a supplement to the lineage treasury.<sup>79</sup> Thus, many filatures came to be the rental property of individual gentry, landlords as well as the corporate lineages.<sup>80</sup>

Rising construction costs, too, were a major reason for this evolution in business structure. In the Canton region, in the last decades of the nineteenth century 15,000–16,000 taels were required for the construction of a plant of 400–500 reels; by 1900 the cost had gone up to 20,000 taels. But most partnerships pooled a total of about 20,000 taels, and thus after the construction of the filature no money was left for working capital.<sup>81</sup> While the stock company form seemed to have characterized many of the Cantonese filatures, most investors spread out their capital in several companies, rather than concentrating their resources on one filature; moreover, all profits were redistributed as dividends rather than reinvested.<sup>82</sup> Consequently, the Canton filatures, too, suffered from a shortage of capital. Therefore, although initially most filatures were run by the owners or their agents, in time the majority came to be rented rather than owned by their managers. Renting existing plants, as in Shanghai, represented a cost-saving option that facilitated entry into the industry but fostered speculation and technical stagnation.

Filatures in both regions, like most Chinese industrial and commercial enterprises, depended for their working capital on the traditional banks (*qianzhuang*) or money shops (*yinpu*).<sup>83</sup> It was these traditional

<sup>77</sup> Cheng Yaoming, "Qing mo Shunde xian jiqi saosiy de fasheng, fazhan ji qi yingxiang," paper delivered at Guangdong Ming-Qing jingjishi xueshu taolunhui (1982), 10.

<sup>78</sup> Lei and Lei, 123.

<sup>79</sup> *Heshi shilue* (1923), 24b.

<sup>80</sup> Li Benli, 116.

<sup>81</sup> *Nanhai xianzhi*, juan 4:39b.

<sup>82</sup> Howard and Buswell, 123; *Nongshi yuekan*, IV:8 (Feb. 1926), 13.

<sup>83</sup> In addition to the *qianzhuang* and *yinhao*, which usually operated at the local level,



banks, which dated from the early Qing period,<sup>84</sup> rather than the foreign or the modern Chinese banks, that served as the financial underpinnings for most private commercial and industrial enterprises. The foreign banks were not investment banks; they were primarily interested in foreign trade and currency exchange operations. The modern Chinese banks, which began their history with the establishment of the Imperial Bank of China in 1896, functioned less as a supplier of capital to commerce and industry than as an instrument of government finance. Before the Second Sino-Japanese War, industrial investment was about 12–13 percent of total modern Chinese bank loans, commercial loans accounted for about 30 percent, while the financing of public debt and government investment amounted to over 40 percent.<sup>85</sup>

The traditional banks might participate in industrial enterprise through direct investment, the collection of stock purchase payments on behalf of a company at the time of formation, and loaning working capital to enterprises on trust or with collateral. Loans remained the most important way whereby the banks participated in commercial and industrial activities. After 1900 industrial loans probably accounted for 20–30 percent of all loans by the Shanghai traditional banks.<sup>86</sup> Among industrial loans the overwhelming percentage was made to light industrial enterprises, particularly filatures and cotton mills.<sup>87</sup> As cocoon purchases amounted to about three-fourths of a filature's expenses, the need of Shanghai filatures for working capital was especially acute at the cocoon buying season. They secured from the traditional banks loans for a two-month period. If the borrower was of good standing, he might be

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there were the Shanxi banks (*Shanxi piaohao*). These were quasi-governmental banks with branches all over the empire. Their prominence dated from the Taiping Revolution when the Qing government turned over to them the functions of transferring official funds. They also handled the issuance of bills of exchange, the deposits of officials, and loans to expectant officials. However, they were not directly involved in commercial and industrial loans. With the establishment of imperial and provincial banks from about 1890, which took over the function of handling the deposit and transfer of official funds, they began to decline. They failed to accept several Qing invitations to participate in the new official banks (including modern banks), and after the fall of the dynasty, their eclipse was completed. See Zhang Yulan, 13, 31.

<sup>84</sup> Andrea McElderry, *Shanghai Old-style Banks (Ch'ien-chuang), 1800–1935* (Ann Arbor, 1976), 2; "Native Banks in Canton," *Chinese Economic Journal*, XI:3 (Sept. 1932), 187.

<sup>85</sup> Wu Chengming, "Zhongguo minzu ziben de tedian," *Jingji yanjiu* (1956:6), 136.

<sup>86</sup> Yokoyama Suguru, "Chūgoku minzoku kōgyō shihon to no kankei ni tsuite," *Shakai keizai shigaku*, XXVII:3 (Dec. 1961), 26–8.

<sup>87</sup> *Ibid.*, 34.

able to obtain a loan at only 6 percent per annum interest and with no security deposit required.<sup>88</sup> Otherwise a guarantor had to be found, and a cash security deposit amounting to 30 percent of the loan had to be paid to the bank; the interest rate would often be 7.2–14.4 percent per annum. In the purchase of cocoons, the bank representatives would handle the transfer of funds and payment at the cocoon areas. After the cocoons had been shipped to Shanghai and stored at a warehouse, the warehouse receipt remained in the hands of the bank as collateral.<sup>89</sup> Some of these cocoon warehouses belonged to the filatures and other private companies, but many were owned by the traditional and modern banks. In the mid-1920s more than 20 cocoon warehouses belonged to these banks. The Bank of China alone owned 6.<sup>90</sup>

Similarly, members of Zhongxin Tang, the guild of money shops in Canton, made loans to the cocoon markets and silk filatures in Daliang, Rongqi, Guizhou, and other places in Shunde and Nanhai counties their primary business.<sup>91</sup> They maintained branches in the market town centers of silk production; by the twentieth century, there were more than 40 branches of Canton money shops in Rongqi.<sup>92</sup> Through these banks silk filature owners and others connected with the silk trade obtained their working capital.<sup>93</sup> Typically, the filatures in times of need borrowed from the money shops on short terms, usually for 15 days or until the end of reeling, at an interest rate of 8–15 percent.<sup>94</sup> American buyers generally paid by promissory notes of three to four month terms, which might be submitted by the filature to the bank for cash at a discount.<sup>95</sup>

The Cantonese filatures enjoyed a source of capital largely absent from the Shanghai financial market: remissions from emigrants. In Siam, Indo-China, and the Netherlands Indies, the Chinese were dominant in retail trade (particularly rice).<sup>96</sup> Chen Qiyuan was only one example of returned overseas Chinese capitalists who invested in the silk

<sup>88</sup> Buchanan, 9.

<sup>89</sup> Lieu (1940), 101; Horie (II), 148–9.

<sup>90</sup> Uehara, 229.

<sup>91</sup> Zhi Ziqing, "Youguan Guangzhou zhi yinye yu siye de yixie cailiao," *Guangzhou wenshi ziliao*, 16 (1965), 78.

<sup>92</sup> Li Benli, 107.

<sup>93</sup> Ou Xiuluan and Huang Yinpu, *Guangzhou zhi yinye* (Canton, 1932), 190, 192, 259; "Native Banks in Canton," *Chinese Economic Journal*, X:3 (Sept. 1932), 188–9, 195.

<sup>94</sup> Howard and Buswell, 123; Lei and Lei, 113.

<sup>95</sup> *Nongshi yuekan*, II:10 (April 1924), 57.

<sup>96</sup> C. G. Fuson, "The Peoples of Kwangtung: Their Origin, Migrations, and Present Distribution," *Lingnan Science Journal*, VII (June 1929), 13–5.

filatures; another was Zhou Pan of Luzhou in Shunde, who repatriated from South Africa to expand his family's filature business.<sup>97</sup> Moreover, by the 1920s, several tens of thousands of Shunde men were engaged in commerce overseas and remitted millions of dollars home annually.<sup>98</sup> These remittances must have constituted an important source of capital for filatures either directly (as in the case of the brothers Chen Qiyuan and Qishu), or indirectly, through the traditional banks of Canton, which were largely controlled by natives of the silk counties. The Shunde group, with 56 percent of total capital in 540 old-style banks in Canton around 1930, was the single most important banking group. After the Siyi group, the Nanhai group stood third in importance, with 13 percent of total capital; even the Siyi group relied on the experienced Shunde men for the management of their banks.<sup>99</sup>

It is certain that many of the Canton and Shanghai filaturists had intimate relations with the local banking business; loans were made in many cases without collateral, and they were often renewed from year to year. Ye Chengzhong (1840–1899), who established the Lunhua Filature in Shanghai as well as invested in several other enterprises, had his own bank at Shanghai, and his family subsequently established several more.<sup>100</sup> The Hangzhou filaturist Pang Yuanji had been a silk merchant at Huzhou as well as an owner of a traditional bank.<sup>101</sup> Many of the Cantonese filaturists were simultaneously proprietors of Canton money shops: Cen Guohua, who managed 18 filatures directly and sold raw silk on behalf of 39 filatures in the early twentieth century, also owned seven money shops.<sup>102</sup>

### **Filatures, Traditional Banks, and the Foreign Sector**

Equally certainly, many Shanghai filaturists had solid links to the foreign import-export business and had previously been involved in Sino-Western trade or even served as compradors to the Western firms. At the beginning of his career, Ye Chengzhong periodically rowed a

<sup>97</sup> Li Benli, 113.

<sup>98</sup> Guoli Zhongshan daxue nongkexueyuan, *Guangdong nongye gaikuang diaocha baogaoshu xubian* (Canton, 1929), 135.

<sup>99</sup> Ou and Huang, 75.

<sup>100</sup> Ye's other holdings included match factories in Shanghai and Hankou, the Commercial Bank of China, and a coal mine in Fujian. Zhongguo renmin yinhang Shanghai shi fenhang, *Shanghai qianzhuang shiliao* (Shanghai, 1960), 743.

<sup>101</sup> GYS, II, 417.

<sup>102</sup> Li Benli, 113.

small boat out to the Shanghai harbor to trade with Western vessels, and thus built up many foreign business connections.<sup>103</sup> Huang Zuoqing, founder of the first Chinese filature in Shanghai, was a merchant dealing in silk exports. Before 1911 the Huzhou group, composed largely of silk merchants, was the dominant clique in the silk-reeling industry at Shanghai.<sup>104</sup> The dozen or so of the most well-known and successful silk manufacturers in the late nineteenth and early twentieth centuries were all concurrently compradors as well;<sup>105</sup> at the same time, many also operated their own silk wholesale firms (*sihao*).<sup>106</sup> Many of the Shanghai comparadors who entered the silk-reeling and export businesses had originally been silk and cocoon merchants, sales agents in the silk trade (*sitongshi*), and operators of silk warehouses; others had been apprentices at the Western firms. The Ruilun Filature, one of the largest, best-equipped, and oldest in Shanghai, was founded in 1894 by Wu Shaoqing, who had become the comprador of Arnhold, Karberg and Company after his extensive dealings with it as a silk merchant. Zhu Dacun, the founder of the Yuanchang Filature in 1904 and later one of the most distinguished businessmen in Shanghai, was a comprador of Jardine, Matheson. Another well-known Shanghai filaturist, Wu Weichen, began as an apprentice at a French firm, was later assigned the duties of filing customs documents, and served as comprador from 1918 to 1946.<sup>107</sup> Even a filaturist of such distinguished family background with official connections as Xue Nanming of Wuxi found it expedient to be simultaneously a comprador.<sup>108</sup> This combination of holding the job of comprador at a Western firm and managing a silk filature concurrently became hereditary in some cases, the best known instance being that of Wu Shaoqing, whose son Dengying and grandson Shenbo inherited the comprador post at Arnhold, Karberg as well as carried on the family business in silk-reeling.<sup>109</sup>

As at Shanghai, the managers of the Cantonese filatures also tended to be men with connections to both traditional banking and the foreign import-export business. We have already seen the links between silk-

<sup>103</sup> Cong Hanxiang, "Guanyu Zhongguo minzu ziben de yuanshi jilei wenti," *Lishi yanjiu* (1962:2), reprinted in JSBN, IV, 148.

<sup>104</sup> Cong Hanxiang, 139.

<sup>105</sup> Chen Zhen, IV:1, 112.

<sup>106</sup> There are short biographical sketches of these men in Uehara, 325-332, 430-1.

<sup>107</sup> "Waishang yanghang lueduo huasi chukou de pianduan shiliao," 113-4; Wang Jingyu (1965), 431; Cong Hanxiang, 139.

<sup>108</sup> GYS, II, 945.

<sup>109</sup> "Waishang yanghang lueduo huasi chukou de pianduan shiliao," 113.

reeling and the traditional banks. In addition to access to capital, commercial experience was also helpful in a new line of production. Many of the filature operators, including Chen Qiyuan himself, had cut their teeth in other enterprises, which were often but not exclusively related to silk production and exports. He Xiangchi of Liangjiao, founder of the first Shunde filature, got started originally in the bean oil business and eventually managed more than ten filatures financed by the pooled capital of numerous partners. Cen Guohua's father, Xin, had served as a buyer for a filature; he himself worked as a filature packer and gained experience in a silk commission house, ultimately becoming the leader of the largest filature group at Canton.<sup>110</sup> Like Chen Qiyuan, who not only operated other subsidiary businesses but also managed the provincial antimony mines at the request of Governor Mo Tao, many filaturists simultaneously carried on other enterprises. Liu Shuncaï (1835–1919) mixed the rice business with his silk-reeling venture,<sup>111</sup> a combination that must have proved congenial to many filaturists, for, as we shall see, the rural hinterlands where they operated were rice-deficit regions where mulberry growing and silkworm raising had displaced rice cultivation. Even more important, however, it was essential for a filaturist to develop ties with the foreign firms in an export-oriented business.

The case of Chen Qiyuan's family, which continued in the silk business for the next two generations, is again illustrative. Many filaturists had their sons and younger brothers acquire an education in English so that they could become sales agents and managers of the silk commission houses (*sizhuang*) that sold raw silk to the foreign export firms; consequently, a generation of compradors emerged from these Shunde natives, many of whom, even after the demise of the silk trade and the end of World War II, became compradors at the Western firms of Hong Kong.<sup>112</sup> Chen Qiyuan's grandson, Chen Lianbo (1884–1945?), was educated at King's College in Hong Kong, and at sixteen entered the service of the Canton branch of the Hongkong-Shanghai Banking Corporation, where he later became the head comprador.<sup>113</sup>

As a group, the compradors played a leading role in the introduction of modern industry to China. Before the Opium War, Sino-Western trade had been conducted through a group of licensed Chinese merchants

<sup>110</sup> Li Benli, 113.

<sup>111</sup> *Liushi jiapu* (1934), "Shuncaï gong xiaojuan."

<sup>112</sup> Li Benli, 112.

<sup>113</sup> Chen Tianjie, "Wo shuo zhidao Chen Lianbo de jijian shi," *Guangzhou wenshi ziliao*, 10 (1963), 183; Chen Guo, "Guangzhou shangtuan banbian hou de Chen Lianbo," *Guangdong wenshi ziliao*, 19 (1965), 86.

known as the Cohong. The abolition of the Cohong system under the Treaty of Nanking led to the rise of the compradors as the new collaborators of the Western traders. Unlike the supplanted hong merchants, the compradors were not government-licensed brokers but Chinese employees of the Western firms. They gradually expanded their functions beyond that of a house steward-treasurer to include the recruitment and supervision of the Chinese staff, the supplying of market information, and the conducting of business with the Chinese merchants on behalf of the Western firm. The latter found the compradors to be indispensable because of their intimate knowledge of local trade conditions. Moreover, the Western firm reduced its own risks through the guaranty system: the comprador had to assume financial responsibility for all transactions he conducted on behalf of the Western firm. After 1850 almost every comprador had to make a security deposit with the firm where he was employed.<sup>114</sup>

Protected from official squeeze because of their employment status with the foreigners, the compradors were able to amass large fortunes earned from salaries and from commissions on the vastly profitable opium trade. With this capital and with the knowledge about modern industry and commerce gained from their Western contacts, they were able to participate in modern enterprises in a number of ways: as investors in the Western steamship companies and industries organized in China from the 1860s on, as managers and investors in the official-supervision merchant-management enterprises during the Foreign Affairs Movement, and as promoters and founders of their own companies.<sup>115</sup> As we have seen, many compradors played important roles in the Chinese silk-reeling industry.

If some compradors became modern entrepreneurs, however, many more channelled their new wealth into traditional avenues of investment. During the second half of the nineteenth century, the Nanxun silk merchants, many of whom dealt with the Western firms in the Huzhou silk trade, invested their profits mostly in salt, pawnbroking, and real estate; many became absentee residents of Shanghai. Among these wealthy merchants, Pang Yuanji started a few industries, including a filature at Hangzhou, but only Mei Eqing invested the main part of his fortune in silk filatures.<sup>116</sup>

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<sup>114</sup> Yen-p'ing Hao, *The Comprador in Nineteenth Century China* (Cambridge, Mass., 1970), 51.

<sup>115</sup> For an estimate of the extent of the investment by compradors, see Hao, chap. VI.

<sup>116</sup> China Institute of Economic and Statistical Research, *A Study of the Rural Economy of Wuhing, Chekiang* (Shanghai, 1939), 97.

Moreover, there was a decline in the status and importance of the compradors from the beginning of the twentieth century. As foreign personnel became more familiar with Chinese conditions, the compradors were depended on less and less by the Western and Japanese firms and were often no longer required to guarantee the full amount of transactions with Chinese dealers; their liability became limited to 25 percent at Shanghai and North China. In Canton they were still fully liable, but as intermediaries of the Sino-Western trade they were challenged by freelance brokers.<sup>117</sup> As the capital requirements for compradors fell because of the lowering of their liability to the foreign firm, the average resources of the group as a whole also diminished. This decline in the status and wealth of the compradors paralleled the downward tendency in average plant size at the Shanghai filatures: after 1900, no filatures over 600 reels were built in Shanghai.<sup>118</sup>

The continuing prominence of the compradors in the Shanghai silk-reeling business, despite their declining status, and their concurrent management of silk wholesale firms are not surprising, in view of the set-up of the silk export business. The connections of many silk manufacturers to the foreign export firm is a natural corollary of the fact that overseas sales had to be conducted through these firms. At Shanghai, sales of filature silk to the foreign firms was handled by filature silk wholesale houses (*sihao*) on behalf of filatures in Jiangnan. The forerunners of these houses were the hand-reeled silk wholesale houses (*sizan*), which collected silk from itinerant merchants, for a commission.<sup>119</sup> By the early 1930s there were still ten such firms.

Usually the filature silk wholesale firms were connected with three or four filatures. These wholesale firms sometimes served as an alternate source of loans for cocoon purchases by the filatures.<sup>120</sup> Otherwise, at the time of the sale, the wholesalers advanced money to the filatures for the repayment of bank loans, as payment by the Western firm was not made until after the silk had been shipped. Negotiations were conducted between a silk agent (*sitongshi*) acting on behalf of the wholesaler and a comprador who took charge of the foreign firm's silk department (*silou*). Usually the silk was sold on delivery four to five months in the future, though sometimes on spot delivery.<sup>121</sup> The comprador generally earned

<sup>117</sup> Julean Arnold et al., *China: A Commercial and Industrial Handbook* (Washington, D.C., 1926).

<sup>118</sup> Moriyasu Yoshio, "Shina sanshigyō keizai shiron," *Hitotsubashi ronsō*, XI:4 (April 1943), 354.

<sup>119</sup> Shi Minxiong, 58.

<sup>120</sup> "Waishang yanghang lueduo huasi chukou de pianduan shiliao," 107.

<sup>121</sup> Lieu (1940), 142-6.

most of his income not from his salary, but from sales commissions.<sup>122</sup>

In Canton each silk commission house (*sizhuang*) represented several filatures in dealings with the foreign exporters. These houses numbered about 20 in 1925. Silk was sent by boat from the filatures to the houses for storage and sale.<sup>123</sup> The commission houses also served as a direct or indirect source of loans for the filatures: the filature could secure a loan at an annual interest rate of about 8 or 9 percent by agreeing to sell part or all of its production through the commission house;<sup>124</sup> the house could also help the filature obtain an advance from a money shop with which it had good relations.<sup>125</sup> Each day an agent of the commission house (*jingji* or, in popular parlance, *zizhan*) visited the foreign firms. Formerly paid a fixed commission of 0.8 percent of sales, these agents were by the 1920s paid a salary, the level of which was determined by the number of filatures represented by the house. Their counterparts at the foreign firms, the compradors, were reimbursed with a 0.15 percent commission, out of which they paid the salaries and wages of the men they hired.<sup>126</sup>

These commission houses in effect constituted filature consortia, and their organizers were necessarily connected with the silk production or money businesses. To facilitate his overseas sales, Chen Qiyuan set up at Canton his own silk commission house, Changzan *sizhuang*.<sup>127</sup> His grandson Lianbo not only founded a money shop at Canton<sup>128</sup> but also expanded Changzan's commercial scope considerably from 1909 by making use of his business connections as the head comprador of Hongkong-Shanghai Banking Corporation and as a member of the Canton Chamber of Commerce. Chen organized a raw silk sales consortium, the shareholders of which included owners of some of the best known silk commission houses, filatures, waste silk houses, and silk fabric houses at Canton. This consortium had an initial capitalization of \$500,000 Canton, of which Chen contributed \$200,000 Canton, drawing not only on his personal funds but also from his lineage; after 1917 with the added participation of several more well-known owners of silk commission houses, filatures, silk fabric houses, silk fabric manufactories, and machine shops at Canton and Shunde, the consortium's total capitaliza-

<sup>122</sup> "Waishang yanghang lueduo huasi chukou de pianduan shiliao," 109-110.

<sup>123</sup> Lei and Lei, 111.

<sup>124</sup> Cheng Yaoming, 17.

<sup>125</sup> Li Benli, 112.

<sup>126</sup> Lei and Lei, 412; *Nongshi yuekan*, IV:8 (Feb. 1926), 19.

<sup>127</sup> Chen Tianjie and Chen Qitong, 71.

<sup>128</sup> Chen Guo, 89.



tion was increased to \$1 million Canton. Chen decided on a common buying and selling strategy for the consortium, the members of which contributed to the buying fund percentages that corresponded to their share of capitalization. With Chen's business connections and knowledge of the silk trade, and with the individual members' capital and experience in the silk business, the consortium was generally profitable and cornered a substantial proportion of the raw silk exports.<sup>129</sup>

Although Chen's consortium was the strongest in market power, there were other leading silk commission houses. He Xiangchi and Zhou Pan were both filaturists, each managing more than ten filatures that were represented by their own silk commission houses. Not only did Cen Guohua directly manage eighteen filatures, but his commission house, Yongtailong sizhuang, sold silk on behalf of 21 other filatures.<sup>130</sup>

If the traditional banks served as the financial underpinnings of the filatures and the wholesalers, the modern foreign banks performed the same function with respect to the Western import-export firms. The procedures in the silk trade were similar to those in export trade in general. The European or American buyer would send a letter of credit to the Western firm at Shanghai. On the basis of that letter the Western bank at Shanghai would grant the firm credit (called packing credit) after the latter had signed a promissory bill signing over the silk to be purchased as collateral. After the silk had been shipped, the firm turned over to the bank shipping documents, bills of lading, marine insurance certificates, consular invoices, and the exporters' draft and invoice. The bank forwarded these documents to the buyer abroad for payment, and deducted from the export firm's account 0.12 percent exchange fee and 0.06 percent collection fee on the value of the silk.<sup>131</sup>

The system worked similarly for imports. The Western import-export firm acted as an intermediary between the Chinese merchant and the Western exporter in Europe or America. The Shanghai foreign bank collected on behalf of the Shanghai foreign firm from the overseas firm, took care of the payment of import duties, and stored the goods at its warehouse. The merchandise would be released to the Chinese merchant upon his presentation of a delivery order from the Western import firm and a native bank order (*zhuangpiao*). The bank then credited the Western firm's account with the difference between the overseas payment

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<sup>129</sup> Chen Tianjie, 183-7.

<sup>130</sup> Li Benli, 113.

<sup>131</sup> Buchanan, 39-40.

and the Chinese merchant's payment plus various handling charges.<sup>132</sup>

The foreign bank and its client firm and the Chinese traditional bank and its client firm were financially linked in this manner. In the export of silk, for instance, the Western firm wrote a check to the Chinese firm on the basis of its packing credit at the foreign bank. As the Chinese firm had no accounts with the bank, it would submit the check to its bank for collection. In the import of goods into China, the Chinese merchants paid in the form of a native bank order to the Western firm, which handed it to the foreign banks for collection. When the imports and exports were roughly balanced, there was more or less a cancellation of debts when the foreign banks and the traditional banks settled accounts. But especially after 1880 there was a net surplus of goods flowing into China, and the traditional banks were forced to pay in specie. The foreign banks, however, were loaded with capital derived in currency exchange speculations and foreign trade transactions. To keep the system functioning, they were prompted to issue call money (called chop loans or *zhepiao*) to the traditional banks when the latter had cash flow problems. These banks, which had an average capitalization of about 20,000 taels, might receive as much as 70,000–80,000 taels of chop loans at one time.<sup>133</sup> These loans were usually made for two days, but might be extended indefinitely. In the event that the Chinese bank failed to honor its bank order, the Western bank could hold responsible its comprador, who had guaranteed the Chinese bank. If the Western firm defaulted, the bank could sell the goods held as collateral. The Chinese traditional banker, however, had no such recourse. He usually made loans on trust, and even if he were able to take the defaulting borrower's merchandise, he would be in serious difficulties. Because most banks were undercapitalized, they depended on a smooth cash flow to function properly and could ill afford a default that tightened the supply of working capital.<sup>134</sup>

In the wake of two financial crises in Shanghai, the 1910 Rubber Crisis and the one following the outbreak of the 1911 Revolution, many traditional Chinese banks in Shanghai folded. In 1912 fewer than 30 of these banks remained open. Thereafter the Western banks ceased to issue call money to the Chinese banks, although occasional loans were still

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<sup>132</sup> Ma Yinchu, *Ma Yinchu yanjiang ji*, III, 55–8; P. W. Huang, "China's Silk Industry and How It Is Financed," *Chinese Students' Monthly*, XXI:8 (June 1926), 48.

<sup>133</sup> Zhongguo renmin yinhang Shanghai shi fenhang, *Shanghai qianzhuang shiliao* (Shanghai, 1960), "Introduction," 9.

<sup>134</sup> Ma, III, 57–9; Srinvas R. Wagel, *Finance in China* (Shanghai, 1914), 239.

made.<sup>135</sup> However, the modern Chinese banks assumed the function of supplying call loans to the traditional banks. The decade 1913–23 was the golden age for the Shanghai traditional banks, which increased in number as well as in average scale.<sup>136</sup>

It is not clear whether chop loans were made to Canton traditional banks also: the sources on the Canton banks make no mention of any direct connection to the foreign banks. What is certain is that the main business of the Western banks (and, after about 1900, the Japanese banks) at Canton was to handle money drafts in the silk trade.<sup>137</sup> Moreover, silk loans amounting to 70–90 percent of the value of the raw silk were made by the foreign banks to Chinese commission houses, with the silk held in the warehouses of the banks as collateral.<sup>138</sup>

### Foreign Domination of Export and Shipping and Its Economic Consequences

While the foreign banks retreated from their financial backing of the Shanghai traditional banks, the Western export companies held firm their domination of foreign trade. From the start export of silk at Canton and Shanghai was entirely controlled by foreign firms, some of which were general merchants such as Jardine, & Matheson, and others specialists in silk or branches of European and American silk houses.<sup>139</sup> The French and the British were in the vanguard in this business: in 1921–22, French firms exported 10,600 bales out of a total export of 67,000 bales from Shanghai while British and Indian firms combined for 14,500 bales; at Canton the French and British firms exported 15,000 and 16,000 bales respectively out of a total export of 53,000 bales.<sup>140</sup> Around 1928, out of some 30 foreign firms dealing in silk exports, 11 were French, 9 were British, and 4 Italian.<sup>141</sup> It was not until the late 1920s that the Chinese began to win a precarious foothold in foreign trade in general and the silk export business in particular. Four Chinese export companies at Shanghai succeeded in gaining a share of the silk ex-

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<sup>135</sup> Ma, I, 185; Wagel, *Finance in China*, 239.

<sup>136</sup> Zhongguo renmin yinhang Shanghai shi fenhang, *Shanghai qianzhuang shiliao*, "Introduction," 16.

<sup>137</sup> Tōa dōbunkai, comp., *Shina shōbetsu zenshi*, I, 1076.

<sup>138</sup> Frederick W. Hinke, American vice-consul at Canton, "Sericulture in South China" (March 26, 1928), U.S. National Archives, RG 166, entry 5, box 55, folder "China-Silk-1936," 25.

<sup>139</sup> Allen and Donnithorne, 61.

<sup>140</sup> League of Nations, *Natural Silk Industry* (Geneva, 1927), 14.

<sup>141</sup> Chen Zhen, IV:1, 162.

port trade; however, by 1932 three had ceased operation.<sup>142</sup> As late as 1934, foreign firms still controlled all of the raw silk export trade at Canton.<sup>143</sup>

Chinese silk producers had always been in an inferior bargaining position vis-à-vis the foreign trade companies, which enjoyed extraterritorial rights and the financial backing of the powerful foreign banks. Their choice had been pretty much between taking or leaving the price offered them by the foreign firms. Under the provisions of extraterritoriality, a Westerner could only be sued before his own consul; more likely than not the two were on sociable terms, and it was most improbable in any case that the consul would pass an unfavorable judgment against his fellow countryman.<sup>144</sup> Even in a case of favorable judgment for the Chinese plaintiff, he had no way to obtain financial redress; at most the Western defendant would serve a nominal jail sentence and the plaintiff would end up with substantial lawyers' fees and a Pyrrhic victory.<sup>145</sup>

A major attempt to break the foreign monopoly on silk trade was made in Shanghai in the early 1880s by Hu Guangyong. Hu was a merchant who had procured foreign firearms and machinery for the official Zuo Zongtang, collected revenues for the Imperial Maritime Customs, and established several old-style banks in Hangzhou, Shanghai, and several other cities. In 1881 Hu began to hoard bales of silk. He increased his stockpile to more than 15,000 bales the next year, thus causing a steep price rise. The foreign exporters, however, countered by refusing to buy from him, and the Shanghai silk market ground to almost a complete halt. In 1883 a big increase in Italian silk production and in the price of silver led to the fall of the price of silk. Hu was then forced to dump his stockpile at a huge loss; his entire financial empire—which included banks not only in Shanghai, but also at Zhenjiang, Ningbo, Hangzhou, Fuzhou, Hunan, and Hubei—collapsed. A financial crisis was precipitated which ended with the closure of 68 of 78 traditional banks in Shanghai and adversely affected many financial and commercial enterprises in several other treaty ports as well.<sup>146</sup>

<sup>142</sup> Lieu (1933), 130.

<sup>143</sup> Allen and Donnithorne, 61.

<sup>144</sup> Ernest O. Hauser, *Shanghai: City for Sale* (New York, 1940), 70.

<sup>145</sup> "Waishang yanghang lueduo huasi chukou de pianduan shiliao," 102.

<sup>146</sup> Quan Hansheng, "Cong Xu Run de fangdichan jingying kan guangxu junian de jingji konghuang," *Zhongguo jingji shi luncong* (Hong Kong, 1972), II, 790–2; *Zhongguo renmin yihang Shanghai shi fenheng*, *Shanghai qianzhuang shiliao* (Shanghai, 1961), 44–9; Wang Jingyu, "Shijiu shiji waiguo zaihua yinhang de kuangzhang ji qi dui Zhongguo tongshang kouan jinrong shichang de kongzhi," *Lishi yanjiu* (1963:5), reprinted in JSBN, IV, 320.

After this debacle the power of the foreign trading companies in Shanghai was never again challenged. Through various means the foreign trade companies were able to increase their share of the profits at the expense of Chinese producers. Each export firm held the right to do its own silk tests and stand on their results, which could not be disputed by Chinese sellers. Deliberate fault-finding became a favorite tactic for the foreign firm to bargain for lower prices.<sup>147</sup> The foreign firm reserved the option to reject the consignment upon delivery if it found the goods to be unsatisfactory. If goods were returned, the foreign firm was not responsible for costs or damage incurred during inspection.<sup>148</sup> Payment to the Chinese was made only after the goods were on board the ship, and the filature, not the foreign export company, was responsible for the payment of the various export taxes.<sup>149</sup>

If the Chinese filature failed to deliver the silk on the date specified in the contract, the foreign firm could cancel and hold it responsible for damages. However, if the Western house had not issued its notification to deliver, the Chinese concern must wait, even on the specified date of delivery, thereby incurring losses due to additional rent, insurance, and interest payments. During periods of business depression, the Western company that had purchased raw silk on forward contract would postpone its delivery notice until market prices were favorable, with delays up to six or more months.<sup>150</sup> Or the foreign firm would simply use every possible pretext to reject the consignment immediately.<sup>151</sup> During inspections at the foreign firm, a bale of silk would mysteriously lose from two to five pounds when weighed; evaporation of moisture from the silk was given by the examiners as the explanation. The Chinese producers suspected, however, that the difference represented "squeeze" paid to the Chinese employees of these Western companies, since the weight loss occurred even in the dry season.<sup>152</sup>

While the long-term depreciation of silver served to stimulate Chinese exports generally, the fluctuations in the silver exchange rate could also work to the foreign firm's advantage. If the exchange rate of

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<sup>147</sup> D.E. Douty, "The International Testing House at Shanghai," *Silk* XV:3 (March 1922), 39.

<sup>148</sup> Lieu (1940), 145.

<sup>149</sup> Chen Zhen, IV:1, 162.

<sup>150</sup> "Waishang yanghang lueduo huasi chukou de pianduan shiliao," 97.

<sup>151</sup> Paul K. Whang, "Foreign Silk Firms and Chinese Producers," *China Weekly Review*, XXXIX:2 (Dec. 11, 1926), 42; "Waishang yanghang lueduo huasi chukou de pianduan shiliao," 102-3.

<sup>152</sup> Whang, "Foreign Silk Firms and Chinese Producers," 42.

silver declined between the purchase agreement and the time of delivery, the exporter would profit by the amount that the agreed upon price in taels had depreciated relative to gold. If, on the other hand, the exchange rate went up, the exporter would call the Chinese silk producer into his office and try to persuade him to accept a lower counteroffer because market conditions had taken a turn for the worse.<sup>153</sup> If the seller proved to be uncooperative, however, the exporter's inspection standards became noticeably more stringent.<sup>154</sup> Thus, in the early part of the 1924-25 silk year, when silver was appreciating relative to gold, the Americans purchased very little silk at Shanghai.<sup>155</sup> Therefore, much of the profit arising from the depreciation of silver accrued to the foreign firm.<sup>156</sup>

Cantonese merchants in foreign trade, however, had more independence and freedom of action: they took direct charge of cleaning, classifying, packaging, and transporting Chinese goods to ships in the Canton harbor or directly to Hong Kong.<sup>157</sup> Except for new chops, purchases of raw silk were made by foreign buyers without seeing samples.<sup>158</sup> This greater independence might have been due partly to the longer business standing of many Cantonese filatures and the resultant familiarity of foreign firms with them. Nevertheless, foreign merchant houses at Canton, too, had their own inspection machines and the final say in any dispute over price or quality: during periods of low overseas silk prices the Westerners would find any pretext during inspection to break the contract. They routinely discounted the quantity sold to them at 90 percent for alleged moisture in the silk due to the humid Guangdong weather.<sup>159</sup> All the costs for packaging, customs, loading, and transporting were

<sup>153</sup> Paul K. Whang, "Exchange and the Silk Market," *China Weekly Review*, XLIV:5 (March 31, 1928), 140.

<sup>154</sup> Paul K. Whang, "Settling Disputes in the Silk Trade," *China Weekly Review*, XXXX:3 (March 10, 1927), 80.

<sup>155</sup> Whang, "Exchange and the Silk Market," 140.

<sup>156</sup> In the import trade, the Western companies exploited the fluctuating exchange rate differently. From the 1870s, when the price of silver started to decline, the indent system came into increasing use in the import trade of China. The price agreed upon between the Chinese and Western merchants was based on the market exchange rate at the time of the agreement. In this way the Western merchant protected himself from receiving payment in silver taels which probably declined in value by the time the goods were delivered. Wang Jingyu, "Shijiu shiji waiguo zai hua yinhang shili de kuangzhang ji qi dui Zhongguo tongshang kouan jinrong shichang de kongzhi," JSBN, IV, 314.

<sup>157</sup> Gu Mengyu, "Zhongguo churukou shangye de xianzhuang," DFZZ, XIX:9 (May 1922), 119.

<sup>158</sup> Duran, 147.

<sup>159</sup> Tōa dōbunkai, comp., *Shina shōbetsu zenshi*, I, 923; Li Benli, 125.

borne by the Chinese silk commission house.<sup>160</sup> If the Chinese commission house had to secure a loan from the export house by leaving its silk in the latter's warehouse, it would have to make further price concessions in addition to interest at 10 percent per year.<sup>161</sup>

Given the extraterritorial privileges and the legal immunities of the Western companies and the dependent status of many filaturists as compradors or borrowers of funds, it was difficult for the Chinese silk manufacturers to bargain for better terms with their Western customers. This is true even for a conglomerate as large as Chen Lianbo's, for his consortium's success depended in large part on his ability to obtain loans in times of need from the Hongkong-Shanghai Banking Corporation, which employed him.<sup>162</sup> As his prosperity was predicated on his subordinate relationship with the Western economic interests, Chen could hardly demand from them better prices or terms.

Why were the Chinese unable to capture a share of the foreign trade, which would have strengthened their bargaining position with the Western buyers? One major reason was their inability to develop transoceanic shipping. Westerners gained the privilege to navigate the China coast after the Opium War, and the right to navigate inland waters after the Arrow War. In 1847 the prerogative of British shipping to participate in the coastal carrying trade was confirmed. While Chinese goods carried on Chinese vessels were subject to import and export duties at each port, Chinese goods carried on Western vessels were subject to taxation only once, sometimes at the lower Chinese internal rates rather than the higher tariff applicable to foreign goods. Under these conditions, the British vessels enjoyed a big advantage in the carrying trade over Chinese vessels, some of which resorted to flying foreign flags to avoid multiple taxation and extortion by customs officials.<sup>163</sup>

Before the establishment in 1872 of the China Merchants' Steam Navigation Company, all steamships in Chinese waters were foreign vessels. After the takeover of the ships of the American-owned Shanghai Steam Navigation Company by China Merchants' in 1877, Chinese share of shipping rose sharply to about 4 million tons, about 37 percent of total tonnage in all the treaty ports. But thereafter Chinese share of total shipping continued to decline, and after 1900 it stayed around 20 per-

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<sup>160</sup> Chen Zhongmin, II, 16.

<sup>161</sup> Hinke, 25.

<sup>162</sup> Chen Tianjie, 185.

<sup>163</sup> John K. Fairbank, *Trade and Diplomacy on the China Coast*, 317–21; Tian Yukang, "Zai lun shiqi zhi shijiu shiji zhongye Zhongguo fanquanye de fazhan," JSBN, III, 299.

cent.<sup>164</sup> More seriously, it was confined mostly to inland navigation, and even there the British were dominant, with 60 percent of the carrying trade in 1894.<sup>165</sup>

This inability to develop transoceanic navigation resulted in part from foreign domination and in part from official oppression. As a prime example of an enterprise of the “official-supervision merchant-management” (*guandu shangban*) type, the China Merchants’ certainly benefited from official patronage, particularly that of Li Hongzhang, the single most powerful official in China. Official assistance included remission of taxes, loans and interest deferral, and granting of the monopoly of transporting tribute grain and official goods.<sup>166</sup> But at the same time, Li Hongzhang jealously protected the monopolistic privileges of the China Merchants’ and repeatedly rejected numerous petitions by Cantonese and Shanghai merchants to establish steamship companies for both inland and overseas navigation during the early 1880s. He vetoed both the petition of Cantonese merchants to organize an overseas shipping company in 1881 and that of the Shanghai filaturist Ye Dengzhong to construct ships in the following year. Between 1870 and 1902 only four Chinese shipping companies were formed.<sup>167</sup> These monopoly rights were a typical privilege of all the “official-supervision merchant-management” enterprises; however, the monopoly was applicable only to rival Chinese firms and not to Western firms.<sup>168</sup>

At the same time, even the China Merchants’ was hampered by foreign competition both within and outside China and by discriminatory laws overseas. In the 1870s the attempts by the China Merchants’ to send ships to Japan, Luzon, Singapore, and other Asian ports were soon stopped by foreign competition. In 1879 and again in 1880 a ship was sent to Hawaii and San Francisco, where there were communities of overseas Chinese. However, the U.S. Customs slapped a heavy tonnage levy on the Chinese ships and restricted Chinese who returned to China from coming back to the United States. Thus, the China Merchants’ suffered heavy losses on their transoceanic ventures and abandoned them for good.<sup>169</sup>

<sup>164</sup> Yen Zhongping et al., comps., *Zhongguo jindai jingji shi tongji ziliao xuanji* (Peking, 1955), 218–22.

<sup>165</sup> Fairbank, 311.

<sup>166</sup> Wang Xi, “Cong lunchuan zhaoshangju kan yangwu pai jingji huodong de lishi zuoyong,” *Lishi yanjiu*, (1963:3), reprinted in *Yangwu yundong yanjiu lunji* (Hong Kong, 1973), 104.

<sup>167</sup> Wang Xi, 100–3.

<sup>168</sup> Kang Chao, 110.

<sup>169</sup> Mou Anshi, *Yangwu yundong* (Shanghai, 1956), 94.



What were the economic consequences of foreign domination of trade and shipping? From a microeconomic point of view, had a filature been able to integrate trade or shipping into its operations, it could have kept in better touch with the conditions and requirements of overseas markets and increased its profits and potential for expansion. Ding Rulin, one of the most successful owner-managers of filatures in Shanghai and probably the only one who shipped and sold his raw silk directly in the American market, claimed that such direct trade increased his annual profits by about 10 percent or \$100,000 over what they were when his silk was sold through foreign brokers.<sup>170</sup> Moreover, the addition of foreign middlemen undoubtedly raised the relative price of Chinese silk overseas and thus dampened demand. A rough computation comparing the c.i.f. prices of Shanghai and Canton silk at New York and at Lyon with f.o.b. prices in China (converted to the same monetary terms) suggests that the margin, equaling the service charges of import-export firms and shipping and insurance companies, was at least 10 percent above prices that Shanghai and Canton filaturists received from their foreign buyers: average yearly ratio of New York price or Lyon price to price in China was 1.09 and 1.14 for Shanghai silk, and 1.15 and 1.17 for Canton silk.<sup>171</sup> From a macroeconomic point of view, these profits to foreign middlemen and shippers represented leakages abroad from the Chinese economy and lessened the potential benefits of silk export growth to the domestic economy.<sup>172</sup> Had these leakages accrued instead to Chinese shippers and exporters (even if they were not the same persons as the filature managers), the economy could have internalized the earnings; such internalization could have had multiplier effects upon other domestic sectors (provided that the earnings were not expended for imported foreign luxury items).

It is in the export sector, therefore, that we see the severest consequences of the imperialist economic framework. Not only was there drainage abroad from the Chinese economy, but, given the extraterritorial privileges of the foreign factors, they were able to appropriate raw silk

<sup>170</sup> Zeng Tongchun, *Zhongguo siye* (Shanghai, 1934), 96–7.

<sup>171</sup> Prices in China are from Zeng, 132–7; prices at New York (1897–1900, 1902–22) from American Silk Association, 28th, 31st, 35th–37th, 40th, 41st, 43rd–50th annual reports; prices at Lyon (1898–1912) from “Review of the 1912 Silk Market,” *The American Silk Journal*, XXXII:2 (Feb. 1913), 64; exchange rates from Hsiao Liang-lin, *China’s Foreign Trade Statistics, 1864–1949* (Cambridge, Mass., 1974), 190–1.

<sup>172</sup> For an excellent theoretical discussion of export economies and the role of foreign factors, illustrated by case studies, see Jonathan V. Levin, *The Export Economies: Their Pattern of Development in Historical Perspective* (Cambridge, Mass., 1960).

at prices lower than in a free market, thereby exploiting their Chinese sellers. While the export sector was superficially competitive with a multitude of foreign companies, they banded and acted together as a whole the when occasion demanded it. Moreover, Western firms or their Chinese surrogates who had obtained certificates of Western ownership through dummy Western partners or who were compradors in the service of these foreign companies could secure the services of Chinese workers at lower cost than could domestic factors. The legal immunity that Westerners and their Chinese partners enjoyed was fully backed by the gunboat forces of their home governments. As we shall see, the silk export trade also transformed large agrarian regions of Jiangnan and Guangdong into monocultures dependent on the vicissitudes of the foreign markets.

## V

# The Growth of Sericulture in Jiangnan and Guangdong

If both Canton and Shanghai filatures suffered from foreign domination at the distribution end, what about their relationship to the sericultural sector? Cocoons were not only the basic input for the production of raw silk, but also constituted the largest proportion of production costs in the operation of a filature—about three quarters.<sup>1</sup> Without a responsive sericultural sector the Cantonese silk-reeling industry could not have expanded rapidly. Did the Canton region enjoy any superiority in cocoon supply conditions that might help to account for the faster growth of filature silk exports there?

In both regions sericulture and cultivation of mulberries expanded in response to the growth of foreign demand in the nineteenth century. Huzhou had long been the leading silk-producing prefecture in China, and Nanking, Suzhou, and Hangzhou centers of silk-weaving. But as the rise in silk prices drove up mulberry prices, peasants not only in the traditional silk centers but also in regions in which sericulture had previously been little known found it profitable to convert rice fields to mulberry fields. Lü Guifen, a native of Xinchang in Zhenjiang, reported that profits from mulberry planting were about five times that from wheat cultivation.<sup>2</sup> Because “it was easy to sell silk and moreover the price of silk was high,” villagers in the Nanxun region turned increasingly to sericulture and hand-reeling, so that there were “no localities that

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<sup>1</sup> Cost of purchasing and drying cocoons constituted 77.4 percent of operating expenses for Shanghai filatures. For two Cantonese filatures in 1916, cost of cocoons constituted 76 percent and 81 percent of operating costs respectively. Shanghai International Testing House, *A Survey of the Silk Industry of Central China* (Shanghai, 1925), 91; Zheng Tongchun, *Zhongguo siye* (Shanghai, 1934), 69–70.

<sup>2</sup> Zhang Kai, “Woguo canye fazhan gaishu,” *Nongshi yanjiu jikan* (Peking, 1960), II, 127.

did not grow mulberries or have families that did not grow silkworms.”<sup>3</sup>

Concomitant with this rise in foreign demand was official promotion of sericulture as part of the rural reconstruction program in the wake of the Taiping Revolution. During the Tongzhi period (1862–1874), sericulture bureaus where peasants were taught mulberry growing by officials and gentry were established in many counties in Jiangsu, including Dantu, Gaoyou, Kunshan, and Nanhui. In Jiangpu, first Zeng Guofan and then Zuo Zongtang distributed mulberry seedlings; in 1882, Zuo ordered Hu Guangyong to disseminate 80,000 seedlings at Jurong.<sup>4</sup>

The most prominent of the regions new to sericulture was Wuxi, where before 1800 sericulture was hardly practiced and only in the single village of Kaihua was silk produced. After the Taiping Revolution many people turned to mulberry cultivation on the vast tracts of land that had been laid waste during the fighting.<sup>5</sup> By 1880, 3.2 million *liang* of silk were produced, 40 percent of which was sent to Shanghai for export; the rest was consumed locally in the manufacture of silk goods. The construction of the Shanghai-Nanking Railroad between 1904 and 1908 facilitated the transport of cocoons to Shanghai. The establishment of filatures at Wuxi gave sericulture there a further stimulus. By 1920, mulberry fields occupied about 30 percent of total land area in the county. Virtually all peasants were engaged in sericulture, and annual production of cocoons amounted to more than 200,000 piculs.<sup>6</sup>

In Zhenjiang sericulture had long been abandoned, but in 1851 authorities attempted to revive it by distributing free mulberry seedlings and teaching local people how to plant mulberries and breed silkworms. In 1871 authorities again procured seedlings from Huzhou for free distribution. In 1880 production of silk in Zhenjiang was about 6 million *liang*. Before the Taiping Revolution there was little silk production at Danyang, but during the Tongzhi period silk cultivation was begun and increased annually. Liyang started sericulture only during the Qianlong period; production increased from more than 2.6 million *liang* during the Daoguang period (1821–1850) to 5 million *liang* in 1880, 80 percent of which was sent to Shanghai for export. Again, Yixing in Changzhou pre-

<sup>3</sup> Fan Baichuan, “Zhongguo shougongye zai waiguo zibenzhuyi qinru hou de zaoyu he mingyun,” reprinted in JSBN, III, 240.

<sup>4</sup> *Shanghai difangzhi wuchan ziliao huiji* (Shanghai, 1961), 172; Nongye, “Shijiu shiji houbanqi Zhongguo nongye shengchan de shangpinhua (xu),” *Jingji yanjiu*, (1956:4), 129.

<sup>5</sup> Yeh-chien Wang, “The Impact of the Taiping Rebellion on Population in Southern Kiangsu,” *Papers on China*, XIX (1965), 137.

<sup>6</sup> NYS, II, 151.

fecture produced little silk before the nineteenth century; by 1880 it produced 6 million liang.<sup>7</sup> Other counties in Jiangsu—Jiangyin, Dantu, Jiangpu, Jiangning, Jurong, Changshu, Gaoyou, and Kunshan—all began to practice sericulture under the stimulus of foreign demand during the Tongzhi and Guangxu (1875–1908) periods.<sup>8</sup> At Jiangyin, for example, a native son, Qian Weiqi, who had experience in the cocoon business at Wuxi, instituted in 1890 two cocoon brokerages and promoted sericulture by offering free rent for two years and favorable terms thereafter to tenants of his mulberry land. Sericulture in the county grew steadily, as evidenced by the increase in numbers of cocoon brokerages and drying ovens throughout the last years of the Qing, until by early Republican times there were more than 40 brokerages.<sup>9</sup>

By the first decades of the twentieth century three major sericultural regions could be distinguished in Jiangsu (see map 2). The most important one was the Wuxi-Changzhou area, which lay to the north and west of Lake Tai and extended northward to the Yangtze and westward to Anhui province. This region covered more than 1,000 square miles of rich agricultural land intersected by riverways and canals, and included the cities of Wuxi, Changzhou, Jiangyin, and the towns of Yixing, Liyang, and Jintan. Along the Nanking-Shanghai Railroad the concentration of mulberry trees increased between Suzhou and Wuxi as one approached Wuxi, and decreased gradually beyond Changzhou. Of secondary importance was the Suzhou region, situated east of Lake Tai and extending southward to the borders of Zhejiang. It contained the leading silk-weaving centers of Suzhou and Shengze. The least important sericultural region was the northern Jiangsu area, which included the cities of Nanking and Zhenjiang and the area north of the Yangtze.

Within Zhejiang there were also three major sericultural regions (see map 2). The Huzhou region, south of Lake Tai, was bounded on the west by Anhui province and on the east and south by Hangzhou county. The Suzhou-Jiaxing region extended from the southern border of Jiangsu southward to Hangzhou Bay. The Shaoxing region, situated south of Hangzhou Bay in the valley of the Caoe River, was a fertile valley surrounded by mountains on all sides; it enclosed the counties of Xinchang and Shengxian.

Although sericulture had long been known in Guangdong, perhaps as early as the Han dynasty,<sup>10</sup> the rise of the Pearl River Delta around

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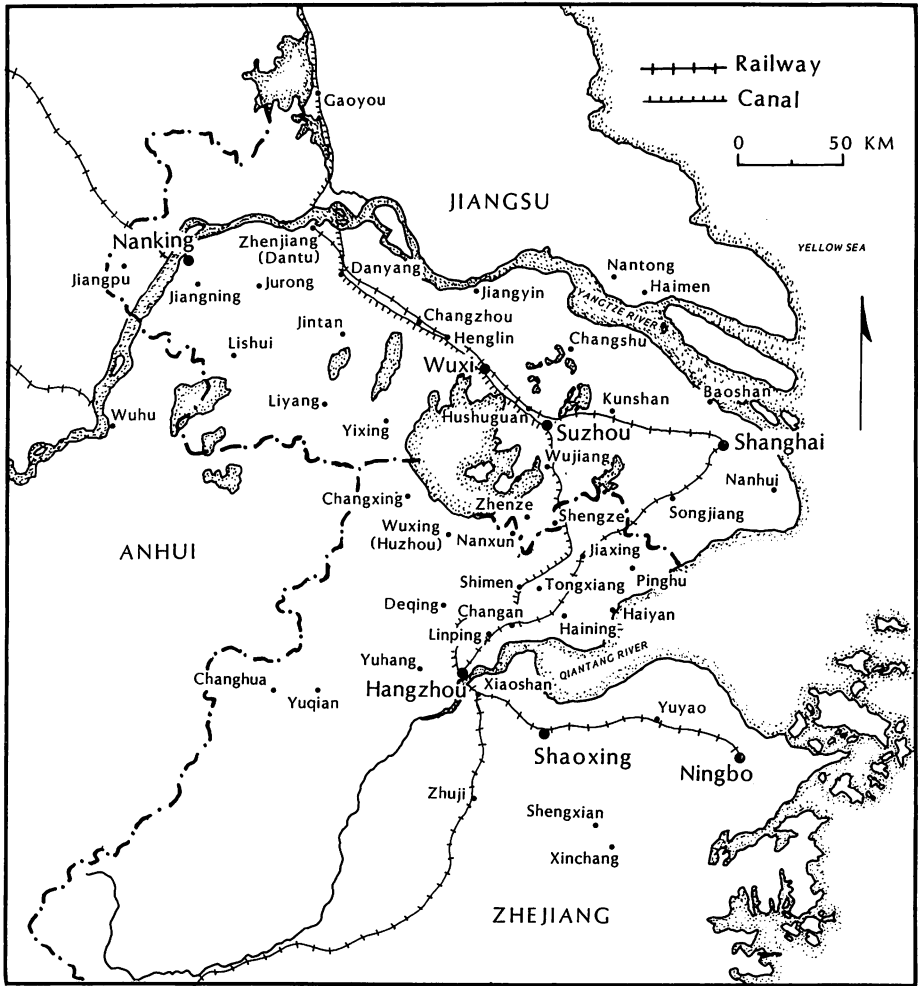
<sup>7</sup> China, Maritime Customs, *Silk*, 59–62.

<sup>8</sup> NYS, I, 426–8; Zhang Kai, 128.

<sup>9</sup> *Jiangyin xian xuzhi* 1920 ed. (Taipei, 1970 reprint), 533, 540.

<sup>10</sup> Chen Zhi, *Liang Han jingji shiliao luncong* (Xi'an, 1958), 92–3.

Map 2. The Jiangnan Silk Region in the Early Republic



Canton as one of the most important silk regions in China seems to have occurred after the opening to foreign commerce in the eighteenth century. Silk fabrics were not among the Guangdong tributes to the Tang court. During the Song the areas in Guangdong from where silk was sent as tribute were Shaozhou, Xunzhou, and Nanxiongzhou, all in the northern part of the province. The Guangdong provincial gazetteer of 1536 listed silk as the product of Chaozhou only. One might then infer that the silk industry was of minor importance in the Canton Delta before the Qing.<sup>11</sup>

After the opening of Canton to Western trade, silk from Zhejiang and Jiangsu was transported overland for export at Canton. The highest quality Cantonese silk fabrics were made with Zhejiang silk, for fabrics made from local silk were reportedly lacking in shine and brilliance.<sup>12</sup> Even in the 1910s the upper classes in Guangdong imported silk fabrics from Suzhou and Hangzhou, as the local product was allegedly inferior in quality.<sup>13</sup>

After the Opium War, increased foreign demand for silk spurred the growth in sericulture in Shunde and neighboring counties. By the 1860s mulberries were extensively cultivated in the alluvial counties to the south of Canton.<sup>14</sup> As profits from mulberries rose in tandem with the generally increasing if fluctuating silk prices and far exceeded gains from rice cultivation, peasants in Nanhai and Shunde converted rice fields to mulberry fields.<sup>15</sup> B. C. Henry, on traveling through Xichao in Nanhai county in the 1880s, saw that “around the base of these hills, and for miles on all sides, the land is covered with mulberry plantations” and that “hundreds of women may be seen sitting by their doors winding the gossamer threads from the cocoons.”<sup>16</sup> In Dongguan county, where sericulture had not been practiced previously, some local gentry during the 1880s purchased seedlings and hired sericultural experts as instructors from Shunde county. Thereafter sericulture became popularized.<sup>17</sup> During the 1890s Sanshui county, originally an agricultural area, turned increasingly to mulberry plantation and silkworm raising.<sup>18</sup> Similarly in

<sup>11</sup> Zhang Kai, 127.

<sup>12</sup> SGYS, I, 217.

<sup>13</sup> Tōa dōbunkai, comp., *Shina shōbetsu zenshi* (Tokyo, 1918–21), I, 844.

<sup>14</sup> W. F. Mayers, N. B. Dennys, and Charles King, *The Treaty Ports of China and Japan* (London, 1867), 200.

<sup>15</sup> *Foshan zhongyi xiangzhi* (1923), *juan* 6:3b; *Longshan xiangzhi* (1930), *juan* 3:1b; *Longjiang xiangzhi* (1926), *juan* 1:15b.

<sup>16</sup> Henry, *Ling-nam* (London, 1886), 66–7.

<sup>17</sup> *Dongguan xianzhi* (1910), *juan* 13:3b; NYS, I, 431–2.

<sup>18</sup> China, Maritime Customs, *Decennial Reports, 1892–1901*, II, 264.

Panyu, there were no mulberry fields until the 1890s; acreage increased yearly until after the turn of the century there were about 100 *qing* (about 1,500 acres) of mulberry land with more than 20 *qing* near the borders of Shunde county. The cocoons produced were transported to and sold in Shunde.<sup>19</sup>

By the 1920s, then, many counties in Guangdong and Guangxi engaged in sericulture (see Table 5.1). The delta region between Canton,

TABLE 5.1

## SERICULTURAL PRODUCTION IN SOUTH CHINA, C. 1923

	Mulberry Acreage (in 1,000 <i>mu</i> )		Population in Sericulture	Production of Dried Cocoons (in piculs)	
	(A)	(B)	(A)	(A)	(B)
Shunde	436.0	665.0	1,440,000	152,600	242,060
Nanhai	297.6	300.0	200,000	83,330	96,600
Xiangshan	100.0	328.8	382,600	28,000	105,874
Xinhui	60.0	60.0	50,000	21,000	21,840
Sanshui	30.0	30.0	25,000	6,300	8,400
Panyu	10.0	10.0	15,000	2,800	3,220
Qingyuan	6.0	16.0	10,000	1,680	4,480
Heshan	30.0	4.8	20,000	8,400	1,351
Sihui	—	5.0	1,000	—	1,400
East River Delta	28.6	28.6	25,000	8,000	8,000
West River Delta	10.7	17.0	20,000	3,000	4,760
Southwest counties	—	0.5	—	—	20
Guangxi	—	90.0	90,000	—	25,200
Total	1,008.9	1,555.7	2,278,600	315,110	523,205

## SOURCES:

(A) 1922 estimates by the Guangdong Experimental Station in Agriculture and Forestry from Liu Boyuan, *Guangdong canye diaocha baogaoshu* (Canton, 1922), 83–4.

(B) 1923 estimates by the Canton Christian College from C. W. Howard and K. P. Buswell, *A Survey of the Silk Industry of South China* (Canton, 1925), overleaf on p. 36.

NOTE: In general these two estimates are in reasonable agreement. The most serious discrepancies occur in estimates for Shunde and Xiangshan counties, the Canton Christian College figures being about 1.5 and 4 times those of the Experimental Station. Probably the Canton Christian College estimates are more reliable: its investigators had the benefit of being able to consult the earlier survey and also had more time to do the actual field work (although it is possible that they just copied some of the earlier figures).

<sup>19</sup> *Panyu xian xuzhi* (1931), *juan* 12:35b; *Nongxue bao*, *juan* 244:1b.



Hong Kong, and Macao, approximately 60 square miles in area, remained by far the most important sericultural region (see map 3). The three Pearl River Delta counties of Shunde, Xiangshan, and Nanhai accounted for about 85 percent of total cocoon production of the provinces of Guangdong and Guangxi. Shunde alone contributed close to half of the total, while Xiangshan and Nanhai were each responsible for about one-fifth. Sericulture was also extensively practiced along the West River in a belt from one-quarter to one-half mile on each side of the river, as far as the Guangxi border, and into that province along the river banks. Minor regions include those north of Canton and north of Swatow (Shantou), in the southwest, and on Hainan Island.<sup>20</sup>

Accompanying the geographical spread of sericulture in Jiangnan, Guangdong, and other regions of China was the shift by peasant households from reeling silk by hand to cocoon production.<sup>21</sup> This was a consequence of the increasing disfavor for hand-reeled silk on foreign markets and of the rise of steam filatures, which collected cocoons for export production. This shift took place earlier in the Pearl River Delta than in Jiangnan, paralleling the differential development of filatures in Shanghai and Guangdong. By the late Guangxu period, hand-reeled silk (both for export and for domestic silk weavers) accounted for no more than 40 percent of total raw silk production in Shunde county.<sup>22</sup> Within the Jiangnan region the shift took place faster in South Jiangsu than in North Zhejiang, where hand-reeled silk continued to be an important export commodity until around World War I and to supply the needs of the weaving centers of Hangzhou, Suzhou, and Nanking. In 1903, for example, Shanghai filatures imported 61 percent of the cocoons they consumed from Jiangsu and only 38 percent from Zhejiang.<sup>23</sup> Even in 1925 sericultural production in Zhejiang was overwhelmingly for home consumption: the province supplied 36 percent of dried cocoons consumed by Jiangnan filatures as compared with 62 percent for Jiangsu, where production was predominantly for the consumption of the export-oriented Shanghai and Wuxi filatures (see Table 5.2). The Huzhou region continued to specialize in hand-reeled silk (about one-third of total production in Jiangnan) and produced a relatively small quantity of

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<sup>20</sup> C. W. Howard, "Sericulture Improvement in Southern China," *Lingnaam Agricultural Review*, I:1 (Dec. 1922), 32.

<sup>21</sup> See, for example, *Mudu xiaozhi* (1928), *juan* 5:14a.

<sup>22</sup> *Shunde xian xuzhi*, *juan* 1:26a.

<sup>23</sup> Computed from quantity and value data in Tōa dōbunkai, comp., *Shina keizai zensho*, XII, 78–9.

Map 3. The Canton Delta in the Early Republic

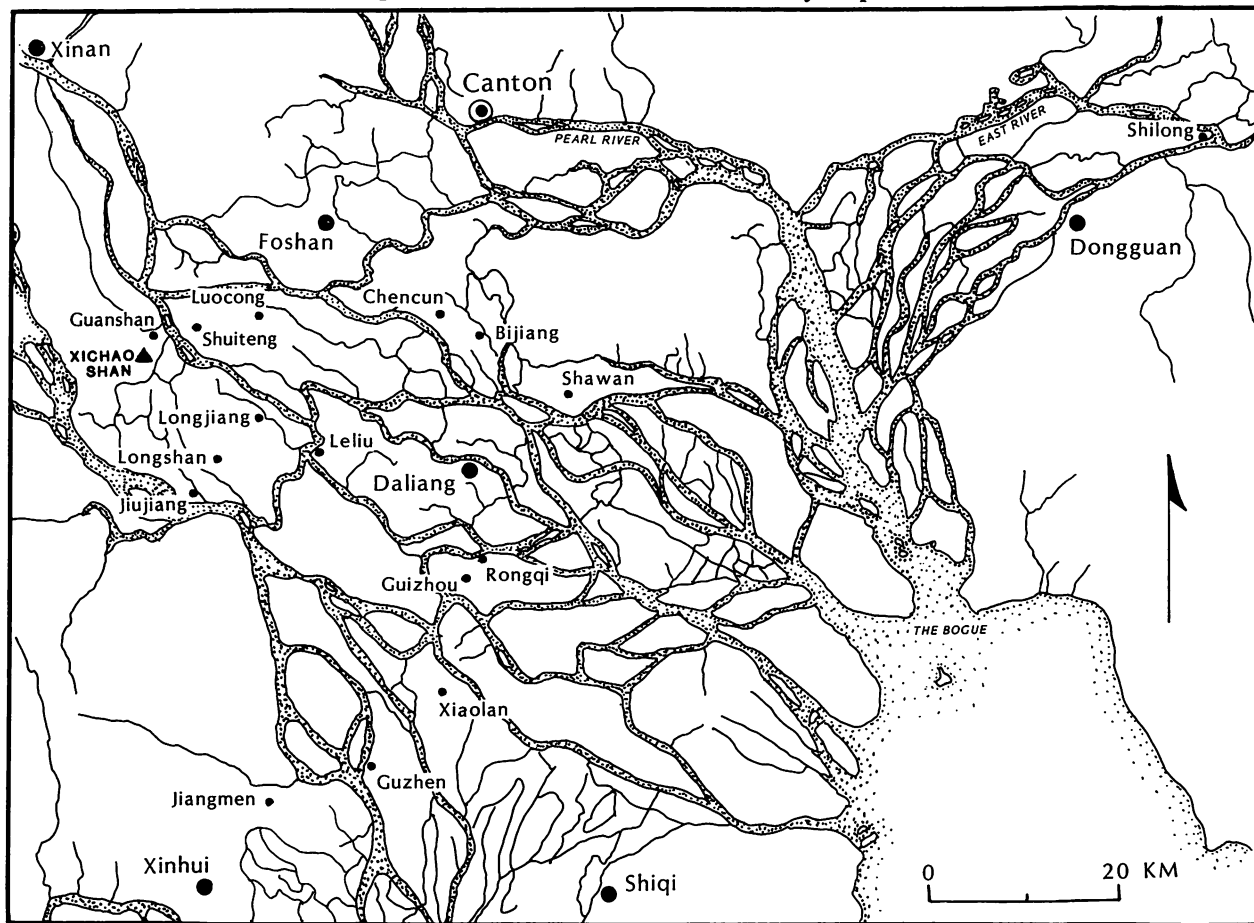


TABLE 5.2  
 PRODUCTION OF COCOONS AND HAND-REELED SILK  
 IN JIANGNAN, C. 1925 (IN PICULS)

	Dried Cocoons for Filature Use	Hand-reeled Silk for Home Consumption or Export	Estimated Annual Percent Growth Rate in Cocoon Production, c. 1880–1925
Jiangsu:			
Wuxi	55,000	—	6 } 4 2
Changzhou	30,000	—	
Suzhou	15,000	3,000	
North Jiangsu	11,000	2,000	
Provincial subtotal	111,000	5,000	4
Zhejiang:			
Hangzhou-Jiaxing	30,000	20,000	1
Huzhou	10,000	35,000	0.2
Shaoxing	25,000	5,000	4
Provincial subtotal	65,000	60,000	3
Anhui	4,000	1,000	
Total	180,000	66,000	
Cocoons converted into silk		36,000	
Total silk		102,000	

SOURCES: The Shanghai International Testing House. *A Survey of the Silk Industry of Central China* (Shanghai, 1925), 5–6; the regional estimates of annual percentage growth rate in cocoon production are computed by comparing the above figures with the 1879 silk production estimates made by the Maritime Customs, as contained in *Silk* (Shanghai, 1881), 76, 80, 82 and 84. It cannot be overemphasized that my estimates are extremely tentative in view of the wide margins of error that may be contained in the Customs and Testing House statistics, and the differences in bias that they may have.

dried cocoons for filature use (about 6 percent of total). According to the estimates of Tan Xihong, even as late as 1929 about 40 percent of Zhejiang's fresh cocoon production of 1.1 million piculs per year was hand-reeled into silk.<sup>24</sup>

By comparing Maritime Customs figures for 1879 and the estimates of the International Testing House of Shanghai for 1925 (see Table 5.2), we tentatively conclude that cocoon production grew fastest (perhaps 6 percent per annum) in the Wuxi-Changzhou area, which by 1925 produced exclusively to supply the export-oriented filatures of Shanghai and Wuxi. The rate of growth was slower in the Suzhou and Ningbo-Shaoxing areas, very slow in the Hangzhou-Jiaxing area, and virtually stationary in the older established Huzhou region, which might have exhausted its growth potential by the 1880s or served a relatively stagnant home market.

Not only did the growth rates of sericulture differ for different regions, but not all counties that introduced sericulture managed to establish it on a permanent basis. The availability of transport and marketing facilities, suitability of the soil for mulberry culture, and government policy all played a part in determining the success or failure of sericultural enterprise in a region.

Since in a pre-industrial society water transport is the cheapest and most convenient mode of transportation, it is not surprising that the region around Lake Tai, which included Yixing, Wuxi, Suzhou, and Shengze in Jiangsu and Huzhou and Nanxun in Zhejiang, and which provided easy access by water to and between various major silk weaving and exporting centers, became the foremost sericultural area in Jiangnan. The Canton Delta itself is an alluvial plain dotted with numerous easily navigable waterways. In addition, mulberries were less susceptible to flood damage than vegetables and food grains, were particularly suited to the sandy loam type of soil found along the Grand Canal, and benefited from fertilization by riverbed deposits.<sup>25</sup> Most sericultural regions were therefore in the vicinity of waterways with easy access to outside markets. Within the hilly areas of the sericultural regions of Hangzhou, Huzhou, and Shaoxing, tea rather than mulberries was grown.<sup>26</sup>

At first, transportation from the silk-producing areas of Jiangnan to Shanghai was by junk. Later, regular steam-launch lines were established

<sup>24</sup> China, Ministry of Industry, *Zhongguo shiye zhi: Jiangsu sheng*, pt. VIII, 121.

<sup>25</sup> Zheng Tongchun, 11-3.

<sup>26</sup> B.T. Chang, "The Cocoon Crops of Chekiang and Kiangsu in 1928," *Chinese Economic Journal*, V:1 (July 1929), 588.

between centers of the silk industry. Because of unrest after the 1911 Revolution, transportation of silk from Northern Zhejiang to Shanghai by junk was replaced with transportation by steam launch via Suzhou.<sup>27</sup>

After the construction of the Shanghai-Nanking Railway in 1908 and the Shanghai-Hangzhou Railway in 1912, rail transport became an important alternate means of conveying cocoons to Shanghai. During the cocoon season special daily trains went from Wuxi to Shanghai, with a stopover at Henglin.<sup>28</sup> Express companies using the Shanghai-Hangzhou Railway sprang up in Zhejiang alongside the long-established transportation companies (*guotanghang*).<sup>29</sup> During periods of civil war Chinese vessels were liable to be seized by local military commanders for troop transport, as they lacked the armed guards and convoy protection that permitted foreign shipping companies to maintain at least a skeleton service in the worst of times.<sup>30</sup> The railway displaced steam launches for freight transportation between Hangzhou and Suzhou or Shanghai.<sup>31</sup> However, specially chartered launches towing junks that carried dried cocoons prevailed between the cocoon counties and Shanghai.<sup>32</sup>

Access to the market was indeed a major determinant of the success or failure of sericulture in a region. The efforts of the county magistrate Zhong Tongxuan to introduce sericulture in Heping county in the upper reaches of the East River in Guangdong in the 1880s were abortive, probably because of difficulties of transport on the river.<sup>33</sup> In Lechang county in the North River region, Huang Jingshen, a member of the local gentry, tried to propagate sericulture after the 1911 Revolution, but his efforts proved unavailing within one year because of bottlenecks in transport, lack of marketing facilities for mulberry leaves and the resultant shortage of food to feed the silkworms, and the generally hilly terrain, unsuitable for sericulture.<sup>34</sup>

In Baoshan county near Shanghai, sericulture also failed to take hold, after the Recorder had established a sericultural school there.

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<sup>27</sup> China, Maritime Customs, *Decennial Reports, 1912-21*, II, 66.

<sup>28</sup> Tōa dōbunkai, chōsa kensambu, ed. "Genka Shina kōgyō no taisei," (III), *Shina*, VII:12 (June 15, 1916), 26.

<sup>29</sup> "Means of Communication in Chekiang," *Chinese Economic Journal*, I:1 (Jan. 1927), 120-1.

<sup>30</sup> China, Maritime Customs, *Decennial Reports, 1922-31*, II, 7.

<sup>31</sup> Wei Songtang, *Zhejiang jingji jilue*, 8-9.

<sup>32</sup> Chang, "The Cocoon Crops of Chekiang and Kiangsu in 1928," 599.

<sup>33</sup> Guoli Zhongshan daxue nongkexueyuan, *Guangdong nongye gaikuang diaocha baogaoshu xubian*, 98.

<sup>34</sup> "Cansi," in *Wunian lai zhi Guangdong jianshe* (Canton, 1931), 155.

Aside from the closure of the school due to the lack of funds, peasants preferred planting wheat, which yielded two crops per year, or growing vegetables, which could supply their food needs, to cultivating mulberries, which could not be picked until three or four years after grafting. Moreover, lack of experience and price-fixing policies by itinerant peddlars made cocoon production highly unprofitable. Thus, within a few years all remaining acreages of mulberries were converted to vegetable growing or cotton cultivation.<sup>35</sup> Similarly, efforts to promote sericulture in Songjiang prefecture proved abortive, as farmers found cotton cultivation more profitable.<sup>36</sup> The alluvial deposits that characterized the soil of the counties near Shanghai and the islands and deltas fringing the Yangtze estuary were more suitable to cotton than to mulberry cultivation.<sup>37</sup>

Not only did sericulture not take hold in every area where it was introduced, but even in those regions where silk production increased, growth was probably not monotonic. Reliable time series data are lacking, but Akeda's estimates of cocoon production for around 1918 for Zhejiang and Jiangsu were 877,000 and 267,000 piculs respectively, which were below the 1898 levels estimated by Jierboman. The possibility that cocoon production actually declined in Jiangnan sometime between the turn of the century and the end of World War I, however, is consistent with the fact that exports of hand-reeled silk from Shanghai dropped precipitously, from around 25,000 piculs in the late 1900s to under 500 piculs after 1914.

To return to our initial question: why was the sericultural sector more responsive to the needs of filatures in Guangdong than in Jiangnan? One key reason lay in the differences in sericultural conditions due to climatic differences in these two regions. In Jiangnan, silkworms were of the univoltine (one generation per year) and bivoltine (two generations per year) varieties. The spring crop was the most important; the summer crop was insignificant because of weather conditions and interference with rice planting. The silkworm rearing season lasted about a month and a half in the spring, from the hatching of the eggs to the subsequent laying of eggs by the moths. After hatching, the larvae alternately fed on mulberry leaves, gradually losing their appetite as growth proceeded, and then abstaining from eating altogether for some time; finally they cast off

<sup>35</sup> Shanghai shi wenwu baoguan weiyuanhui, *Shanghai difangzhi wuchan ziliao huibian*, 243-4.

<sup>36</sup> *Ibid.*, 112, 122.

<sup>37</sup> Chang, "The Cocoon Crops of Chekiang and Kiangsu in 1928," 588.

the outer layers of the old integument and secreted a new skin before going into the next larval instar, or periods of feeding and sleeping before molting. Although most silkworm varieties had four molts, some had three or five. In Jiangnan, depending on the type of worms and weather conditions, the duration of all the larval instars varied from 25 to 33 days. Initially the worm was small and consumed very small quantities of leaves, but at each subsequent rearing stage its appetite increased astronomically, until at the end of the month-long cycle an average silkworm increased its weight about ten thousand times.<sup>38</sup>

After attaining maturity with the last instar, the larvae were mounted on beds or scaffoldings so they could spin their cocoons. In two days the cocooning was complete, and in another two days they cast off the skin and became pupae or chrysalides. After about ten days the pupa would pierce through the cocoon and emerge as a moth. Before this last stage the cocoons had either to be reeled or dried, or else the continuous silk thread that comprised the cocoon would be broken irretrievably.

Unlike those in Jiangnan, the silkworms in the semitropical climate of Canton were of bivoltine and polyvoltine varieties.<sup>39</sup> Thus it was possible to rear seven generations of silkworms each year, from late February to November; in some years as many as eight or nine crops could be raised. The rearing stages were of shorter duration than in Central China, ranging from 16 days in the summer to about 20 days in the winter.<sup>40</sup>

Closely paralleling the silkworm crops were the mulberry leaf pickings in the Canton Delta. Whereas in Central and West China several varieties of the white mulberry (*Morus alba*) were grown as trees from which leaves were picked, in South China a variant of the mulberry known as *Morus latifolia*, which grew easily and supplied an abundance of leaves, was grown as a shrub. While *Morus alba* could not be picked until four years after grafting and could yield at most two leaf pickings each year, *Morus latifolia* could be picked one year after grafting and could yield several pickings in a year, as suckers would start to grow ra-

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<sup>38</sup> Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 7.

<sup>39</sup> The bivoltine type was known as *dazao*, the first crop of which was raised in March for cocoons and the second for eggs to hatch the next year. The polyvoltine type was known as *lunyue*. These two varieties produced the same silk, the difference being that the *daizao* spun a larger cocoon and could not survive the hot summer. C. W. Howard, *The Sericulture Industry of South China* (Canton, 1923), 17.

<sup>40</sup> C. W. Howard and K. P. Buswell, *A Survey of the Silk Industry of South China* (Hong Kong, 1925), 66ff.

pidly from a cut stem.<sup>41</sup> Between the rows of mulberry shrubs, Cantonese farmers planted various types of vegetables.<sup>42</sup>

Moreover, a unique system of mulberry culture integrated with fish rearing, called "4 water 6 land" (*sishui liuji*) and known in the delta since the late Ming, was practiced especially at Jiujiang in Nanhai and Longshan and Longjiang in Shunde.<sup>43</sup> By late seventeenth century, about half of the land in Jiujiang was occupied by fish ponds.<sup>44</sup> According to the prefectural gazetteer of Guangzhou of the Qianlong period, the practice of this system had become quite widespread at Nanhai and other areas near Canton.<sup>45</sup>

Under this system combining pisciculture with mulberry culture, the land in about four-tenths of a given area was dug out and large ponds formed. The excavated soil was then piled on top of the remaining six-tenths of the land, raising its level. Mulberries were planted on the elevated soil, and fish were raised in the ponds during the summer and sold during the winter when the lack of rainfall often caused the ponds to dry out. Sediment from the ponds fertilized the soil, and in turn silkworm litter and dead silkworms furnished food to the fish.<sup>46</sup>

Although the 4 water 6 land system had long been practiced in the delta, pisciculture initially provided the main source of income; mulberry cultivation constituted only a subsidiary activity. Not until the rise of the raw silk export trade around the middle of the eighteenth century did mulberry production become the primary economic activity; thereafter acreage of mulberry land and fish ponds (*sangji yutang*) increased rapidly, especially from the middle of the nineteenth century to the end of World War I in 1919.<sup>47</sup> The possibility of combining mulberry and fish culture made sericulture relatively more profitable in the Pearl River Delta, and the year-round crops of silkworms and mulberry leaves permitted farmers to practice sericulture full-time rather than as a by-employment during one or two months of the year. Thus, although both

<sup>41</sup> *Ibid.*, 41–2.

<sup>42</sup> Guo Xiuhua, "Wang Shunde diaocha cansang sichang ji," *Nongshi yuekan*, II:8 (Feb. 1924), 21.

<sup>43</sup> *Zhujiang sanjiaozhu nongye zhi* (1976), III, 47.

<sup>44</sup> Qu Dajun, *Guangdong xinyu*, juan 22.

<sup>45</sup> Cited by Li Zhiqin, "Lun Yapien zhanzheng shangyexing nongye de fazhan," *Ming-Qing shehui jingji xingtai de yanjiu* (Shanghai, 1957), 277.

<sup>46</sup> Howard and Buswell, 48; *Nongxue bao*, juan 245:2a.

<sup>47</sup> By the 1930s, the collapse of the silk trade prompted the peasants to adapt the system to sugarcane plantation in place of mulberry culture. *Zhujiang sanjiaozhou nongye zhi*, III, 47–8.



regions were subject to fluctuations in price and demand because of dependence on overseas markets, the Guangdong filatures enjoyed a year-round supply of cocoons and could adjust more easily. While Shanghai filatures either had to purchase most of their annual supply of cocoons within two weeks of May or June or get them later at a higher cost from cocoon merchants or cocoon warehouses, Cantonese filatures could spread out their cocoon purchases throughout the year and thus required less working capital to be run successfully than Shanghai filatures at the same scale of production. While Shanghai filatures usually operated about 250 days a year, the Canton filatures could stay open 300 or more days. Moreover, in the Canton Delta sericultural production was heavily concentrated within a very small area and the filatures were in the region; Shanghai filatures, on the other hand, had greater logistical problems, since they had to collect their cocoons from much farther away and over a much larger area. The lack of cocoons must have contributed to the frequency with which Shanghai filatures suspended their operations, and supply problems must have encouraged speculation and chronic instability in the industry.

### **Cocoon Marketing, Brokers, and the Likin Tax**

Another supply advantage enjoyed by the Cantonese filatures lay in the organization of cocoon collection: in Jiangnan the sale of cocoons was restricted by monopolistic controls that were absent in Guangdong. During the late 1840s and early 1850s, compradors to Dent's and to Jardine, Matheson gradually worked out the Suzhou system of bringing opium from Shanghai to sell at Suzhou, where silk was purchased.<sup>48</sup> Under the system known as "upcountry purchase," which became prevalent at Shanghai and Fuzhou in the 1850s, foreign firms entrusted capital to their compradors, who in turn financed the silk brokers.<sup>49</sup> Before 1870 particular villages in Jiangnan were engaged to be exclusive suppliers by particular brokerages (*sihang*), which in turn would sell to comprador representatives from the foreign firms of Shanghai.<sup>50</sup> After about 1870, silk brokerages not only collected hand-reeled silk but also transported it to Shanghai; this was a development concomitant with the decline of the large Western merchant houses and their eclipse by the new small

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<sup>48</sup> Yen-p'ing Hao, *The Comprador in Nineteenth Century China* (Cambridge, Mass., 1970), 82.

<sup>49</sup> Zhang Guohui, "Shijiu shiji houbanqi Zhongguo qianzhuang de maibanhua," *JSBN*, IV, 368; Hao, 76-7.

<sup>50</sup> "Notes on the Silk Trade of China," *North China Herald*, I:2 (Aug. 10, 1850).

Western firms. Capital loans to the brokers were now made by the traditional banks in the spring season and collectable after the sale of silk at Shanghai.<sup>51</sup> But with the gradual displacement of hand-reeled silk by cocoons as the item in demand from Shanghai, silk brokerages began to be replaced by cocoon brokerages (*jianhang*) as intermediaries between producers and exporters at Shanghai.<sup>52</sup>

The guilds of silk and cocoon brokers were products of the post-Taiping government recruitment and organization of guilds in different trades for reconstruction, provision of needed services and goods, and collection of new levies. The most important of these new levies was the *likin* (*lijin*), a commercial transit tax first instituted as a temporary local fund-raising measure in 1853 but gradually adopted nationwide and extended to different categories of commodities after the Taiping Revolution. A local guild of silk brokers (*siye gonghang*) became the agent for the collection of silk *likin*. Local silk guilds were established at Nanxun in 1864 and at Huzhou in 1874.<sup>53</sup> The silk *likin* (*sijuan*) was first instituted in 1862 and set at \$16 per bale in 1864. This tax had to be paid to the local guild of silk brokers before the silk could be sent from the producing area to export at Shanghai. The guild in turn would forward the payment to the *likin* bureau, which would then issue a receipt. The carriers would show the receipt as proof of prepayment of the *likin* at each customs station in transit. In addition, a user's tax, set at four copper cash per picul, was also collected on silk consumed locally.

As cocoon sales to Shanghai became important, the *likin* tax on cocoons (*jianjuan*) was formally instituted in 1883, at the rate of \$4 per picul of fresh cocoons and \$12 per picul of dried cocoons; the latter included \$9.40 of regular *likin* levy (*zhengjuan*), \$2 of Shanghai levy (*hujian*), and \$0.60 of levy for dike repairs (*tanggongjuan*).<sup>54</sup> The *likin* bureau licensed cocoon brokerages as local monopolies that acted as *likin* collecting agents in return for their privileges; officially, however, the proclaimed purpose for licensing these monopolies was to protect the domestic weavers' source of raw silk. At the end of the nineteenth cen-

<sup>51</sup> Zhang Guohui, 368.

<sup>52</sup> The term *jianhang* referred both to the commercial organizations that dealt in the drying and selling of cocoons and to the physical plants where the drying took place. Below, we use the term cocoon brokerage rather than *jianhang*, as the owners and the brokers were usually not the same persons: more typically, the latter rented the building and the drying ovens from the former.

<sup>53</sup> Moriyasu, 348.

<sup>54</sup> *Nongxue bao*, *juan* 144:5b; SGYS, II, 318; Yue Sibing, *Zhongguo cansi* (Shanghai, 1935), 88.

tury, cocoon markets opening for two to seven days were established in the cocoon-exporting counties of Jiangnan as places where cocoon brokers would purchase from peasants during the hatching season in the spring; for instance, the Wuxi cocoon market dated only from 1887,<sup>55</sup> when the first brokerages were formed there.<sup>56</sup> These brokers sometimes owned but more often rented the buildings along with the drying ovens, where they stifled the chrysalides and dried the cocoons before the moths could pierce them. There were two types of ovens: in the single type the cocoons were heated from below by charcoal, while in the double and newer type the heating was done from both sides of the chimney by burning firewood.

In some localities, such as the market town of Linghu in Wuxing, intermediate brokers (*xiaolingtou* and *hangchuan banzi*) acted as middlemen for the peasants and the silk brokerages. During the busy silk season, these go-betweens took along peasant sellers to stalls set up by the weighers (*chengshou*) of the silk brokers at various key points of the transportation network, introduced the parties, and participated in the price negotiations; they received from the silk brokers commissions amounting to one to two percent of the total purchase.<sup>57</sup> By the late nineteenth century, as demand for cocoons gradually displaced that for silk, these intermediate brokers (*baila* or *xiaolingtou*) played an especially important role in Shaoxing, Liyang, and Jintan, where the terrain was hilly and travel to the cocoon market difficult: they collected the cocoons from the farmers and transported them to the cocoon brokers for a small commission.<sup>58</sup>

Although some of the Shanghai filatures sent their agents to buy cocoons at the local markets and some even owned their own drying ovens, much of the cocoon-buying business was carried on by local brokers who acted as intermediaries between the peasant seller and the filatures or the Shanghai cocoon warehouses, which purchased cocoons speculatively, hoping to sell to filatures later at a profit. By 1910 Shanghai filatures relied less and less on their own agents.<sup>59</sup> By 1920 probably no more than 30–40 percent of cocoons in Jiangnan were sold directly to the filatures.<sup>60</sup> Instead, cocoon merchants (*yujianshang*) bought up those cocoons not purchased by filatures during the cocoon

<sup>55</sup> *Nongxue bao*, *juan* 144:4b.

<sup>56</sup> "Sericulture in Wusih," *Chinese Economic Journal*, I:2 (Feb. 1927), 142.

<sup>57</sup> "Waishang yanghang lueduo huasi chukou de pianduan shiliao," 120–2.

<sup>58</sup> *Nanxun zhenzhi*, cited in "Hucanshu," in *Nongxue bao*, *juan* 4:7a; Lieu (1940), 103.

<sup>59</sup> China, Maritime Customs, *Trade Returns*, 1910, 404.

<sup>60</sup> NYS, II, 510.

season, hoarded them and sold them later to the filaturists through brokers (*qianke*) who conducted their businesses at teahouses. Many of these cocoon merchants were themselves cocoon brokers; others were landlords and rich peasants from the hinterlands or men in the silk and traditional banking businesses at Shanghai.<sup>61</sup>

This trend away from direct purchase to buying from cocoon merchants reflected that the filatures were more and more run by people with limited financial means. While the filatures could spread out their cocoon purchases throughout the year and ease their cash flow problems, they had to pay considerably higher prices: in 1904 the difference between the price of Shaoxing cocoons bought at the county plus drying and transportation expenses and transit taxes on the one hand, and the Shanghai selling price on the other, amounted to a full 23 percent.<sup>62</sup>

In addition to the cocoon brokerages, another new institution, the re-reeled silk brokerage (*sijinghang*), sprang up as an intermediary between the peasant producer and the exporter as a result of foreign demand for higher quality silk. Brokers of re-reeled silk thrived in Nanxun and Zhenze in the Huzhou region; they collected hand-reeled silk from the silk brokers, redistributed it back to the peasants for re-reeling to produce a more regular silk, and then collected and sorted the re-reeled silk for transportation to and sale at Shanghai. Around 1925 there were eight such brokerages at Nanxun, selling a volume of 100–1,000 bales per year, and twenty at Zhenze, selling a volume of 100–600 bales per year.<sup>63</sup> Orders from foreign firms were transmitted through silk wholesale houses (*sihao*) and agents (*sitongshi*) in Shanghai.<sup>64</sup>

During the late Qing the number of cocoon brokerages increased, but to protect their monopolistic privileges the brokers induced the government to limit their numbers. In 1905 the government at Jiangsu decreed that no new licenses were to be issued for five years in counties where there were five brokerages already (except for Nanking, Jurong, Lishui, Gaoyou, and Shengze); further, no new drying ovens were to be permitted at existing facilities.<sup>65</sup> In 1912 new regulations on the establishment of new brokerages required that they be situated at least twenty

<sup>61</sup> "Waishang yanghang lueduo huasi chukou de pianduan shiliao," 118–8; Uehara, 235.

<sup>62</sup> Computed from data in U.S. State Department, "Industrial China," *U.S. Consular and Trade Reports*, no. 298 (July 1905), 22.

<sup>63</sup> Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 71.

<sup>64</sup> *Chinese Economic Bulletin*, XII:23 (June 9, 1928), 289.

<sup>65</sup> Buchanan, 6.

li beyond the center of operation of existing brokerages. In 1920 the local chambers of commerce and silk traders' association got the central and the Zhejiang provincial governments to nullify these restrictions in Xinchang, Shengxian, and Changxing; however, the regulations remained in force in 22 other sericultural counties. In the same year the issuance of licenses to new brokers was stopped for two years. In December the provincial assembly of Zhejiang repealed the monopoly, but the dealers instigated a riot that led to the nullification of the repeal.<sup>66</sup> In 1921 at the insistence of the Jiangsu-Zhejiang Silk Piece Goods and Textile Dealers' United Association, the Ministry of Agriculture and Commerce decreed the moratorium on new brokerage licenses to be permanent in the prefectures of Hangzhou, Jiaying, Huzhou, and Shaoxing in Zhejiang and in the prefectures of Jiangning, Suzhou, Changzhou, Zhenjiang, and Songjiang in Jiangsu.<sup>67</sup>

At the beginning of each season the representatives of the Shanghai filatures conferred with the local cocoon guilds and cocoon brokers on junks or launches anchored near the silk counties. They discussed the date the cocoon market should start and the average price of cocoons that should be set. Such arrangements were not meaningful in practice, however, as prices decided on were not binding.<sup>68</sup> For example, in 1917 the price agreed upon beforehand was \$54 per picul, but the average price on the market the next day was \$59.<sup>69</sup> These cocoon brokers had, then, a monopolistic control on the supply of cocoons, which must have kept the prices high and restricted the quantity available to Shanghai filatures. While the number of brokerages did increase somewhat despite legal restrictions during the 1920s, their total capacity (as measured by the number of baking ovens) was virtually unchanged, for the owners of the cocoon drying plants (like the owners of the filature plants in Shanghai) found it more profitable to lease them out to operators rather than to manage them directly and renovate and expand them.

In 1908 Shen Lianfang, a Shanghai filature owner and president of the Jiangsu-Zhejiang-Anhui Cocoon and Silk Guild, attempted to expand his source of cocoon supply beyond the borders of Jiangsu-Zhejiang and outside the sphere of influence of the cocoon brokers. He visited South Anhui and studied the soil and climate there. In 1915 and 1916 he

<sup>66</sup> China, Maritime Customs, *Decennial Reports, 1912-21* (Shanghai, 1924), I, 367.

<sup>67</sup> "Cocoon Trade in Chekiang," *Chinese Economic Monthly*, III:12 (Dec. 1926), 564; China, Maritime Customs, *Decennial Reports, 1912-21* (Shanghai, 1924), I, 367.

<sup>68</sup> Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 30.

<sup>69</sup> Tōa dōbunkai, comp., *Shina shōbetsu zenshi*, XV, 537.

bought and distributed mulberry seedlings and silkworm eggs to farmers in the Wuhu region in Anhui province and set up temporary brokerages to buy fresh cocoons from them. He also distributed sericulture literature to the farmers of Anhui. Other Shanghai filaturists similarly tried to promote sericulture in the provinces of Anhui and Hubei and enlisted the help of local officials. Yet these efforts by Shanghai filatures to increase the supply of cocoons were reportedly all stymied by the extortions of "local bullies and evil gentry,"<sup>70</sup> who opposed any attempt to break their monopolies.

Not until 1927, with the occupation of Jiangnan by the Southern Revolutionary Army, were restrictive regulations on the establishment of cocoon brokerages in Zhejiang and Jiangsu revoked. Any Chinese who could secure the guarantee of either the local chamber of commerce or three merchants of good standing could apply for a license to open a cocoon-collecting office. In Zhejiang license fees, charged according to cocoon-drying capacity, amounted to \$14 per single oven and \$28 per double oven. Preferential rates were charged for new and improved types of ovens (at half the regular rates) and for drying plants organized by farmers' cooperatives or for personal use (at \$4 per single oven and \$8 per double oven). Similar new laws were announced in Jiangsu. In the wake of the lifting of restrictions many new brokerages were licensed by the new government authorities.<sup>71</sup> At Jiaying, for example, 22 new cocoon brokerages (along with 5 new mulberry leaf brokerages) were registered in 1928, bringing the total to 45.<sup>72</sup> There were originally only 15 brokerages at Huzhou, but after the military governor of Jiangsu abolished the monopoly in 1926 the number rose to about 50 by 1927.<sup>73</sup> Yet much of this increase in the number of brokerages might have been illusory. Between 1927 and 1930 the number of cocoon brokerages grew from 783 to 1,315, yet the number of baking ovens only increased from 14,054 to 14,915; even taking into account that there were now 101 newly formed peasant cooperatives with 233 baking ovens, total capacity remained little changed.<sup>74</sup> As it was for the Shanghai filatures, the scale

<sup>70</sup> Li Jiayuan and Huang Gongmai, "Jiang-Zhe-Yue siye diaocha baogao" (II), *Nongshang gongbao*, III:10 (May 15, 1917), 28; NYS, II, 170-3; Chen Zhen, IV, 175.

<sup>71</sup> *Chinese Economic Bulletin*, XI:333 (July 9, 1927), 27, and XII:26 (June 30, 1928), 329; Y. T. Chow, "The Nationalists' Plan to Improve the Silk Industry in Central China," *China Journal*, IX:3 (Sept. 1928), 119.

<sup>72</sup> *Chinese Economic Bulletin*, XII:21 (May 26, 1928), 272.

<sup>73</sup> *Chinese Economic Bulletin*, VIII:269 (April 17, 1926), 214, and XI:352 (November 19, 1927), 267.

<sup>74</sup> Zhao Ruheng, *Jiangsu sheng jian* (Shanghai, 1935), II, 105.

of production was declining for these cocoon brokerages.

Most owners of the cocoon-drying plants were undoubtedly members of the local gentry or the locally powerful (*qiang youli zhe*). The majority of the members of the Jiangsu provincial assembly from the sericultural counties were reportedly owners of cocoon-drying plants, often in partnership with well-to-do merchants; hence it was hardly surprising that they sought legislative limitation of the number of ovens.

Their monopsonistic position vis-à-vis peasant producers and their monopolistic position vis-à-vis the filatures enabled the cocoon brokers to squeeze both. Peasants had to sell to the brokers on the latter's terms, for if they waited for better prices the moths would have pierced the cocoons and they would have suffered a total loss. If they tried to go outside their home area to sell their cocoons, they could be arrested by the local cocoon guild for smuggling and have their cocoons confiscated. The silk brokers, either because of connections with the gentry and the locally powerful or because of registration as foreign agents, could count on the help of the local officials for protection and suppression of protests. The brokers of Liyang even hired the police to enforce order during the selling season. Any seller who argued about unfair prices could be arrested and charged with disturbing the peace.<sup>75</sup>

Indisputably, Shanghai filatures were hampered by the imposition of the *likin* and the concomitant monopolistic control of cocoon brokers. *Likin* was not only an onerous addition to production cost for filaturists but a serious impediment to trade in general. Carriers of goods were additionally subject to harassment and extralegal exactions by collectors at the numerous customs stations that dotted the major highways and waterways. In the wake of the Boxer indemnities, surcharges of \$13 were added to the regular silk *likin* of \$16.<sup>76</sup> In 1903 the *likin* tax on cocoons amounted to 6 percent of their purchase price.<sup>77</sup> After the founding of the Republic in 1912, the tax on dried cocoons (exclusive of surcharges) was lowered from \$9.40 to \$6 per picul, but soon raised again to \$11. In 1916 the dried cocoon tax was again lowered to \$9 per picul, and the Shanghai surcharge to \$1 per picul.<sup>78</sup> However, with the periodic multiplication of surcharges by local authorities during the Republican period, the tax burden on cocoons was definitely not lowered. For example, in

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<sup>75</sup> NYS, II, 320-1, 518, 524-5; Kojima Yoshio, "Jinushi sei to nōminso bunkai," in Nozawa Yutaka and Tanaka Masatoshi, eds., *Kōza Chūgoku kingendai shi* (Tokyo, 1978), III, 35-6.

<sup>76</sup> SGYS, II, 318.

<sup>77</sup> Computed from data in Tōa dōbunkai, comp., *Shina keizai zensho*, XII, 78-9.

<sup>78</sup> Yue Sibing, 88.

1924 the government at Wuxi collected a surcharge of \$0.10 for the police force, \$0.30 for the Cocoon and Silk Guild, and \$0.45 for community charity work, in addition to the regular likin of \$8 per picul.<sup>79</sup> In 1928 the likin per picul of dried cocoons brought to Shanghai amounted to \$12.40, or about 8 percent of the purchase price. In comparison, transport cost from the cocoon-producing counties in Zhejiang to Shanghai was only about 1 percent of the purchase price.<sup>80</sup> Taxation, therefore, not transport cost, raised production cost significantly.

That is not to say that transport factors and accessibility to the market did not play a part in determining where sericulture would develop. But the likin magnified production and marketing cost differentials between different localities. Possibly, silk counties in Northern Zhejiang expanded their cocoon exports to Shanghai more slowly than the counties in Southern Jiangsu because Zhejiang cocoons would have been subject to likin charges of two provinces, even though Shanghai was about equidistant from Wuxi and Huzhou. In 1883, when the cocoon likin was formally instituted, payment of double likin duty for Zhejiang cocoons shipped to Shanghai meant an extra charge of \$30 per picul (compared to Jiangsu cocoons).<sup>81</sup> Only after the Northern Expedition did provincial authorities agree that Zhejiang cocoons would only have to pay, in lieu of likin, a border crossing tax (*guojingshui*) of \$1 per picul upon entry into Jiangsu.<sup>82</sup> Around 1900 natives of Anhui informed Luo Zhenyu that they were reluctant to undertake sericulture because the likin stations made marketing costs prohibitive.<sup>83</sup> Although the nominal likin on cocoons in Anhui was only \$2.20 per picul in the 1910s, as compared to \$8 in Jiangsu and Zhejiang, cocoons from Langqi and Guangde counties in Anhui were subject to an additional surcharge of \$5.80 per picul at Liyang on passage to Shanghai (thus bringing the total likin to the same level as in Jiangsu and Zhejiang). In 1926 likin in Anhui was raised to \$5 per picul, but no reduction was made for the surcharge collected at Liyang.<sup>84</sup>

<sup>79</sup> Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 31.

<sup>80</sup> Computed from data in "Shanghai Silk Filatures," *Chinese Economic Journal*, III:1 (July 1928), 601-2.

<sup>81</sup> "Raw Silk Trade of China," *Reports of the Consuls of the United States*, XI:36 (Dec. 1883), 350.

<sup>82</sup> *Chinese Economic Bulletin*, XII:14 (April 7, 1928), 179.

<sup>83</sup> *Nongxue bao*, juan 137:1a-b.

<sup>84</sup> *Chinese Economic Bulletin*, XII:14 (April 7, 1928), 179.



The renowned industrialist Zhang Jian also blamed the likin for the initial failure of his promotion of sericulture in the Haimen-Nantong areas. In 1892 Zhang persuaded Ouyang Lin, the director of the likin bureau, to suspend likin collection on silk in Haimen; he then organized a cocoon market. The suspension of likin was continued by the prefect Wang Shutang. Another cocoon market was added at Haimen, and perhaps one million mulberry trees were planted. But after the closing of the cocoon markets in 1896, the new director of the likin bureau, Mu Ke, rescinded the suspension of likin, whereupon the merchants wanted to cancel their brokerage licenses, production fell 70 percent in 1897, and there were few buyers of mulberry seedlings from Huzhou.<sup>85</sup>

Indeed, the avoidance of likin was one important reason some Chinese filatures were registered as foreign firms in Shanghai. They would then be entitled to obtain a license under foreign firms from the Native Customs authorities and would only have to pay a fixed ad valorem transit tax in lieu of likin and extralegal payments at the customs stations, a privilege accorded foreigners importing goods to or exporting from the interior of China. For dried cocoons the payment in lieu of likin was fixed at half the export tax on an equivalent amount of raw silk (set at a 1:4 ratio by weight). The filature would obtain a pass under foreign registration from the Native Customs, which would be shown at each likin station, and the fee would be paid upon entry into Shanghai.<sup>86</sup>

In the Canton Delta, however, government licensed monopolistic cocoon brokerages played no role in supplying raw materials to the filatures. There as in Jiangnan, first silk markets and then cocoon markets emerged to service the growing silk export trade. In 1800 the gentry of Jiujiang petitioned to establish a silk market to support the local literary society (*Rulin wenshe sixu*).<sup>87</sup> Thereafter a number of silk markets sprang up in various market towns of Shunde and Nanhai; they were the corporate property of the gentry-dominated local defense bureaus (*xiang-*

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<sup>85</sup> *Nongxue bao*, *juan* 6:5a-b. In 1904 Zhang Jian founded the Fusun Sericulture Company, which was consolidated with his other Nantong enterprises in 1907. He also established a sericulture and silk-weaving training school for the women of Nantong. Samuel C. Chu, *Reformer in Modern China: Chang Chien, 1853-1926* (New York, 1965), 41, 96. Nevertheless, North Jiangsu never became an important sericultural region.

<sup>86</sup> Chen Zhen, IV, 152. The export tax on silk, originally fixed at 5 percent ad valorem by the Treaty of Nanking, was changed in 1858 to 10 Haiguan taels per picul. Thus, the tax on dried cocoons in lieu of likin would be 1.25 taels, or \$1.74 per picul, an amount much lower than the regular likin tax and surcharges.

<sup>87</sup> *Jiujiang rulin xiangzhi* (1883), *juan* 4:77a.

*tuanju*), which rented them out for terms of two or three years at open biddings. In the early twentieth century there were 18 silk markets in Guangdong. The most prosperous was at Guizhou in Shunde county; it yielded an annual rental income of \$50,000 Canton for the defense bureau and police of Rongqi and Guizhou and commanded an annual business volume of \$2 million Canton. The brokers who rented the silk markets were not directly involved in the silk sales; they only provided weighing services for the buyers and sellers, who bargained about prices freely. These brokers derived their incomes from commissions amounting to 2 percent of the sales from the sellers and 6 percent from the buyers, and from interest at the monthly rate of 2 percent for loans to buyers without sufficient cash. The borrower left behind the silk he purchased as collateral, and could only obtain a loan equal to 60 percent of its cash value.<sup>88</sup>

As in Jiangnan, in Guangdong new cocoon markets sprang up from the 1870s and displaced the silk markets.<sup>89</sup> Chen Qiyuan had depended on sending agents to purchase cocoons from the neighboring areas; within eight or nine months of the founding of his filature Jichanglong in 1874, however, two cocoon markets were set up at the market town of Guangshan. To ensure a steady cocoon supply, Chen subscribed to the capitalization of another cocoon market established by a fellow native of Xichao.<sup>90</sup> Subsequently, many cocoon markets were built from the end of the Guangxu period on at Rongqi, Guizhou, Lechang, and Chencun in Shunde; Jiangbao, Guanshan, and Jiujiang in Nanhai; Xinan in Sanshui; Guzhen and Xiaolan in Xiangshan; Shilong in Dongguan; and elsewhere in the province.<sup>91</sup> As in the case of the silk markets, these cocoon markets were rented out at open biddings; the level of the rent (*xiangyong*) at each market was largely determined by the past volume of business. Free buying and selling took place between farmers and either agents of the filatures or speculators (*shuidou*). The brokers operating these markets provided weighing services as well as free boat transport for the peasants and their cocoons. For their commissions, they charged the

<sup>88</sup> Li Weishi, "Guangdong sheng cansiye de maoyi ji qi shuailuo," *Guangzhou wenshi ziliao* 16 (1964), 75.

<sup>89</sup> Around 1910 there were 22 cocoon markets as compared to 9 silk markets in Shunde; no silk markets were listed in the *Nanhai xianzhi* of the Xuantong period. Suzuki Tomoo, "Shimmatsu minsho ni okeru minzoku shihon no tenkai katei: Kanton no seishigyō ni tsuite," *Chūgoku kindaiika no shakai kōzō: Shingai kakumei no shiteki ichi* (Tokyo, 1960), note 5, 68.

<sup>90</sup> Chen Tianjie and Chen Qitong, 67.

<sup>91</sup> Suzuki, 62.

sellers 2 percent of sales and the buyers 6 percent.<sup>92</sup> Cocoon speculators (*shuidou*) numbered in the thousands at Rongqi and Guizhou alone; they often secured their cocoon supplies by making loans to poor peasants who had no cash to buy mulberry leaves to feed their silkworms.<sup>93</sup> While the gentry and the lineages built the market facilities, the companies that operated the markets were often organized by the local filaturists. The cocoon market of Rongqi-Guizhou was managed by a filature group headed by the local chamber of commerce president, Ou Zhanming, and capitalized by shares of \$200 Canton from each local filature.<sup>94</sup> Filatures also maintained cocoon warehouses (*canzan*) with drying facilities, to which the peasants and the speculators could bring the fresh cocoons directly; at Rongqi, there were approximately 100 such warehouses in the early twentieth century.<sup>95</sup>

Thus, the brokers of Guangdong were merely intermediaries between cocoon sellers and the filatures and not government-licensed monopolies that acted as tax collection agencies. Not that there was no *likin* tax imposed on cocoons in transit in Guangdong: in 1929 cocoons going to the Canton Delta from the West River area were subject to a *likin* tax of HK\$37, which was about 2 percent of the prevailing cocoon price.<sup>96</sup> But since the filatures were all at or in the vicinity of cocoon-producing villages, they relied mainly on locally produced cocoons. Since most cocoons did not have to travel very far to get to the filatures, there was no point for the government to license a cocoon broker to collect transit dues. As in Jiangnan, there was a user's tax on cocoons (*jianjuan*): at Rongqi the cocoon tax, along with numerous other taxes, was instituted in 1865 to finance the newly formed local militia (*gongyue*).<sup>97</sup> But this tax, set at 0.1 percent *ad valorem* and collected at the cocoon markets, was far less onerous than the *likin*.

Still, the Cantonese manufacturers did suffer from the imposition of *likin* collected at the tax office (*tusi lichang*) on the raw silk they transported by boat from the countryside to Canton for export. In the mid-1920s, for example, *likin* and other taxes totalled \$417.50 per picul of raw silk; freight cost was \$1.20.<sup>98</sup>

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<sup>92</sup> Li Benli, 109–10; Lei and Lei, 116.

<sup>93</sup> Li Weishi, 76.

<sup>94</sup> Li Benli, 111.

<sup>95</sup> *Shunde xianzhi* (1974), 95; Li Benli, 109.

<sup>96</sup> *Xinjianshe*, 3 (Oct. 1929), 8, 64.

<sup>97</sup> *Shunde xian xuzhi, juan* 3:11a.

<sup>98</sup> Lei and Lei, 112; Howard and Buswell, 149.

In 1924 the county government of Shunde farmed out the cocoon tax to a private company for \$30,000 Canton. The cocoon merchants objected to the company's announcement to collect at each selling place; they pointed out that the cocoons were subject to double duty, since taxes were collected at the markets and at the warehouses as well. Backed by an armed force, the company invaded the offices of the merchants and seized their books, in an attempt to eliminate tax evasion. The merchants countered by going on strike.<sup>99</sup> They resumed the cocoon trade only after the government stepped in and eliminated the cocoon tax. However, a crisis ensued when the company arrested the employees of the cocoon merchants.<sup>100</sup> We have no information on the outcome of this struggle. It was reported in 1928, however, that "tax-farming scoundrels" (*zhuangun*) had recently been especially rampant and that they often caused market strikes by the cocoon merchants and created much rural tension.<sup>101</sup>

Thus, until the 1920s at least, the Cantonese filatures enjoyed greater ease and lower cost in the collection of cocoons because of proximity to cocoon producers, absence of restrictive control over price and supply by monopolistic brokers, and year-round mulberry and silkworm crops; those filatures that managed cocoon markets and warehouses were directly involved in purchasing the cocoons. By the mid-1920s, however, the situation might have worsened with respect to cocoon supply, as the government frequently farmed out tax powers to unscrupulous local bullies as a means of raising revenue.

### **Vertical Disintegration, Rentier Mentality, and the Problem of Silkworm Disease**

Moreover, sericulture and the silk industry in both regions shared a lack of vertical integration between different production stages (see Figure 5.1). Few farmers engaged in both mulberry cultivation and silkworm rearing.<sup>102</sup> Not only was there separation between ownership and production, but specialization in one stage or another of sericultural production characterized silk manufacturing at both the household and the regional levels.

<sup>99</sup> *Nongshi yuekan*, II:12 (June 1924), 66–7.

<sup>100</sup> *Nongsheng*, no. 22 (May 30, 1924), 353.

<sup>101</sup> Liu Boyuan, "Guangdong canye jiyong zhuzhi lianhe gailianghui zhi yijian xin," *Nongsheng*, no. 116 (December 31, 1928), 6.

<sup>102</sup> Tōa dōbunkai, comp., *Shina shōbetsu zenshi*, I, 778.

In Zhejiang, particularly around Xiashi and other towns in Jiaying and Huzhou, special dealers bought mulberry seedlings and in turn sold them to retailers from West Zhejiang or to sericultural companies in Jiangnan and North China. This trade amounted to about \$500 thousand annually in the 1920s. Of far greater importance was the trade in mulberry leaves, particularly in Hangzhou, Haining, Huzhou, Jiaying, Shimen, Tongxing, and Shaoxing. Retailers transported the leaves at full speed by junk to distribution centers in Shimen, Changan, and Linping near Hangzhou, Wuchen, Guian, Deqing, and other counties in Jiangsu province.<sup>103</sup> Changan and Shimen were the most important areas in the production of mulberry leaves: this business amounted to \$600,000–\$700,000 per year around 1925.<sup>104</sup>

During the Qing, poor peasants of the Zhenze and Xuanglin areas borrowed money from wealthy households (*fuhu*) at 10 percent interest (*jiayiqian*) so they could afford the mulberry leaves during the cocoon growing season.<sup>105</sup> At Huzhou, under the practice of mulberry renting (*miaosang*), owners of mulberry trees rented to silkworm growers for ten years on a contractual basis. In the sale of leaves, either cash was paid at the time of purchase (*xianxiao*), or the buyer would by contract pay the price for the leaves plus 10 percent interest after he had sold his silk (*shexiao*).<sup>106</sup> In the hinterlands of the market town of Xincheng in Xiushui county of Zhejiang, poor mulberry growers would anticipate the next year's leaf production and sell it at half price to brokers for immediate cash payments (*shaoye*); if production fell below expectations, the peasants would be forced to buy the leaves at full price to repay the lenders.<sup>107</sup> In Jiangsu as in Zhejiang, mulberry leaf brokers also provided capital to the peasant so he could defer payment for the leaves until he had sold his cocoons.<sup>108</sup>

In Guangdong during the 1920s, probably 50 percent of mulberry leaves consumed by sericultural farmers were purchased, either by contract between the producer and the buyer or from retailers at the leaf markets.<sup>109</sup> There were usually two or three markets at each of the larger

<sup>103</sup> *Chinese Economic Bulletin*, VII:271 (May 1, 1926), 234–5.

<sup>104</sup> Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 52.

<sup>105</sup> *Zhenze zhenzhi* (1884), *juan* 2:1b; *Xuanglin zhenzhi* (1917), *juan* 14:3b–4a.

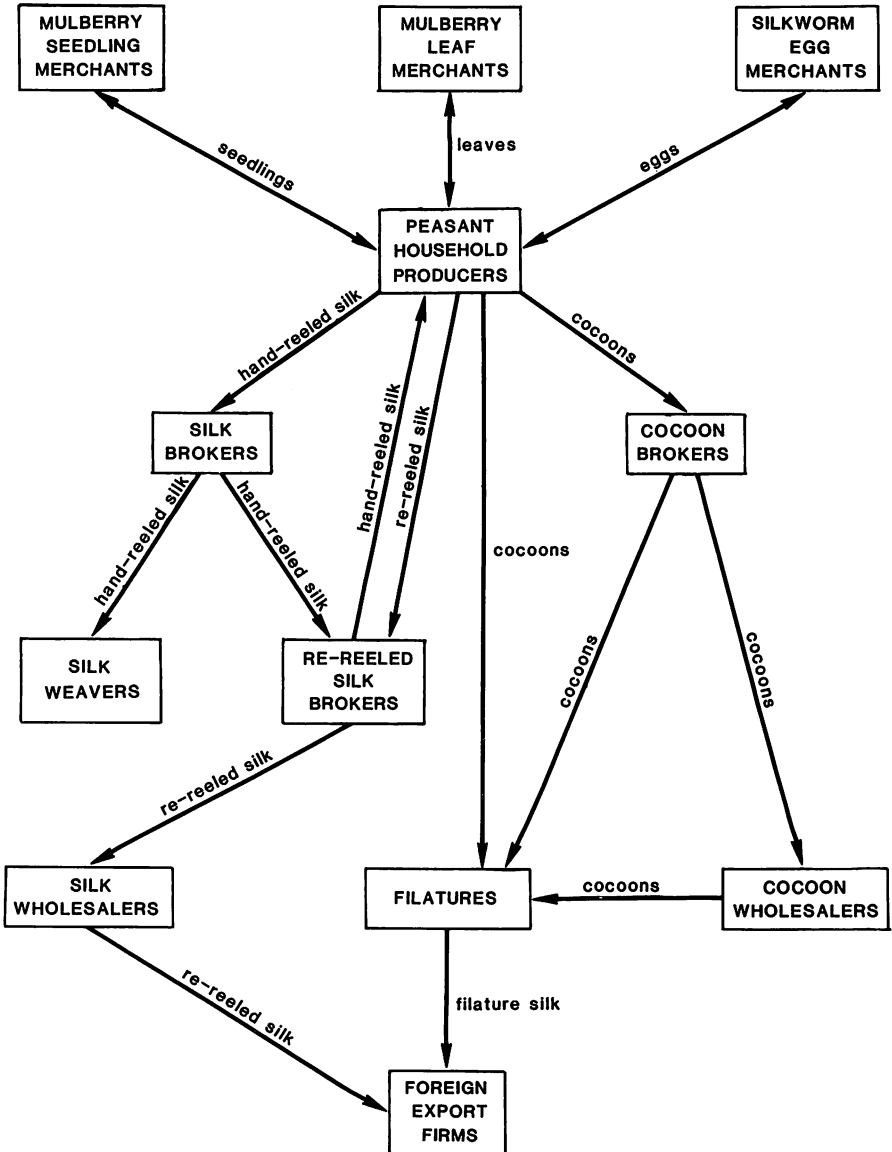
<sup>106</sup> Yueh-hung C. Ting, "Sericulture in Hu-chou as Seen in Hu-chou Fu-chih," *Papers on China*, XXIII (July 1970), 31–2.

<sup>107</sup> *Xingcheng zhenzhi* (1923), *juan* 3:3a.

<sup>108</sup> *Zhongguo shiye zhi: Jiangsu sheng*, pt. V, 161; *Zhongguo jingji zhi* (Hangzhou 1935, Taipei photo-reprint, 1971), I, 50.

<sup>109</sup> Howard and Buswell, 56.

Figure 5.1. A Schematic Representation of Different Phases of Production and Distribution in the Silk Industry



SOURCE: Adapted from Shi Minxiong, *Qingdai sizhi gongye de fazhan* (Taipei, 1968), 59.

market towns in the Delta; even a smaller market town would normally contain one leaf market. Like silk and cocoon markets, these leaf markets were most often on public land or on lineage land. In the former case, income would go to finance the expenses of the local militia (*baoweituan*); in the latter, income would go into the lineage treasury. The high bidders at an open bidding gained the right to operate a leaf market for three or five years. The market operators collected a small commission (2 percent from the sellers, 6 percent from the buyers) for providing the facilities and the weighing services. If the buyer had insufficient cash, the market operator would pay the seller at the time of the transaction and later collect the sale amount plus interest and commission from the buyer after he sold his cocoons.<sup>110</sup> Interest rates often amounted to about 20–30 percent per year.<sup>111</sup>

Not only were a large proportion of silkworm-raisers non-growers of mulberry leaves, but many also purchased the silkworm eggs instead of providing their own. In Zhejiang, Shaoxing and Yuhang were the two leading counties specializing in the production of silkworm eggs. Yuhang eggs were always the first to appear on the market, as raisers there used high temperature to hasten production.<sup>112</sup> By the 1920s the production of silkworm eggs had become Yuhang's most important industry, with an annual production of 350,000 sheets at a value of approximately \$700,000. Yuhang eggs were not only used locally but also exported to Deqing, Hangzhou, Haining, Tongxiang, Shimen, parts of Jiaxing and Huzhou in the province, as well as to Nanking, Northern Jiangsu, and Anhui.<sup>113</sup> Shaoxing produced about 200,000 sheets annually and supplied the needs of Shengxian, Xinchang, Zhuji, Xiaoshan, and large sections of Huzhou and Jiaxing. Except for about 60,000 sheets that were produced by farmers in Shuanglin and Nanxun in Huzhou region for their own use, the needs of Zhejiang were filled by silkworm egg sheet producers in these two counties. On the other hand, in the southern parts of Jiangsu including Wuxi, silk farmers produced their own eggs.<sup>114</sup>

In Guangdong by the 1920s the production and sale of silkworm eggs were undertaken by about a thousand merchants. Eggs were sold at

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<sup>110</sup> Li Weishi, 74; Liu Boyuan, *Guangdong sheng canye diaocha baogao shu* (Canton, 1922), 22.

<sup>111</sup> Howard and Buswell, 61.

<sup>112</sup> *Chinese Economic Bulletin*, X:313 (Feb. 19, 1927), 103.

<sup>113</sup> Uehara Shigemi, *Shina sanshigyô taikan* (Tokyo, 1929), 104; Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 54–5.

<sup>114</sup> Uehara, 98.

special egg markets that, like the mulberry leaf markets, mostly belonged to lineages or the villages and were rented out to individuals or companies. These markets were centrally located in the larger towns, such as Rongqi, Longshan, Daliang, Leliu, and Xiaolan.<sup>115</sup> The leading town in the production of silkworm eggs was Longshan.<sup>116</sup>

Not only were different phases of production engaged in by different people, but at each stage middlemen could be found functioning as intermediaries between producer and seller, the transactions taking place or the processing carried out at facilities often not owned but rented by the broker or producer. The middlemen often acted in addition as suppliers of capital or loans to the producer or the buyer; they in turn might have borrowed their capital from old-style banks, pawnbrokers, or money-lenders.

In pre-modern China, this division between production and marketing, the tendency for an industry to separate or disintegrate into vertical lines of production with a proliferation of middlemen mediating, was characteristic of rural production and urban handicrafts in general. Underlying this phenomenon was the pervasiveness of the rentier mentality, that is, the propensity of owners of land and capital to rent them out rather than to use them directly themselves for productive purposes. Scarcity of land and capital partially explained the persistence of the rentier mentality and the disintegration of production phases. Such disintegration was caused not so much by the separation of mulberry culture and silkworm breeding as by the entry into sericulture of peasants who did not own and could not afford to rent the land for mulberry culture.<sup>117</sup> In the silk counties of Nanhai, Shunde, and Xiangshan, 85 percent of land was held by wealthy landlords and lineages who parcelled it out to tenants in small lots, with 5–10 or 15–year leases.<sup>118</sup> By the early decades of the twentieth century most landlords had taken up residence in the market towns and urban centers of Guangdong and let their land to tenant farmers. Some of the rich peasants might have raised silkworms and cultivated mulberries with the help of laborers, who were hired on an annual basis at an open market and housed in the “polder establishments” (*weiguan*).<sup>119</sup> Most mulberry cultivators and silkworm

<sup>115</sup> Howard and Buswell, 70, 78.

<sup>116</sup> Liu Boyuan, 23.

<sup>117</sup> According to the prefectural gazetteer of Huzhou of 1884, the poor farmers there did not own any mulberry trees because of heavy land taxation and lack of spare land. Ting, 31.

<sup>118</sup> Howard and Buswell, 12, 50; Tōa dōbunkai, comp., *Shina shōbetsu zenshi*, I, 780.

<sup>119</sup> *Wei* means a polder enclosed by embankments that protect it from flooding. According to Chen Hansheng, *weiguan* referred at first to housing built by rich peasants who had



growers, however, must have relied on family labor.

Farmers who specialized in mulberry culture or the production of silkworm eggs did so initially because they enjoyed certain comparative advantages in that phase of production. For instance, climatic conditions favored the earlier hatching of eggs in Yuhang, where the farmers added to their natural advantage by the artificial means of heating the eggs. The limited or non-participation of mulberry farmers and egg producers in the latter steps of sericultural production was due to a need or desire to secure cash as soon as possible to pay for rents and interest on loans, daily necessities, ceremonial expenses, and capital for their regular farming (sericulture being in many cases only a by-employment to supplement the main occupation—production of basic foodstuffs). In the Canton Delta rent was collected in advance, and it was therefore necessary for peasants to secure credit as soon as possible.<sup>120</sup>

Thus, peasant sellers became clients of middlemen who provided capital and credit advances in return for future deliveries of crops and products. Such ties were typically based on personal relationships between the peasant and the middleman and on personal guarantees. The brokers limited their activities territorially to ensure the dependability of their clients and thereby reduce risk; consequently, the market for each commodity remained segmented.

What were the economic consequences of the separation of production and marketing, the proliferation of middlemen and market segmentation, and the vertical disintegration between stages of production? Interchange of information between producer and consumer was minimized. In the minds of producers, improvement of quality was not as important as quantitative expansion, minimization of cost, and the ability to get the goods to the market quickly. As the market lasted only a few days a year, the seller and buyer would try to conclude the transactions as fast as possible. For silkworm eggs, this tendency toward early distribution and quick sale was reinforced by the fact that refrigeration methods to preserve them were unknown. Thus, at the Yuhang silkworm egg market, eggs sold on the first day were more expensive, because most of the buyers would have left by the second day.<sup>121</sup> Moreover, since the seller would not process the product further, quality of

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rented large tracts of reclaimed polders for themselves and their hired hands, and was thus applied to mean large farms. Chen Hansheng, *Guangdong de nongcun shengchan guanxi yu nongcun shengchanli* (Shanghai, 1934), 35.

<sup>120</sup> Chen Han-seng, *Landlord and Peasant in China* (New York, 1936), 37.

<sup>121</sup> Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 58–9.

the lot was of little concern to him. In the event that facilities and equipment were rented out rather than used by the owner, repair and renovation became unlikely.

Procurement of high quality cocoons would increase the profits of filature operators, for the better the quality of the cocoons, the higher their silk content (as measured by the amount of silk that could be reeled from a given quantity of cocoons). Moreover, filaments of poor cocoons broke off more easily and frequently, causing bottlenecks in the reeling process.<sup>122</sup> But, as noted earlier, few of the Shanghai filaturists owned their cocoon buying and drying plants, and whether they owned the plant or bought the cocoons through agents or from cocoon warehouses, they had no control over the cocoon production process. Alone among Shanghai filaturists, Ding Rulin attempted to integrate cocoon production into his operations: he set up seven silk culture stations where disease-free eggs were distributed to farmers free of charge.<sup>123</sup>

Mulberry farmers mixed in stale leaves with fresh ones if there were left-over lots. Peasants kept the best cocoons for their own reeling and mixed in inferior, double, and pierced cocoons in the batches they brought to the market. They tried to produce the largest number of cocoons at the least cost, irrespective of the quality of cocoons thus produced. Jiangnan farmers who produced cocoons for the market were not motivated to adopt improved silkworm varieties, because these eggs took three or four days longer to hatch than the ordinary variety and thus consumed more mulberry leaves that had to be purchased.<sup>124</sup> Silk farmers in Wuxi raised the bivoltine type of silkworm along with the univoltine type during the spring, as the bivoltine worms, which molt only three times instead of the four of the univoltine, required a shorter rearing period and consumed less food. The bivoltine cocoons, however, had a low silk content. In addition, by limiting the amount fed during the last days of rearing, the farmers reduced the silk content further.<sup>125</sup>

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<sup>122</sup> Howard and Buswell, 133.

<sup>123</sup> Daniel S. Mercein, "A New Epoch in China's Silk Industry," *Trans-Pacific*, V:6 (Dec. 1921), 76.

<sup>124</sup> China, Maritime Customs, *Decennial Reports, 1922-31*, II, 19. Pierced cocoons are the ones from which the moths have emerged; because the silk is entangled near the opening, it is not useful for reeling. Double cocoons are the ones in which two silkworms are enclosed; although they are reelable, they yield a rough and uneven silk because of entanglements.

<sup>125</sup> Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 29-30.

Not only was the silk content of cocoons declining, but worse still, silkworm disease was spreading as breeding practices deteriorated because of the preoccupation with cost cutting and because farming families and regions with no tradition in sericulture were being drawn into silkworm raising by market forces.<sup>126</sup> As the common saying in Huzhou went: "It is more economical to raise sick worms than to pay a high price for leaves (*mai guiye buru yang bingcan*)."<sup>127</sup> Feeding silkworms on a smaller quantity of leaves cut costs, but it also weakened their resistance to disease. The overcrowding of silkworms on bamboo mats meant that some were deprived of full diets.<sup>128</sup>

In south China peasants, by accident or design, crossed a polyvoltine type of silkworm with a bivoltine worm with a larger cocoon, thereby producing a hybrid that spun a cocoon larger than that of the polyvoltine worm; however, only eggs of the first two and part of the third generation would hatch naturally. The peasants found that by immersing the eggs in hot water they could force hatching and get six or seven generations each year. The unintended consequence, however, was the weakening and lowered resistance to disease of the hybrid, which had moreover inherited from the bivoltine worm an inability to endure the summer heat and humidity.<sup>129</sup>

Already in the 1880s many individuals, foreign and Chinese, in official and private capacities, pointed to the problem of spreading silkworm disease. As early as 1883, Brunat warned Li Hongzhang that, according to testings he had conducted by microscope, the decline in silk exports of 50,000 bales over the previous three years had been caused by the spread of pebrine disease.<sup>130</sup> In 1885 Kleinwächter, the Imperial

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<sup>126</sup> Diseases affecting silkworms included:

1. pebrine, a corpuscule disease caused by a protozoan parasite and attacking all organs of the worm, resulting in inactivity and loss of appetite;
2. flacherie, an intestinal malady caused by bacteria, with loss of appetite and sluggishness as symptoms;
3. grasserie, characterized by restlessness and loss of appetite, with unknown cause, often resulting in the worm turning white and swollen and dying or spinning very thin cocoons and unable to pupate;
4. muscadine, a fungus infection during which the worm would turn red.

K. Lei, "Silkworm Diseases in South China," *China Journal*, X:1 (Jan. 1929), 30-7; Howard and Buswell, 99-100; Yoshimaro Tanaka, *Sericology* (Bombay, 1964), 248-64.

<sup>127</sup> Ting, note 19, 48.

<sup>128</sup> *Nongxue bao*, juan 165:5a.

<sup>129</sup> C. W. Howard, *The Sericulture Industry of South China* (Canton, 1923), 16-7.

<sup>130</sup> "Raw Silk Trade of China," *Reports of the Consuls of the United States*, XI:36 (Dec. 1883), 346-7.

Maritime Customs commissioner at Ningbo, found in a survey of 208 silkworms from Western Zhejiang that 118 (57 percent) had contracted disease.<sup>131</sup>

The problem of diffusion of disease among silkworms was to become more acute with time. Around 1920 it was claimed that over 90 percent of cocoons in China were affected by disease and that nearly 75 percent of silkworms hatched died before reaching the spinning stage, with the result that while one ounce of good silkworm eggs would yield 110–113 pounds of cocoons elsewhere, in China the same quantity of eggs would yield only 15–25 pounds.<sup>132</sup> Nor was the problem of silkworm disease confined to Jiangnan; in Guangdong a census taken in the second crop of 1927 showed that 60 percent of cocoons was affected by pebrine disease.<sup>133</sup> Thus, quantity of silk production ultimately was limited by the deterioration in quality caused by attempts to cut costs and expand production.

The consequence for the filaturists was a combination of rising cocoon price in conjunction with deteriorating quality and productivity. In 1916 the price of dried cocoons rose to 150 taels per picul; and whereas previously the price was only 80–90 taels and it took only 4.5 piculs of cocoons to produce one picul of silk, it now took 5.5 to 6 piculs.<sup>134</sup> A 1924 survey found that about 20 percent of cocoons bought by the filatures was refuse, pierced, or double cocoons, and therefore unusable.<sup>135</sup> Throughout the 1920s the Shanghai filaturist continued to be plagued by rising cocoon price and lower silk yields (see Table 5.3), which combined to increase cocoon cost per picul of silk produced (see Table 5.4). For the Canton area, in 1903 it took about 5.5 piculs of dried cocoons to manufacture 1 picul of silk.<sup>136</sup> Around 1917, even with top quality cocoons, it took between 4.6 to 6.4 piculs.<sup>137</sup>

Clearly, Chinese filaturists, with their limited financial resources, were in no position to reform Chinese sericulture. Nor could the peasants on their own carry out the needed reforms. Mulberry culture and cocoon production remained largely a household business, and an

<sup>131</sup> Zhang Kai, 129.

<sup>132</sup> "The Silken Bond Between East and West," *Trans-Pacific*, II:6 (June 1920), 89.

<sup>133</sup> H. K. Lei, "Silkworm Diseases in South China," *China Journal*, X:1 (Jan. 1929), 31.

<sup>134</sup> Li Jiayuan and Huang Gongmai, "Jiangzheyue siye diaocha baogao," *Nongshang gongbao*, III (April 15, 1917), 15.

<sup>135</sup> Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 20–1.

<sup>136</sup> "Nanhai xian canye diaocha baogao," *Nongxue congshu*, 6th collection:4b.

<sup>137</sup> Chen Zhen, IV:1, 188.

TABLE 5.3  
PRICES AND SILK YIELDS OF COCOONS IN JIANGNAN, 1916-1924

	Shaoxing		Jiaying		Wuxi		Yixing-Jintan-Lishui	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
Before 1916*	145	450	110	520	120	520	125	490
1916	152	540	140	580	156	550	128	460
1917	158	510	135	520	140	510	125	540
1918	153	540	146	530	143	560	140	530
1919	150	590	138	550	130	620	148	570
1920	170	670	159	595	150	600	155	560
1921	155	600	145	600	160	670	150	600
1922	185	540	165	600	167	590	170	580
1923	235	550	220	580	240	680	235	610
1924	162	620	164	570	165	620	165	580

(A) Price at Shanghai in taels per picul.

(B) Quantity of cocoons needed to produce 1 picul of silk, in catties.

SOURCE: Uehara, 225.

\* Estimated average.

TABLE 5.4  
COCOON COST PER PICUL OF RAW SILK IN JIANGNAN, 1916-1924 (IN TAELES)

	Shaoxing	Jiaying	Wuxi	Yixing-Jintan-Lishui
Before 1916	653	572	624	613
1916	821	812	858	589
1917	806	702	714	675
1918	826	774	801	742
1919	885	759	806	844
1920	1,139	946	900	868
1921	930	870	1,072	900
1922	999	990	985	986
1923	1,293	1,276	1,632	1,434
1924	1,004	935	1,023	957

SOURCE: Computed from Table 5.3.

individual farmer, no matter how wealthy, could hardly change regional sericultural practices on his own.

It should be noted here, however, that the problem of silkworm disease should not be blamed on the stupidity or mendacity of the peasant. To begin with, the problem was sometimes exacerbated by conditions outside the peasants' control: summer heat and humidity in Guangdong affected the silkworms directly by encouraging certain diseases and indirectly by affecting the quality of mulberry leaves.<sup>138</sup> Moreover, traditional Chinese sericultural techniques were quite efficient at traditional production and demand levels. In 1849 a French silk expert found that the Chinese "lose hardly one worm in a hundred while in France the mortality rate exceeds 50 percent"; he thereby recommended the introduction of certain Chinese practices into French sericulture.<sup>139</sup> Even in modern times, peasants who produced cocoons primarily for their own reeling did it with great care and skill. For example, the yields of Huzhou cocoons in the 1920s were excellent, averaging 1 picul of raw silk per 4.43 piculs of dried cocoons.<sup>140</sup> As we have suggested, the deterioration in cocoon quality was due to market structure and increased outside demand. Once silkworm disease had set in, affected eggs could only be sorted out with the use of a microscope, which was beyond the means of the average farmer.

### **Efforts to Reform the Silk Industry**

The enormity of the problem notwithstanding, there were numerous instances of individuals and groups trying to propagate modern techniques of sericulture among farmers during the late Qing. Given China's chronic trade deficit and the state of the silk industry in the face of foreign competition, many of the late Qing thinkers were concerned with reviving the economy in general and agriculture and the silk industry in particular. The emphasis on agriculture and sericulture current among these thinkers was not new; what was new were the concurrent interest in the promotion of commerce, industry, and mining and the advocacy of Western methods in agriculture. For example, Liang Qichao and Zhang Jian both advocated the spread of Western farming

<sup>138</sup> Howard and Buswell, 93.

<sup>139</sup> "Cultivation of the Mulberry, and Rearing of Silkworms," *Chinese Repository*, XVIII:6 (June 1849), 314.

<sup>140</sup> Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 68. This compares favorably with a quantity of dried cocoons needed ranging between 5.40 to 6.80 for various areas in Jiangnan between 1920 and 1924 (see Table 5.3).

techniques through the institution of agricultural societies. Zhang Zhi-dong believed that the key to the revival of agriculture lay in the mastery of chemistry; since the peasants could not easily comprehend chemistry nor afford machinery, the state should encourage the gentry and the wealthy to establish agricultural schools (*nongwu xuetaang*) to promote the use of Western agronomy and machinery.<sup>141</sup>

Some of the more progressive gentry began to follow the lead of these thinkers. For example, in 1904 it was reported that Chen Desan, a member of the Cantonese gentry, established a sericultural society at Xi-chao in Nanhai county where new Japanese methods were introduced.<sup>142</sup> In 1905 a Mr. He with some comrades founded a silkworm egg inspection station at his home village in Nanhai, where peasants could send eggs for microscopic inspection to search for disease; he even hoped to teach the peasants these inspection methods.<sup>143</sup> In 1907 a Tan Tonghui of Nanhai established a study society of mulberry culture.<sup>144</sup> In fact, sericultural societies were founded by members of the gentry all over the empire—in Guangxi, Zhili, Fujian, and elsewhere.<sup>145</sup> Yet many of these private efforts suffered from smallness of scale and lack of capital, and were sustained only as long as the enthusiasm and the funds of the sponsors held out.

From the 1890s on Chinese and foreign individuals warned about the dire consequences of silkworm disease and urged the government to take an active role in the reform of sericulture. In the last decades of the Qing dynasty, there were many instances of official dissemination of mulberry seeds, agricultural handbooks or sericultural techniques, and official sponsorship of sericultural societies and bureaus where mulberry seedlings, silkworm eggs, and native instructors might be imported from such traditional silk counties as Huzhou.<sup>146</sup> Yet these efforts were wholly inadequate and largely ineffectual for several reasons. Mostly they remained localized and temporary. Many hardly went beyond introducing sericulture to areas that had not previously practiced it. Since under the Qing system tenure of office seldom went beyond two or three years, the zealous efforts of one well-meaning official might be followed by the

<sup>141</sup> Zhao Fengtian, *Wan Qing wushi nian jingji shixiang shi* (Beiping, 1938), 19–41.

<sup>142</sup> DFZZ, I:6 (June 1904), 96; *Nongxue bao*, ch. 274:2a.

<sup>143</sup> DFZZ, II:11 (Nov. 1905), 196.

<sup>144</sup> DFZZ, IV:4 (April 1907), 83.

<sup>145</sup> For example, see NYS, I, 694–6; DFZZ, IV:2 (Feb. 1907), 48; DFZZ, V:4 (April 1908), 60–1, 66; *Qing shilu jingji ziliao jiyao* (Shanghai, 1959), 42–3.

<sup>146</sup> E-tu Zen Sun, "Sericulture and Silk Textile Production in Ch'ing China," in W.E. Wilmott, ed., *Economic Organization in Chinese Society* (Stanford, 1972), 83.

neglect and indifference of another. Even more important, these official efforts rarely involved the introduction of modern scientific techniques of seed selection and silkworm breeding, which were vital to check and eliminate the spread of silkworm disease and to improve the quality of cocoons.

One significant exception was Lin Dichen, the prefect of Hangzhou who founded the Hangzhou School of Sericulture in 1897. At this school a limited number of students were trained under the instruction of two Japanese experts, research in cross-breeding and prevention of silkworm disease was carried out, and disease-free silkworm eggs were produced and sold.<sup>147</sup> Even after Lin's death in 1900, the school was continued by Zhu Xiaohu, his successor as prefect.<sup>148</sup> In 1900 and 1901 some students were dispatched to the principal silk centers of Zhejiang to teach farmers methods of silkworm disease prevention.<sup>149</sup>

Other sericultural schools modelled on the Hangzhou School followed. Most of these proved short-lived. For instance, the sericultural school established in 1899 by Ye Manqing, the magistrate of Jingui county, was terminated upon his death.<sup>150</sup> In 1904 Governor-general Cen Chunxuan of Liangguang proposed the establishment of a sericultural school at Canton where peasants from different parts of Guangdong and Guangxi might learn modern methods of mulberry and silkworm culture and propagate them upon their return to their native abodes.<sup>151</sup> This school, however, seems not to have gone beyond the planning stage.

During the period of government reorganization and reform in the last decade of the Qing, Peking attempted to institutionalize the promotion of agriculture and modern industry. In 1906 the Board of Public Works and the Ministry of Commerce were enlarged into a new Ministry of Agriculture, Industry, and Commerce. In the following year the provinces began to establish Circuits for the Promotion of Agriculture, Commerce, and Industry (*quanyedao*) to take charge of provincial projects in agriculture, industry, commerce, mining, and communications. The Ministry of Agriculture, Industry, and Commerce ordered the provinces to carry out projects in land clearance, soil conservancy, propagation of animal husbandry, and establishment of sericultural schools and agricultural experiment stations. In compliance with this directive many seri-

<sup>147</sup> *Nongxue bao*, *juan* 62:2b.

<sup>148</sup> *Nongxue bao*, *juan* 120:1b.

<sup>149</sup> China, Imperial Maritime Customs, *Decennial Reports, 1892-1901* (Shanghai, 1906), II, 27.

<sup>150</sup> *Nongxue bao*, *juan* 62:2b, 63:2a, 73:2b.

<sup>151</sup> *Nongxue bao*, *juan* 276:1b.



cultural schools were founded throughout the provinces. In Guangdong the Circuit for the Promotion of Agriculture, Commerce, and Industry was established in 1908, with branch offices subsequently founded in each circuit, prefecture, and county within the province; the Guangdong Agricultural Experimental Station was established in 1934.<sup>152</sup>

With the establishment of the Republic and the subsequent political chaos, departments in charge of industry, commerce, and agriculture at both the national and provincial levels underwent numerous organizational changes. The Board of Education ordered the establishment by each province of middle-level sericultural schools or the introduction of courses in sericulture into the curriculum of existing middle-level agricultural schools in the country.<sup>153</sup> However, many of the reforms were paper ones and disrupted by the political developments of the late Qing and the early Republic. Not only were the new sericultural schools scattered geographically and lacking in organization and coordination, but most existed more in name than in reality. The only schools that achieved any concrete results were the aforementioned Hangzhou Sericultural School (renamed in 1913 the Zhejiang Provincial Sericultural School) and the Jiangsu Provincial Women's Sericultural School at Hushuguan, about 10 li west of Suzhou. The school at Hushuguan was founded in 1913 under the presidency of Zheng Ziqing, a graduate of the Hangzhou School with intimate, firsthand knowledge of Japanese sericultural practices.<sup>154</sup>

Other institutions devoted to sericultural reform included the National Southeastern University (renamed Zhongshan University after 1927), founded at Nanking in 1923. It had a small sericulture department (in 1926 only 32 first- and second-year students in sericulture were enrolled).<sup>155</sup> Some other sericultural institutions in Jiangsu were the Jiangsu Provincial Number Two Agricultural School, established in 1912 at Suzhou, and from which 71 out of 216 students were graduated in sericulture in 1922, and the Provincial Silkworm Breeding Experimental Station at Wuxi, established in 1918 and grossly underfinanced by the provincial government.<sup>156</sup> In Zhejiang sericultural institutions included the Provincial Girls' Sericultural School (established in 1916 at Hang-

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<sup>152</sup> Deng Zhiyi, "Sanshi nian lai zhi Guangdong nongye," in *Qishi nian lunji, 1864-1933* (Hong Kong, ?).

<sup>153</sup> Sun Baihe, "Minyuan lai woguo zhi cansiye," in Zhu Sihuang et al., eds., *Minguo jingji shi* (Shanghai, 1947), 309.

<sup>154</sup> Uehara, 488-9, 503; Yao Kerang, *Nongsang ji* (Shanghai, 1934), 85.

<sup>155</sup> Uehara, 496.

<sup>156</sup> Uehara, 507-9.

zhou) and the Provincial Silkworm Egg Producing Station (established in 1915 at Hangzhou).

In 1923 the Jiangsu Provincial Women's Sericultural School at Hushuguan founded a society for the improvement of sericulture, which introduced to farmers new crossbreeds and modern methods. Under the guidance of the Hushuguan school, a model silkworm-egg industry was established; by 1928 fifteen companies along the Shanghai-Nanking Railroad provided more than 150,000 sheets of eggs each year.<sup>157</sup> In 1927 and 1928 the autumn silkworm eggs were successfully introduced.<sup>158</sup>

In 1926 the Zhejiang government set up 17 sericultural stations at different silk centers in the province under the supervision of the Hangzhou School to demonstrate to farmers scientific methods of silkworm raising, mulberry cultivation, and silk reeling. The cocoon yields of silkworms raised in these stations were double or triple those obtained by the peasants, many of whom were thus encouraged to approach the station officers to obtain eggs for the next year's crops.<sup>159</sup> As a result of the peasants' increased demand for disease-free eggs produced by public institutions, many private stations for the production of improved silkworm eggs sprang up in Jiangsu and Zhejiang. The autumn silkworm crop also became increasingly popular.<sup>160</sup>

The most extensive and concentrated efforts to reform Chinese sericulture did not materialize, however, until the Silk Association of America became wary of becoming overly dependent on the Japanese, who had developed a monopsonistic position on the American market; it thus turned to tap the possibility of greatly expanding the Chinese supply of raw silk.<sup>161</sup> As one American silk expert candidly admitted, "There is not an element of philanthropy in the American silk manufacturers contributing to the improvement of China raw silks. It is a straight-forward, cool-headed, far-seeing business proposition. The improvement of Chinese sericulture means for the American manufacturers more raw silk, better raw silk, and cheaper raw silk."<sup>162</sup> In 1917 the International Committee for the Improvement of Sericulture was formed in Shanghai

<sup>157</sup> Y. T. Chow, "The Nationalists Plan to Improve the Silk Industry in Central China," *China Journal*, IX:3 (Sept. 1928), 119-20.

<sup>158</sup> Sun Baihe, 313.

<sup>159</sup> *Chinese Economic Bulletin*, IX:289 (September 4, 1926), 135.

<sup>160</sup> China, Ministry of Industry, *Zhongguo shiye zhi: Zhejiang sheng*, pt. IV, 165.

<sup>161</sup> NYS, II, 188; "High Priced Japanese Silk," *Trans-Pacific*, VII:2 (Aug. 1922), 38; "Warnings to Silk Men Multiply," *Trans-Pacific*, VIII:2-3 (Feb.-March 1923), 37.

<sup>162</sup> D. E. Douty, "Progress in the Movement to Improve China Raw Silk," *Silk*, XII (Jan. 1919), 35.

by French, British, and American silk interests; financial support came from the foreign chambers of commerce and from the Chinese government out of increased export taxes on silk. The committee subsequently set up seven experimental stations at Zhenjiang, Wuxi, Nanking, and other silk centers, where disease-free silkworm eggs were produced and distributed. At these stations better sericultural methods were taught, and experimental work in improving mulberry and silkworm culture was carried out. The Silk Association of America also subsidized the introduction of sericultural subjects into the curriculum of Nanking University, an institution established by American missionaries. In Central China, in terms of scale and extent of operations, the primary institution for the reform of sericulture was the International Committee for the Improvement of Sericulture, the most significant achievement of which was its promotion and distribution of disease-free silkworm eggs.

In Guangdong, efforts to reform sericulture did not gain much impetus until 1919, when the Comité Internationale pour l'Amélioration de la Sériculture dans le Kouangtong was formed by the British, French, and Chinese Chambers of Commerce in Canton. It was financed by an export levy of 10 cents per bale on the total export figures of each firm, both foreign and Chinese. Cooperation in experimental work in producing larger and stronger cocoons was started with the Canton Christian College (later Lingnan University), another institution founded by American missionaries. Despite initial successes, the Comité was dissolved when the Cantonese government failed to respond to its request for more funds. Nonetheless, the Canton Christian College continued its work in experimentation and in the production of disease-free silkworm eggs. It subsequently received a subsidy from the Silk Association of America for a building to house the department of sericulture; two Americans connected with the silk business also donated funds for buildings and equipment.<sup>163</sup>

In 1923 the Guangdong provincial government established the Bureau of Sericulture Improvement, and appointed as head C. W. Howard, an American who already chaired the sericulture department at Lingnan University. The two institutions cooperated in basic research into better sericultural and reeling methods and in extension work to check the incidence of silkworm disease. The work of the bureau, however, was hampered by the diversion of allocated funds to military expenditures for the Northern Expedition. Although on paper \$150,000 Canton was allocated each year to the bureau, in reality it obtained only

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<sup>163</sup> Howard, "Sericulture Improvement in South China," 37-8.

a total of \$6,500 Canton up to May of 1925. Only from 1926 did the provincial government provide the bureau with financial support on a regular and gradually augmented basis, until by 1927 the bureau was receiving \$3,400 Canton each month for expenses.<sup>164</sup>

Had these reform efforts been on a sufficiently large scale, the decline in silk yield of cocoons and the rise in cost of cocoons per unit of silk produced might have been reversed: the improved silkworm varieties introduced by the reform institutions yielded more silk and produced a much greater percentage of first grade silk than the native varieties.<sup>165</sup>

But all these reform efforts came too little and too late to enable China to challenge Japan's preeminent position as the world's leading supplier of raw silk.<sup>166</sup> The effectiveness of education in scientific methods of sericulture through agricultural schools and extension programs was limited not only by the small scale of these programs but also by the lack of any supplementary programs to provide low-cost rural credit. Those few peasants who learned new sericultural techniques were prevented from employing them fully because of financial constraints. They might take proper care in the ventilation and lighting of the breeding chambers, in the feeding of silkworms, and in maintaining the cleanliness of the bamboo crates; however, they were often unable to keep a constant watch over room temperature and humidity because they could not afford the necessary scientific equipment.<sup>167</sup> Moreover, the production of disease-free silkworm eggs was grossly inadequate to meet rural demand. As late as 1928, the Jiangsu Bureau of Agriculture and Mining estimated that disease-free silkworm eggs produced by public institutions and private stations supplied only 5 percent of total demand.<sup>168</sup> In 1929, producers of disease-free eggs supplied only 725,000 sheets (20 million layings) or 6 percent of total demand.<sup>169</sup> In Guangdong, as late as 1930, experiments carried by Lingnan University suggested that 40 percent of cocoons in the province were affected by disease.<sup>170</sup>

<sup>164</sup> *Xinjianshe*, no. 3 (Oct. 1929), 10–13.

<sup>165</sup> See R. E. Buchanan, "A Comparative Study of Cocoons," *China Journal*, VIII:5 (May 1928).

<sup>166</sup> For an outline sketch of these private and public institutions in Jiangnan up to 1930, see Jin Yanlan, "Jiangzhe ge canye jiguan lueshi ji xianzhuang," *Nongkuang gongbao*, no. 24 (May 1930), 45ff.

<sup>167</sup> *Chinese Economic Bulletin*, no. 223 (May 30, 1925), 306.

<sup>168</sup> China, Ministry of Industry, *Zhongguo shiye zhi: Jiangsu sheng*, pt. V, 162.

<sup>169</sup> R. E. Buchanan and T. S. Miao, "Programs of Sericulture Improvement in Central China 1929," *China Weekly Review*, XLIX:11 (August 10, 1929), 474.

<sup>170</sup> E. Hartman and P. K. Wu, "A Census of Silkworm Disease Occurring in Selected Districts in Kwangtung in the Years 1929 and 1930," *Lingnan Science Journal*, X:1 (April 1930), 20.

## VI

# Impact of Silk Export Expansion on Rural Society and Weavers

What were the implications of sericultural development on peasant livelihood and cottage industry? Did the trend toward cocoon production for export-oriented filatures mean the destruction of silk reeling and weaving and hence a loss in peasant income, since raw silk and silk piece goods commanded higher prices?

Here we first note that since the Song, silk weaving had been increasingly separated from the sericultural household and had become the specialty of weavers in urban centers such as Foshan in Guangdong or Hangzhou in Jiangnan and a few rural communities such as Shengze, which imported part or all of their raw silk. We will discuss the social and economic effects of export-oriented growth on silk weavers later, after discussing its impact on rural society and economy.

### **The Impact of Silk Exports on Rural Society and Economy**

As we have seen, profit first motivated the peasants in Guangdong and Jiangnan to practice sericulture in the nineteenth century. Sericulture was new to the peasants of many areas, and the sale of silk provided a lucrative income. We have suggested that market forces, not official and gentry promotion, determined the location and extent of sericultural growth. Where market forces were favorable, the absence of official and gentry promotion did not prevent peasants from taking up a lucrative by-employment, as in Wuxi, for example. Where market forces were unfavorable, because of a lack of transport and marketing facilities, oppressive taxation, price-squeezing practices by unscrupulous brokers, or unsuitable environmental conditions, government and gentry sponsorship did not suffice to establish sericulture on a permanent basis, as in Baoshan county near Shanghai or Heping county in Guangdong, for example. After all, abandonment of sericulture was no more difficult than its adoption. While production for foodstuffs could satisfy immediate

consumption needs within one year, newly grafted mulberry trees could not be picked for another three or four years in Jiangnan. When and where sericulture proved unprofitable, peasants quickly turned their productive energies to other enterprises.

It was again the profit motive that prompted peasants to shift from silk reeling to cocoon production when the structure of demand shifted. When demand for cocoons became relatively high and their price rose relatively faster than the demand for and price of hand-reeled silk, a shift in production could in fact result in higher incomes, since the level of income is not determined by price alone but by a combination of price and quantity sold. Price of fresh cocoons in Jiangsu was about \$30–\$40 per picul in the late Qing; it rose more or less continuously after the establishment of the Republic, to about \$80–\$90 in 1924 and \$100–\$120 in 1926 and 1927.<sup>1</sup> Concomitant with the rise in cocoon prices went the increase in the number of households engaged in silkworm raising and the acreage devoted to mulberry planting. That peasants in Jiangnan were in fact deriving higher incomes from their participation in sericulture can be inferred from their sobriquets for silkworms and mulberries: “dearest treasure” (*baobao*) and “trees of gold” (*huangjin shu*).<sup>2</sup> Peasants used profits made in sericulture in the first half of the year to finance rice planting in the second half. A popular saying in the area adjacent to Lake Tai advised, “Rely on the silkworm during the first half of the year and rely on the rice field during the second half” (*shangbannian kao can, xiabannian kao tian*).<sup>3</sup>

That proficiency in silkworm raising became one of the two most important criteria in determining the acceptability of a prospective daughter-in-law (the other criterion was good physical health, which would ensure fecundity and the continuation of the family line) indicates the profitability of sericulture in Jiangnan. During the first spring after marriage, a new bride was tested on her sericultural skill, having to raise silkworms entirely on her own efforts from good eggs sent by her own mother. Her position in her new household and her standing with her mother-in-law depended on the outcome of this test.<sup>4</sup>

In Guangdong, the growing profitability of sericulture caused conflict between and within rural communities. At Shunde, mulberry cultivators initially let outsiders pick their winter leaves after they them-

<sup>1</sup> NYS, II, 190.

<sup>2</sup> Uehara, 34.

<sup>3</sup> Chen Zhengxiang, 10.

<sup>4</sup> Fei, *Peasant Life in China*, 46.

selves had harvested the normal six crops. But by the middle of the Guangxu period, raising the winter crops of silkworms became more and more common, and mulberry growers prohibited the picking of their leaves during the winter season. Many legal disputes and armed fights over the winter leaves ensued. The village associations (*xiangju*) either took over the leaf collection themselves to raise money for the local militia (*yong*) or charged a protection fee for letting the villagers pick their leaves.<sup>5</sup>

According to the survey by a county magistrate of Panyu in the early 1900s, profits from the sale of mulberry leaves were at least 40 percent above the costs of production, including rents, wages, and outlays for fertilizer.<sup>6</sup> At Nanhai during about the same period, profits from the sale of fish and mulberry leaves exceeded costs by more than 33 percent.<sup>7</sup> In Shunde county in the 1910s, it was reported that 1 mu of mulberry and fish ponds would yield \$15 to \$30 Canton in profits,<sup>8</sup> enough to buy 5–10 piculs of rice. Around 1923 a mulberry farmer in Shunde could still clear about \$15.50 Canton per mu after deducting all costs, including rental.<sup>9</sup> A silkworm raiser who could supply his own mulberry leaves and household labor could make 64 percent profit above costs (not including an initial investment in equipment) each year; some farmers reported annual profits of \$1,600–\$3,000 Canton. Xiangshan cocoon farmers who had to purchase mulberry leaves and hire labor still made 16 percent above costs.<sup>10</sup>

Statistics gathered by the Shanghai International Testing House suggest that all phases of sericulture were highly profitable in Central China. Around 1925 profit rates were 55 percent for native egg producers, 41 percent for cocoon producers, and 37 percent for mulberry growers.<sup>11</sup> Such figures were based on average prices and costs; there might have been wide variations between individuals, between regions, or over time. Moreover, except for the production figures for mulberries, no account has been taken of the part of profits that might have been siphoned off by landlords in rental payments and by pawnbrokers,

<sup>5</sup> *Shunde xian xuzhi*, juan 1:24a.

<sup>6</sup> *Nongxue bao*, juan 244:1a.

<sup>7</sup> Computed from figures in “Nanhai xian Xichao tangyu diaocha wenda” and “Nanhai xian canye diaocha baogao,” in *Nongxue congshu*, 6th collection (*ji*): 1b–2a.

<sup>8</sup> Tō dōbunkai, comp., *Shina shōbetsu zenshi*, I, 778.

<sup>9</sup> Howard and Buswell, 58.

<sup>10</sup> Compiled and computed from Howard and Buswell, 94–5.

<sup>11</sup> Shanghai International Testing House, *A Survey of the Silk Industry of Central China*, 90–1.

money-lenders, and middlemen in interest payments. It was said that the Huzhou peasants' profits were less than 10 percent of those of the Nanxun silk merchants who dominated the Huzhou trade, and who often owed their preeminence to their position as silk agents (*sitongshi*) for the Shanghai foreign firms.<sup>12</sup>

Nevertheless, the impression is that generally sericulture benefited the peasants, and that during periods of prosperity for the silk industry, the income from sericulture helped the peasant to achieve a sufficient standard of living and even enabled him to save some money and goods.<sup>13</sup> The high standard of living of the sericultural peasants in Shunde, their gay lifestyle and indulgence in wine, and the thriving business of the tea houses and restaurants in the area indicate the general prosperity.<sup>14</sup> Shunde became so rich from its silk production that it became known as the "Bank of Guangdong" (*Guangdong yinhang*).<sup>15</sup> The unequal distribution of profits between the Nanxun silk merchants and the Huzhou peasants notwithstanding, profits to the latter were sufficient to support a much more extravagant standard of living than before by the last decades of the nineteenth century. The people of Wuxing were said to devote their free time to visiting markets and shops, where they purchased on credit, and to dining at restaurants, where they freely indulged themselves with meat and wine. Wine consumption became such a status symbol that even a poor man would buy wine with money that should have gone to the purchase of rice.<sup>16</sup>

While the income of peasants engaged in sericulture must have increased in the long run (at least until the mid-1920s), the price of cocoons, which was determined in large part by overseas market conditions, fluctuated. Peasants, however, adopted the expedient of selling cocoons in periods of rising world demand for raw silk and reeling the cocoons themselves in periods of slack demand.<sup>17</sup> The generally upward trend of demand for filature silk until around 1930 meant that peasants gradually abandoned reeling for the more profitable cocoon production. By the early 1930s, in the Zhejiang counties of Jiaxing, Deqing, and

<sup>12</sup> China Institute of Economic and Statistical Research, *A Study of the Rural Economy of Wuhing, Chekiang* (Shanghai, 1939), 94-5.

<sup>13</sup> Hsiao-tung Fei, *Peasant Life in China* (London, 1939), 265.

<sup>14</sup> Pan Yiyun, "Guangdong Shunde cannong de shenghuo," Yu Qingtang, *Nongcun shenghuo congkan* (Shanghai, 1937), 123.

<sup>15</sup> "Guangdong quansheng cansiye diaocha xiaosi," *Cansheng*, I:1-2 (Feb. 1935), 29.

<sup>16</sup> China Institute of Economic and Statistical Research, *A Study of the Rural Economy of Wuhing, Chekiang*, 100, 104.

<sup>17</sup> Howard and Buswell, 21.



Wukang, it was found that while women over 30 were all conversant with the art of silk reeling, none of the women under 30 were acquainted with it.<sup>18</sup>

By 1930, then, in some counties of Jiangnan and Guangdong sericulture had either become the main occupation of peasant households, supplanting the cultivation of rice and grains (as in Wuxing and Shunde), or the most important by-employment (as in Wuxi and Jiaying). In Guangdong, about three-quarters of all cultivated land was devoted to mulberry in Shunde, almost one-quarter in Nanhai (see Table 5.1). According to a survey by the sericulture college of Zhejiang University in 1928, sericulture was practiced in 58 of 75 counties in Zhejiang; more than 30 counties practiced it as the main by-employment. In the counties of Haiyan, Yuqian, Wuxing, Changhua, Tongxiang, Pinghu, Haining, Changxing, Xindeng, Chongde, Jiaying, and Deqing, more than three-quarters of rural households were engaged in sericulture; and the percentage of cultivated land devoted to mulberry was 36.0 in Wuxing, 39.0 in Tongxiang, 45.0 in Haining, 43.0 in Chongde, and 48.0 in Deqing (see Table 6.1). In Wuxing, around 1921, when the silk industry was at its peak, "the receipts for silkworm raising and mulberry growing represented 70 percent of the total income of rural families... while those from rice cultivation amounted to only 30 percent."<sup>19</sup>

The development of sericulture, then, encouraged regional specialization. Some leading sericultural counties in Jiangnan, such as Suzhou, Wuxi, Changshu, Jiaying, and Xiashan, remained rice surplus areas that utilized profits from sericulture in the spring to finance the cultivation of food crops in the second half of the year. Others became dependent on imports in part as a result of the shift to mulberry planting. Chongde county could only supply itself eight months' food in a year, and imported rice from the regions of Jiangsu having a surplus. The soil of Wuxing was well suited to either rice or mulberry cultivation, but the residents devoted their attention mainly to sericulture and as a rule raised only one rice crop. A division of labor emerged between the natives and the immigrants (*kemin*); the former preoccupied themselves with mulberry culture, leaving the latter with the less profitable pursuit of rice and grain cultivation.<sup>20</sup> The county therefore had to import 70 percent of its rice from Jiangsu. Yuyao, Shengxian, and Xinchang were all silk counties that required food imports.<sup>21</sup>

<sup>18</sup> China, Ministry of Industry, *Zhongguo shiye zhi: Zhejiang sheng*, pt. IV, 46.1–46.2.

<sup>19</sup> D. K. Lieu, *The Silk Industry of China* (Shanghai, 1940), 27.

<sup>20</sup> China, Rural Reconstruction Committee, comp., *Zhejiang sheng nongcun diaocha* (Shanghai, 1934), 152, 231.

<sup>21</sup> Wei Songtang, 86–7, 106, 223, 245, 253; Lieu (1940), 15.

TABLE 6.1  
 SERICULTURE IN QIANTANG CIRCUIT, ZHEJIANG PROVINCE, 1928

Counties	Percent of Farming Households Engaged in Sericulture	Number of Cocoon Crops per Year	Cocoon Production per Year (piculs)	Raw Silk Production per Household (catties)	Percent of Farm Acreage Devoted to Mulberry
Hangzhou	60.0	2	112.0	39.0	23.6
Haiyan	97.5	4	92.5		20.0
Jiashan	49.0	1	53.0		11.0
Yuhang	71.7	2	137.5	233.3	27.5
Yuqian	77.5	2	70.0		10.0
Anji	45.0	2	68.0		7.0
Wuxing	100.0	2	120.0	224.5	36.0
Changhua	98.0	1	55.0		10.0
Tongxiang	92.0	2	102.0	140.0	39.0
Pinghu	80.0	1	80.0		19.0
Haining	100.0	4	206.0	285.0	45.0
Linhai	50.0	2	146.0	194.0	19.0
Changxing	88.0	2	225.0	200.0	27.0
Xiaoshan	22.0	1	61.0		2.0
Xindeng	75.0	2	35.0	80.0	5.0
Fuyang	40.0	1	32.0	32.2	14.0
Chongde	92.0	2	90.0	80.0	43.0
Wukang	70.0	2	98.0	40.0	22.0
Jiaxing	100.0	2	99.0	74.0	25.0
Deqing	99.0	2	123.7	88.8	48.0

SOURCE: Survey by Agricultural College, Zhejiang University, in Yue Sibing, 169-70.

The Pearl River Delta, despite the fertility of its soil, was able to supply only about 25 percent of its rice needs, because of overpopulation and the shifting of acreage to mulberry culture. It became dependent on rice imports from Central China and Southeast Asia.<sup>22</sup> Chencun of Shunde county became the main rice distribution center, with merchant-managed rice wharves (*gubu*) along the riverbanks.<sup>23</sup>

<sup>22</sup> *Nongxue congshu*, 6th collection:2b.

<sup>23</sup> Feng Zhongxiao, "Du 'Zhujiang sanjiaozhou' yiwun hou jidian shangque yu buchong," *Guangdong wenxian*, V:3 (Dec. 1975), 15.

The rice shortage was exacerbated in the early decades of the twentieth century by the flight to market towns and urban centers of gentry who had been responsible for the organization of drainage and irrigation projects. For a time villagers banded together to build dikes,<sup>24</sup> but such cooperative efforts were apparently discontinued shortly. Once floods broke through existing dikes, fields were abandoned until they dried up naturally.<sup>25</sup> By about 1930, much of the land devoted to rice culture consisted of undiked tidal estuaries where annual production was limited to only 3 piculs per mu,<sup>26</sup> whereas average yield around the turn of the century was as high as 6 piculs per mu.<sup>27</sup>

According to the investigation by the Shunde Chamber of Commerce in the mid-1910s, the county exported \$18 million worth of raw silk, \$4.15 million worth of waste silk, \$3 million worth of silk fabrics, \$3 million worth of cotton yarn, and \$4 million worth of cotton cloth, but had to import 30–40 million catties of rice, at the cost of \$0.9–\$1.2 million from Xiangshan, Xinhui, Annam, and Siam, since local average annual production was only 1 million catties.<sup>28</sup> In the 1920s the price of rice was higher in Shunde than in Canton by \$1–\$2 per picul; firewood, vegetables, melons, oil, salt, and other daily essentials (except fish) were all more expensive than in Canton by a price differential of 10 percent or more.<sup>29</sup> Thus, silk and related products not only constituted the main exports of Shunde, but also paid in large part for the imports of rice and other essential items.

Local rice production in Nanhai county supplied only four or five months of consumption needs each year. On the other hand, Xiangshan county (renamed Zhongshan in 1925), while producing at least two million piculs of cocoons per year, harvested more than enough rice for local needs and could supply part of Shunde's needs. As a result of both income from sericulture and remittances from overseas Chinese, Shunde,

<sup>24</sup> Tōa dōbunkai, comp., *Shina shōbetsu zenshi*, I, 774.

<sup>25</sup> China, Maritime Customs, *Decennial Reports, 1922–31*, II, 186.

<sup>26</sup> J. W. Ballantine, "The Economic Development of Kwangtung in Relation to Trade," *Lingnan Science Journal*, X:4 (Oct. 1931), 379.

<sup>27</sup> Chen Han-seng, 65. In the Zhengde-Jiajing period of the Ming, rice production in Nanhai was supposed to be 10 piculs for top grade land, 7 for medium, and 4 for low. Zheng Changan, "Mingmo zhi Qingdai qianqi de fengjian zhudian guanxi," *Beijing lishi xuehui, diyi dier jie nianhui lunwen xuan ji* (Peking, 1964), 160.

<sup>28</sup> Tōa dōbunkai, comp., *Shina shōbetsu zenshi*, I, 689.

<sup>29</sup> Guoli Zhongshan daxue nongkexueyuan, *Guangdong nongye gaikuang diaocha baogao shu xubian*, 135.

Xiangshan and Nanhai were the most prosperous counties in Guangdong, despite their population densities.<sup>30</sup>

Sericulture also provided work for otherwise underemployed women both in and outside their households. In Guangdong, for example, women were employed as mulberry leaf pickers, silkworm raisers, egg producers, reelers, and weavers.<sup>31</sup> Ting has suggested that income from silkworm rearing should have helped women in Huzhou to raise their position, although she could find no evidence to substantiate this theory,<sup>32</sup> perhaps because this hypothesis assumes that women could control the income derived from their own labor. But unless she was the head herself, a woman had to hand over the money to the male household head, who would determine to what uses it would be put.<sup>33</sup> The situation might have been quite different in Guangdong, however; large-scale male emigration from the Pearl River Delta meant the absence of father or brother for many a woman; thereby her retention of her income was facilitated. This factor, along with the possibility of year-round employment in some phase of the silk industry, contributed in large part to the unique existence of the *zishunü* in Guangdong.

In addition, the expansion of sericulture was associated with growth in tenancy and fragmentation of land use. On the one hand, peasants in overpopulated regions were always alert for economic activity and employment that would provide more income than grain cultivation did. On the other hand, the price of land rose in conjunction with the profitability of sericulture. Although longitudinal data for landownership and tenancy in the silk counties are lacking,<sup>34</sup> mulberry farm price was positively correlated with cocoon price; and since the trend for the latter was generally upward before the 1930s, mulberry land also tended to increase in value and thus attracted investors. Moreover, profits from silk and cocoon trade provided capital for land purchases.<sup>35</sup> Thus, wealthy silk counties such as Wuxi, Suzhou, and Jiaxing tended to have high land prices and concentrated landownership; landlords with holdings as large as 10,000 mu could be found.<sup>36</sup>

<sup>30</sup> *Ibid.*, 125, 135, 145.

<sup>31</sup> "Women's Work in Kwangtung Province," *Chinese Economic Journal*, I:6 (June 1927), 568-70.

<sup>32</sup> Ting, 37.

<sup>33</sup> Fei, *Peasant Life in China*, 61-2.

<sup>34</sup> All such available data cover only the span of a few years and cannot demonstrate long-term trends.

<sup>35</sup> Qian Chengze, *Jiaxing xian zhi zhudian zhidu*, vol. 59 of Xiao Zheng, *Zhongguo ershi niandai tudi wenti ziliao* (Taipei, 1977), 30249, 30276.

<sup>36</sup> Institute of Pacific Relations, trans. and comp., *Agrarian China*, 3.

Concomitantly, mean farm size was small. For example, the average sericultural family in Shunde around 1930 was said to manage 7.22 mu of elevated mulberry land and fish ponds, of which 90 percent was rented.<sup>37</sup> At Wuxi in the late 1920s, on average a family of five would cultivate 5–6 mu of rice fields and 1–2 mu of mulberry fields.<sup>38</sup>

At the same time, the possibility of earning income in sericulture tended to mitigate the inequality of land distribution. Just as the most populous regions with a severe shortage of land tended to abandon rice cultivation for mulberry cultivation rather than to use the receipts from the latter to finance the former, fragmentary evidence suggests that the poorer the sericultural household, the more dependent it was on income from silk production. The 1883 gazetteer of Jiujiang in Nanhai states that “among local products fish, mulberries and silkworms were the most important; *even* gentry lineages would not dispense with them [emphasis added].”<sup>39</sup> The implication was that sericultural income was more important to poorer and nongentry households. In Jiuxing in the 1930s, the larger the farm, the greater the percentage of land devoted to rice and crops for manuring, the less to other crops, vegetables, and mulberries; correspondingly, the larger the farm, the greater the percentage of income was derived from rice and the smaller the percentage from other crops and from silkworm raising.<sup>40</sup> The scale of production was so low that the poor peasantry found it difficult or even impossible to be self-sufficient in foodstuffs. Hence it was necessary for these peasants to engage in production of food for the market and in sericulture, which might be financially more rewarding (although also riskier) than rice planting. Moreover, merchant-usurers encouraged peasants to engage in sericulture by making mulberry leaves and silkworms among the few lien crops acceptable. As the need for credit induced a mulberry grower to place his leaves as lien, rather than saving them for feeding his own silkworms, the disintegration of phases of production was promoted, as we noted before. Finally, participants in the new income-earning op-

<sup>37</sup> Amano Motonosuke, *Chūgoku nōgyo no chihikiteki tenkai* (Tokyo, 1979), 407.

<sup>38</sup> Suetsugu Reiko, “Chūgoku nōson ni okeru fujin no jotai,” in Nozawa Yutaka and Tanaka Masatoshi, eds., *Kōza Chūgoku kingendai shi* (Tokyo, 1978), IV, 226.

<sup>39</sup> *Jiujiang Rulin xiangzhi* (1883), *juan* 3:8b.

<sup>40</sup> For large farms (greater than 50 mu), medium farms (20–50 mu) and small farms (less than 20 mu), respectively, the percentage of land devoted to rice was 46.4, 42.0, and 41.7, the percentage devoted to mulberries was 8.4, 11.0, and 11.1, the percentage of income from rice was 72.4, 61.4, and 59.7, and the percentage of income from silkworms was 2.9, 4.7, and 5.9. See Institute of Pacific Relations, trans. and comp., *Agrarian China*, 74. The data covered a period when the silk industry was in decline; during an earlier and more prosperous period the differences might have been sharper.

portunities were often poor peasants who otherwise could not afford to marry and raise a family; this situation in turn contributed to demographic pressure and declining farm size in the long run, which set a brake on income expansion at the macro level. In the short run, there was shared prosperity for most even if the distribution of benefits tended to favor the landlord-merchant-usurer; in the long run, however, placing themselves at the mercy of the vagaries of the international market would prove catastrophic to the peasants.

Clearly, the rice-deficit sericultural areas depended on their income from the silk industry to pay for imports of food and other items. But even in those sericultural regions where there was a sufficiency or surplus of production in food grains, income derived from sericulture provided money for daily necessities and ceremonial expenses and capital for productive work, rents, and interest payments. Thus, their prosperity became tied to overseas conditions, over which they had no control. In the 1930s the collapse of the world silk market was to have severe repercussions in these regions.

Before we examine what these repercussions were, however, we will investigate the impact of silk export expansion on silk weavers.

### **The Impact of Silk Export Expansion on Weavers**

Unlike the reeling sector, the traditional weaving industry did not undergo any organizational changes as a result of the opening of China to trade with the West: the rise in Western demand was directed at Chinese raw silk for consumption in Western weaving mills rather than at silk fabrics manufactured in China.

Perhaps as early as the Southern Song (1127–1279), silk weaving in the Jiangnan region had divided into an urban sector centered principally in Suzhou, Nanking, and Hangzhou specializing in high quality fabrics and a rural sector around Lake Tai specializing in low quality fabrics.<sup>41</sup> In Suzhou, Nanking, Hangzhou, and other urban centers, weaving was carried out under three different types of industrial organization: (1) independent small producers using family (and sometimes hired) labor; (2) direct management and supervision of production by wholesale establishments called accounting houses (*zhangfang*); and (3) a putting-out system in which small producers (*jihu*) were contracted by the accounting house to deliver silk goods of certain specifications, in exchange for payment by piece rates and an advance of capital and warp and weft silk, and often

<sup>41</sup> Yokoyama Suguru, "Shindai no toshi kinu orimono gyō no seisan keitai," I, *Shigaku kenkyū*, no. 104 (Aug. 1968), 67.

even a loan of equipment. Of these, the putting-out system, which had come into existence no later than the early eighteenth century, was the predominant form of industrial organization. A weaver or workshop was often bound to one particular silk merchant or wholesaler.<sup>42</sup> At the end of the Qing dynasty, the largest of the wholesale silk firms might hire as many as 600 weavers. These firms either collected the silk themselves from the neighboring villages, or, in the case of Nanking, from even more distant places such as Jurung, Pukou, Liuhe, Lishui, Chuzhou, Gaoyou, Dantu, Danyang, and Gaochun; they might also buy from the silk brokers, which in Nanking numbered about 120.<sup>43</sup> At Suzhou in 1913, there were some 7,700 artisans employed by 57 accounting houses, some of which had been founded before the nineteenth century.<sup>44</sup>

Similarly, a putting-out system prevailed in the rural areas. Silk fabric brokerages (*chouzhuang*) in Zhenze, Danyang, Shaoxing, Shuanglin, Shengze, Puyuan, Dantu, and other market towns in Jiangnan collected silk piece goods from rural weavers to whom they had in some cases previously supplied raw silk and advanced cash.<sup>45</sup> The raw silk used by the weaving households might be imported by the silk brokers rather than produced locally; for example, Shengze weavers received their silk from all over Zhejiang.<sup>46</sup> The largest of these silk fabric brokers had offices in Shanghai, Suzhou, Peking, and other large metropolitan areas where they sold the piece goods they had collected in the rural centers of weaving.

Less detail is known about the organization of the Guangdong silk-weaving trade. Silk weavers' guilds thrived in the late Qing at the urban centers of Canton and Foshan and the hinterlands of Nanhai and Panyu counties;<sup>47</sup> merchants also relied on subcontracted family labor in the suburbs and hinterlands of Canton and Foshan, each household being bound to one specific silk merchant.<sup>48</sup>

<sup>42</sup> Ibid., no. 104:71-8; no. 105:52-4. The rentier mentality pervaded the weaving sector as well: in 1896 Liu Kunyi compared the relationship between the accounting house (*zhangfang*) and the weaving households (*jihu*) to that between the landlord and the tenants (cited in *ibid.*, no. 105:54).

<sup>43</sup> "Qing mo Nanjing sizhiye de chubu diaocha," *Jindaishi ziliao*, (1958:2), 9.

<sup>44</sup> SGYS, II, 429-30.

<sup>45</sup> SGYS, I, 218-220; II, 639-42, 675-7. See also H. D. Fong, *Rural Industries in China* (Nankai Institute of Economics, Industry Series, bulletin no. 5), 2, "Silk Weaving in Poyuen, Chekiang," *Chinese Economic Bulletin*, XXII:11 (March 18, 1933), 157-8, and "Silk-Weaving in Shentsseh, Kiangsu," *Chinese Economic Bulletin*, XXII:14 (April 8, 1933), 207-10.

<sup>46</sup> "Silk-Weaving in Shentsseh . . .," 206-7.

<sup>47</sup> Chen Tianjie and Chen Qitong, 71.

<sup>48</sup> William F. Mayers, N. B. Dennys, and Charles King, *The Treaty Ports of China and*

Merchants and artisans maintained separate guilds. So did workers engaged in different phases of the weaving process or in the production of different types of silk piece goods (such as satin and brocade). Some guilds were organized according to regional origins (such as the Nanking and Suzhou groups in the Suzhou satin trade). These guilds maintained mutually exclusive territories, spelled out the rules within their respective trades, and collected dues to enforce guild regulations and to provide for the needs of indigent members and their bereaved dependents.<sup>49</sup> The apprenticeship system was in force: in return for work over a period of typically about three years, a master was to provide training, food, lodging, and pocket money to his apprentices.<sup>50</sup>

Like the silk and cocoon brokerages, these guilds also acted as government tax collectors in exchange for monopolistic rights. Indeed, the guild halls often served double duty as licensing and tax collection centers. The guilds collected licensing fees from their members, who paid according to the number of frames registered in return for a license (*hangtie*).<sup>51</sup>

Between the merchants and the weavers, there were usually intermediaries (known in Nanking as *chengguan*) who did not engage in production directly but who introduced the two parties, were responsible for the flow of raw materials and finished products between them, and guaranteed the good conduct and quality of production of the artisans hired in return for a percentage of their wages. In the event that the artisan absconded with the borrowed equipment and the raw materials, the intermediary had to reimburse the employer.<sup>52</sup> In Nanking, satin weavers would go to certain specified teahouses, where the waiters might introduce them to prospective employers.<sup>53</sup> Many of these intermediaries possessed their own looms, obtained on credit the warp and weft silk from the wholesaler on easier terms than the weavers, and hired weavers to do the weaving on their behalf.<sup>54</sup> At Shaoxing, from the end of the Qing there emerged a class of middlemen called *baozhuren*, who guided the weaving establishments as to specification requirements, sold the fabrics on their behalf to the silk fabric brokers, stored unsold goods, and

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*Japan* (London, 1867), 52, 184.

<sup>49</sup> Yokoyama Sugaru, no. 105:57-9; Tōa dōbunkai, comp., *Shina keizai zensho*, XII, 316-21.

<sup>50</sup> Yokoyama Sugaru, no. 104:76-7.

<sup>51</sup> Nanjing bowuyuan minzuzu, 9; Yokoyama Sugaru, no. 105:58.

<sup>52</sup> Yokoyama Sugaru, no. 105:55-7.

<sup>53</sup> Nanjing bowuyuan minzuzu, 3.

<sup>54</sup> *Ibid.*, 6.



supplied loans from the fabric brokers.<sup>55</sup>

Sometimes there was more than one layer of intermediaries between employer and employee: the inner middlemen (*neichengguan*) might in turn delegate the task of finding artisans to the outer middlemen (*waichengguan*), who would never meet the hiring merchants in person.<sup>56</sup> At Suzhou at the end of the Qing dynasty, some 10,000 weavers (called *sanshu jihu*) were subcontracted by other weavers (called *ershu jihu*) numbering around 500 or 600, who were in turn under contract to the accounting houses (locally known as *dashu*), which numbered more than 100.<sup>57</sup> At the rural weaving centers there were also intermediaries (called *lingtou* at Shengze) between local weavers and the silk brokers, who were often outsiders.<sup>58</sup>

In spite of the guild restrictions, the accounting house exercised some control over all phases of weaving through the putting-out system, and sometimes even directly supervised some phases of production within its own shop. Despite the paternalistic nature of production relations, written contracts were concluded between masters and apprentices over the terms of the apprenticeship, and guild regulations spelled out the terms of employment for merchants and artisans in the same trade. Moreover, there were workers hired on a daily basis to supply additional labor not provided through the apprenticeship system and needed in times of rising demand. A famous passage in the 1684 gazetteer of Changzhou county indicated that Suzhou weavers were generally attached to particular masters and worked for daily wages, but some who had no fixed masters would wait at a certain bridge at dawn each day in hope of finding employment. This system was abolished by government decree, but apparently not successfully. As late as the 1930s, there were designated bridges where weavers of different types of silk goods could await prospective employers.<sup>59</sup> The seasonal labor came from the surrounding villages during periods of agricultural slack. Between the first and fourth months and between the seventh and twelfth months of the lunar calendar, natives of Haiyan county would go as far west as Hangzhou, as far north as Huzhou and even Yixing, in search of work as silk weavers.<sup>60</sup>

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<sup>55</sup> Zhejiang, jianshe weiyuanhui, *Shaoping zhi sichou*, 30.

<sup>56</sup> Yokoyama Sugaru, no. 105:56.

<sup>57</sup> Kojima Toshio, "Shinmatsu Minkoku shoki Soshūfu kinuorigyō to kiko no dōkō," *Shakai keizaishigaku*, XXXIV:5 (Jan. 1969), 478.

<sup>58</sup> "Silk-Weaving in Shentseh . . .," 209.

<sup>59</sup> Yokoyama Sugaru, no. 104:77.

<sup>60</sup> *Ibid.*, 78.

Whether or not these proto-capitalistic elements (contractual agreements and free labor markets) suggest that the silk-weaving industry contained “sprouts of capitalism” and would in time have evolved into industrial capital in the absence of the intrusion of Western capitalism need not detain us here. It suffices to point out that the control of the accounting house over production remained on the whole indirect, that the free labor market remained supplementary and provided only a small segment of the total labor force, and that production remained fragmented and divided along guild lines. The guilds themselves included both masters and employees; at Suzhou it was not until around 1910 that the journeymen and apprentices formed their own independent guild (*xia-zhang gongsuo*).<sup>61</sup> Moreover, the hallmark of manufacturing in the industrial revolution was not so much the division of labor and specialization (well exhibited in the silk-weaving and other handicraft industries in Jiangnan), but the integration of different production stages under the direct control of one enterprise or entrepreneur and the combination of production and management.

However, to point out some inherent problems in the argument that proto-capitalistic enterprises would in the absence of the intrusion of Western capitalism have developed into industrial capital is not to deny that the Chinese economy during the late imperial period might have possessed the internal dynamic potential for development. Nor is it implied that, while failing to induce organizational changes in silk-weaving and other traditional industries, the opening of China to trade with the West might not have subverted or damaged these sectors. Despite a period of recovery after the Taiping Revolution, silk-weaving generally declined from the second half of the nineteenth century on. This decline must be partially attributed to the diversion of cocoons to filatures in the Canton and Shanghai regions catering to the export market. The fortunes of weavers waxed and waned inversely with filature silk exports. For example, at Zhang Jisheng’s workshop in Shashi surveyed in 1903, about a hundred workers were employed when the price of silk was low, but only about half that number when the price of silk was high.<sup>62</sup> Even if weavers were willing or able to purchase the more expensive filature silk, it was not as suitable for traditional wooden looms: filature silk was more brittle than hand-reeled silk because part or all of the natural gum in the filament had been removed through heating and

<sup>61</sup> Peng Zeyi, “Yapian zhanzheng qian Qingdai Suzhou sizhiye shengchan guanxi de xingshi ji xingzhi,” *Jingji yanjiu* (1963:10), 63.

<sup>62</sup> Yokoyama Sugaru, no. 1:4:65.

steaming.<sup>63</sup>

At the start of the nineteenth century there were some 17,000 workers in the silk weaving industry at Foshan, not only supplying markets in China but also exporting to Europe and America. By the end of the nineteenth century, silk filatures were exerting a negative effect on the piece-good trade by increasing cocoon prices and diverting them to their own use.<sup>64</sup> Even then there were still more than 2,000 weavers at Foshan. But by the second decade of the century, as silk became more expensive and scarce because of filature production for export, 60–70 percent of the weaving establishments (*jifang*) had gone out of business.<sup>65</sup>

The 1881 weavers' riot in Nanhai county was by no means the only violent manifestation of the contradiction between the supply needs of the weavers and cocoon production for export-oriented filatures. In 1888 a confrontation between several hundred weavers and filature workers again erupted into armed combat, which ended with six or seven people killed and many wounded.<sup>66</sup> Possibly to placate the weavers and the authorities who were anxious to maintain peace within the area under their jurisdiction, Chen Qiyuan adapted the steam reeling machine to one operated not by steam but by foot treadles; this was more suitable for domestic reeling, yet produced a silk that was superior to traditional hand-reeled silk in regularity and uniformity.<sup>67</sup> A putting-out system emerged whereby merchants supplied equipment and cocoons to women under contract. By the first or second decade of the twentieth century, there were workshops in the Canton Delta, capitalized by partnerships using reeling machinery powered by treadles, that employed between six or seven to more than a hundred woman workers.<sup>68</sup> Even in 1923 it was estimated that twice as much silk was produced with treadles for domestic consumption as in steam filatures for export in Guangdong.<sup>69</sup> Nevertheless, if the existence of these foot-powered workshops alleviated the supply problems of silk weavers in the delta to some extent, it did not altogether resolve the difficulties of the weavers and reverse the decline of the weaving sector. Cocoon growers preferred to sell to filatures because they could get higher prices. Ironically, waste silk (*shuijie*),

<sup>63</sup> "Sericulture in Nanking," *Chinese Economic Monthly*, II:11 (Aug. 1925), 12.

<sup>64</sup> China, Imperial Maritime Customs, *Decennial Reports, 1892–1901*, II, 177.

<sup>65</sup> Suzuki, 62–3.

<sup>66</sup> GYS, I, 966.

<sup>67</sup> Suzuki, 62.

<sup>68</sup> *Shunde xian xuzhi, juan* 1:26b; *Nongshi yuekan*, IV:6 (Dec. 1925), 12.

<sup>69</sup> Buswell and Howard, 118.

which was a by-product of the filatures, was exported to Europe where it was spun into silk noil yarn, which was then reimported into Canton and used by the local weavers to make a coarse cloth (*shuijiebu*).<sup>70</sup> However, the use of the noil yarn represented a switch to a yarn inferior to and coarser than raw silk.

The diversion of cocoons to filatures occurred in Jiangnan as well; it contributed to the supply difficulties of weavers and to the general decline of weaving in that region, and prompted strikes and riots by handcraft workers. After about 1900, hand-reeled silk was in short supply at Jiangnan. Around Wuxi it ceased to be produced, while at Shaoxing, Jiaxing, and even Huzhou, peasants turned increasingly to cocoon production.<sup>71</sup> At the beginning of the twentieth century, more than 80,000 artisans were employed in weaving and subsidiary trades such as bleaching and dyeing in Nanking. But whereas in the Daoguang period the number of frames engaged in the production of satin (*duan*) alone numbered around 30,000, by the end of the Qing dynasty the total was only about 12,500, with about 9,000 producing satin, 3,000 or so producing brocade, and 300 or so producing velvet. By 1930 there were fewer than 12,000 weavers operating approximately 3,700 looms in Nanking.<sup>72</sup> In Suzhou the number of looms in operation declined from around 12,000 in 1900, to around 7,000 in 1911, to around 4,000 in 1912.<sup>73</sup> Over the first decade of the twentieth century, the number of weavers in Hangzhou fell from more than 50,000 to 20,000.<sup>74</sup>

To be sure, the distress of weavers was not solely caused by the diversion of cocoons to the filatures. Heavy taxation also took its toll. In 1906, while the price of thick silk (*feisi*) increased 22 percent from the previous year and the price of thin silk (*xisi*) increased 7 percent, the government increased the tax imposed on the Hangzhou Silk Weavers' Guild (*Hangzhou jiyue huiguan*). The annual tax quota had been set at 30,000 taels; in 1905 it was raised to 45,000 taels, and in 1906 to 51,000 taels.<sup>75</sup>

As the filatures were in Shanghai, away from the center of activities of weavers, disgruntled weavers focused their anger on official establishments rather than filatures. In 1896 at Zhenjiang, for example, weavers

<sup>70</sup> DFZZ, III:10 (Sept. 1906), 200; Ernest Watson, *The Principal Articles of Chinese Commerce* (The Maritime Customs, special series, no. 38) (Shanghai, 1923), 31.

<sup>71</sup> Li Jiayuan and Huang Gongmai, *Nongshang gongbao*, III:9, 15-6.

<sup>72</sup> Nanjing bowuyuan minzuzu, 1-2.

<sup>73</sup> SGYS, II, 453.

<sup>74</sup> China, Imperial Maritime Customs, *Decennial Reports, 1902-1911*, II, 49.

<sup>75</sup> Tōa dōbunkai, comp., *Shina keizai zensho*, XXII, 139.

distressed by the scarcity and high cost of silk and enraged by the recent increases in export tax (*laodi chukou juan*) and the imposition of heavy fines for any underreporting of the number of looms called for a strike. In a group of 2,000 or 3,000 they marched on June 8 to wreck both the Bureau of Loom Licensing (*jijuan ju*) and the Bureau of Likin Collection (*lijuan ju*), and were only suppressed by the mobilization of military force. While punishing the instigators of the riot, the magistrate of Yuanhe county also sought to mollify the weavers by dismissing the directors (*zongban*) of both bureaus and by rolling back the tax quota to its original level.<sup>76</sup> Thus, the diversion of cocoons to the filatures, heavy government taxation, and the oppression of weaker members by dominant members of the guild (who were simultaneously guild directors and government tax collectors) combined to exacerbate the weavers' difficulties in earning a decent income.

Masters and merchants could cushion themselves to some extent against the vagaries of the raw silk supply by manipulating the number of artisans and workers they employed. And the average scale of production was increased: weavers with one or two looms had typified the industry at the start of the Qing dynasty; as they fell prey to the market, the number of looms per workshop averaged as high as five or six by the end of the dynasty.<sup>77</sup> But to those workers whose employment was rendered uncertain and those weavers who had lost their independent status as masters and become hired hands because of indebtedness, the diversion of raw silk to the export market represented a real threat.

Although a buoyant home or export market might have counterbalanced the weavers' difficulties, supply conditions remained generally unfavorable as the rural sericultural sector, under the constraints of silkworm disease and guild control, did not expand supply fast enough for the maximal needs of both weavers and filatures. The decline in the weaving sector in Jiangnan and Guangdong was by no means uniform or continuous. As we have seen, the sericultural sector in Zhejiang, unlike that in Guangdong and Jiangsu, continued to serve principally the domestic rather than the foreign market. Regional competition between different weaving centers benefitted some areas and damaged others. In the 1900s, for instance, Zhenjiang silk fabrics suffered from competition, both foreign and domestic, particularly from Hangzhou.<sup>78</sup>

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<sup>76</sup> Kojima, 479.

<sup>77</sup> Yokoyama Sugaru, no. 104:76.

<sup>78</sup> Kojima, 474.

One silk-weaving center that did maintain prosperity until the 1930s was Shaoxing. Originally silk-weaving was primarily a by-employment of rural households catering to official needs. By the end of the Qing about 400 specialized weaving establishments (*jihu*) produced about \$3 million worth of fabrics annually. At the beginning of the Republican period, the market for Shaoxing fabrics expanded as quality improved; exports reached as far as Southeast Asia. In 1922, under the influence of the Hangzhou silk-weaving industry, iron frames were introduced from Japan; productivity was increased 50 percent and total production reached an all-time high of about \$9.25 million. In 1929 production still totalled about \$7.25 million, but by the mid-1930s it had declined to a level of under \$2 million. The number of weaving establishments fell by half, from 2,600 to 1,300 in 1932.<sup>79</sup>

Political instability proved unsettling on the domestic economy throughout the first five decades of the twentieth century. The Boxer Uprising, the 1911 Revolution, incessant warfare between the warlords, the Northern Expedition, the Sino-Japanese War, and the Civil War between the Nationalists and the Communists all disrupted the internal market. For example, the fall of Peking and Tientsin in 1900 deprived Nanking weavers of the important northern markets; exports fell 30 percent. Liu Kunyi, then governor-general of Liangjiang, proposed the remedy of setting up a special bureau (*guanyaju*) of wealthy satin merchants who would lend money to indigent weavers with unsold silk goods as collateral. In Suzhou, idle weavers erupted into riots and demanded pay increases.<sup>80</sup> The civil war that started in Jiangsu and Zhejiang from July of 1923 hit Hangzhou silk exports especially hard.<sup>81</sup>

The internal market was also affected by such exogenous factors as the vagaries of fashion. At the institution of the Republic, the rumor that a foreign costume would be adopted as the national dress adversely affected the silk piece goods trade in Huzhou, Hangzhou, and Nanking. The Western style of dress became fashionable among the modern Chinese youth, and consequently foreign cotton, woolen, and even silk and satin goods for a while supplanted Chinese silk fabrics.<sup>82</sup>

At the same time that the Chinese were unable to protect their internal market because of a loss of tariff autonomy, they increasingly found the foreign markets closed to their exports. Although export in-

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<sup>79</sup> Zhejiang, jianshe weiyuanhui, *Shaoxing zhi sichou* 1, 18–9.

<sup>80</sup> SGYS, II, 595–600.

<sup>81</sup> Chen Zhen et al., comps., IV, 181.

<sup>82</sup> Kojima, 475–6.

tensity was much lower in the weaving sector than in the reeling sector, the amount of silk piece goods and pongees exported overseas had reached considerable proportions by the end of World War I. Between 1913 and 1922 total exports averaged around twenty million Haiguan taels per year, with Hong Kong, Southeast Asia, and Korea as the principal markets.<sup>83</sup> World War I proved to be a period of growth for Chinese industry in general and for the silk-weaving industry in Jiangnan in particular. Because of the upswing in the urban economy and the rise in purchasing power, silk goods found an expanding internal market, not only within Jiangnan, but also in Peking and the three Northeastern provinces, where Chinese industry mushroomed in the absence of foreign competition.<sup>84</sup> The conflict between the export sector and the domestic weaving sector might also be inferred from the revival of weaving during and immediately after World War I in Jiangnan, when raw silk export was hampered by the diversion of shipping and the shifting of demand of the belligerent countries to more urgent, war-related needs: as hand-reeled silk lost its export markets, it was undoubtedly sold in much bigger proportions at home to meet the needs of the weavers. Between 1912 and 1920 the number of wooden looms at Hangzhou increased almost 40 times to more than 1,000.<sup>85</sup> At Nanking, the export of satin and piece goods had been declining in the first decade of the twentieth century, from 2,000 piculs in 1903 to 1,700 in 1913. However, it started to rise in 1914, from barely over 2,000 piculs that year, to about 4,000 piculs in 1918, 6,600 in 1919, and 9,000 in 1920.<sup>86</sup> But after 1924 the overseas market for Nanking satin and silk fabrics from Shengze and Zhenjiang was severely curtailed as Japan doubled import duties in Korea and France raised tariffs in Annam.<sup>87</sup>

Ironically, in Guangdong the fortunes of silk weaving (like other service and consumer trades) became dependent on the state of health of the silk export sector. With growing incomes derived from sericulture, peasants in Shunde enjoyed a rising standard of living, and even relatively poor families would purchase silk clothing worth several tens of dollars for social occasions.<sup>88</sup> During World War I, as the economy became depressed because of the conditions of the silk export trade, many

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<sup>83</sup> Computed from "Development of Chinese Silk Weaving Industry," *Chinese Economic Monthly*, I:5 (Feb. 1924), 11.

<sup>84</sup> SGYS, II, 639.

<sup>85</sup> SGYS, II, 640.

<sup>86</sup> SGYS, II, 451, 643.

<sup>87</sup> Chen Zhen et al., comps., IV, 163.

<sup>88</sup> "Shunde shangwu shengshuai gan," *Xianggang zongshanghui yuekan* (Oct. 1934), 150.

weavers turned to the production of native cloths (*tubu*).<sup>89</sup>

At the same time, however, when the handicraft weaving sector faced more favorable supply and demand conditions, it also faced increasing competition from the newly-developed modern silk-weaving industry. The modern jacquard frame, the output per worker of which was double that of traditional looms, was first introduced at Hankou in 1908 by Shi Hechu.<sup>90</sup> But it was at Hangzhou that the modern silk-weaving industry became the most established. From 1912 on many modern mills sprang up there, and in 1924 these numbered 60.<sup>91</sup> After 1915 the use of the jacquard frame spread to Shaoxing, Shengze, Puyuan, Ningbo, Jiaxing, Huzhou, Suzhou, Shanghai, and Guangdong and later to Nanking and Sichuan as well.<sup>92</sup> The year 1915 also saw the start of electrically powered weaving at Shanghai, and 1910–1926 was the period of prosperity for the modern silk-weaving industry at Shanghai, Hangzhou, and elsewhere.<sup>93</sup> In 1927 about 15,000 workers were employed in the modern silk mills of Shanghai, which produced about 200,000 pieces each year.<sup>94</sup> In Hangzhou the number of subcontracted weaving establishments, which took raw materials from the silk fabric brokers and wove on a piecework basis, had numbered more than 1,000 at the beginning of the Republican period; by 1932 competition with the new modern mills reduced their number to about 200.<sup>95</sup> Partly because of competition with silk goods produced by jacquards in Suzhou and Hangzhou, as well as with foreign cotton and woolen goods, the export of satin from Nanking, having climbed to a level of over 9,000 piculs by 1921, dropped precipitously in 1924 to around 3,500 piculs, in 1927 to under 2,400 piculs, and in 1929 to barely over 200 piculs.<sup>96</sup> At Guangdong, on the other hand, the modern silk-weaving industry, spearheaded by the founding of the water-powered Lingnan Silk-Weaving Factory (*Lingnan zizaochang*) in 1920, failed to make much of an impact on the market, because its fabrics were not as soft as hand-woven ones.<sup>97</sup>

Yet mechanized weaving, like handicraft weaving, was poorly integrated with the modern silk-reeling sector. A few mills did operate

<sup>89</sup> Suzuki, 63.

<sup>90</sup> "Development of Chinese Silk Weaving Industry," 10.

<sup>91</sup> D. K. Lieu, *The Silk Industry of China*, 164.

<sup>92</sup> Kojima, 472; Chen Zhen et al., comps., IV, 181; SGYS, II, 675.

<sup>93</sup> Kojima, 473.

<sup>94</sup> "Shanghai and the Silk Industry," *China Journal*, XII:5 (May 30, 1930), 273–4.

<sup>95</sup> Zhejiang, jianshe weiyuanhui, *Hangzhou shi jingji diaocha*, 55.

<sup>96</sup> SGYS, III, 11; China, Maritime Customs, *Decennial Reports, 1922–31*, I, 625.

<sup>97</sup> *Shunde xianzhi* (1972), 168.



their own filatures; these exceptions included Weicheng, founded in 1912 and the largest silk mill in Hangzhou, and Mayar (Meiya), established by the filaturist Mu Shangqing in Shanghai in 1920 and the biggest silk-weaving company in China, with ten factories in operation at one time. On the whole, however, the modern weaving mills depended on the traditional sector rather than the filatures for their supply of raw silk. In Shanghai, probably less than 10 percent of filature silk produced each year was retained for domestic consumption. In 1922–23 the sharp rise in the price of raw silk led to the bankruptcies of many silk mills in Shanghai.<sup>98</sup> And like the traditional silk weavers and workshops, most of the Shanghai mills lacked working capital and depended on silk piece-goods wholesalers for the supply of the raw silk they consumed.<sup>99</sup>

This lack of integration between modern silk-reeling and weaving may be seen in the increasing tendency of the mills of Hangzhou to use imported rayon in place of the more expensive raw silk from 1924 on.<sup>100</sup> The percentage of rayon used in silk piece goods rose from around 10 percent in 1925 to over 50 percent in 1927.<sup>101</sup> By 1929 the composition of materials used in the production of silk goods in the modern mills of Jiangnan was 64 percent rayon, 24 percent hand-reeled silk and 12 percent filature silk and cotton.<sup>102</sup> Silk brokers began to supply their rural weavers with rayon as well.<sup>103</sup> Thus, the decline of traditional weaving was due not only to the diversion of cocoons to the filatures, but also to official oppression, unfavorable internal and external demand conditions, and competition from the modernized weaving industry.

### **The Decline of the Silk Industry and Rural Depression**

The switch from raw silk to rayon had, of course, not been confined to the mills of Jiangnan but was one facet of the worldwide switch from natural fibers to synthetics. The world depression of the 1930s brought about a serious erosion of consumer purchasing power and demand and a severe contraction of commodity trade in general, including that of raw silk.

Over the same period the economy of China was itself in a severe depression. This downswing had many causes, including incessant ban-

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<sup>98</sup> China, Ministry of Industry, *Zhongguo shiyezhi: Jiangsu sheng*, I, pt. 8, 133.

<sup>99</sup> *Ibid.*, 156.

<sup>100</sup> Chen Zhen, IV, 103.

<sup>101</sup> SGYS, III, 5.

<sup>102</sup> Chen Zhen et al., comps., IV, 163.

<sup>103</sup> "Silk-Weaving at Shentsch . . .," 209.

ditry and warfare, political unrest, the breakdown of traditional socioeconomic institutions, and natural disasters. But even without these problems, the economies of Jiangnan and Guangdong, which had become so dependent on the world raw silk trade, would have been in serious difficulties.

Beginning in 1930 the fall in world demand for raw silk was reflected by declining prices at the New York and Lyon markets. The price of Chinese silk at New York fell in 1932 to 56 percent of its 1930 level, and in 1934 to 31 percent. At Lyon, the respective levels were 50 percent and 35 percent.<sup>104</sup> Total raw silk exports fell from an all-time high of 435,000 piculs in 1928, to 277,000 piculs in 1930, to 147,000 piculs in 1932.

In 1931 only 15 of 107 filatures in Shanghai, 14 of 49 in Wuxi, and fewer than 10 of 30 in other parts of Jiangsu and Zhejiang remained open. By January of the following year, only 10 filatures continued to operate in Shanghai.<sup>105</sup> Filature rental rates fell by one half between 1931 and 1932; rental terms, normally for one year, were now made for six months or even as few as three months. Plant owners began to remove the equipment and convert the buildings to housing.<sup>106</sup> Filaturists cut wages, which in 1934 were two-thirds of the 1930 level.<sup>107</sup>

At Canton, raw silk exports declined from 81,562 piculs in 1931 to 33,862 in 1932.<sup>108</sup> More than 36,000 woman filature workers were dismissed; they swarmed to Canton in search of employment. Total unemployment caused by the silk trade slump exceeded 107,000.<sup>109</sup> In 1931 111 filatures had been open; by 1932 only 58 were operating.<sup>110</sup>

The slump soon struck the sericultural sector as well when those filatures still in operation tried to reduce their costs by offering lower prices for cocoons.<sup>111</sup> In 1930 the price of improved Wuxi cocoons was \$100 per picul; by 1932 it had fallen to \$80, and by 1934, to \$35.<sup>112</sup> The declining spiral of raw silk prices thus worked backwards: as cocoon

<sup>104</sup> Chen Zhen et al., comps., IV, 136–7.

<sup>105</sup> D. K. Lieu, *The Silk Reeling Industry in Shanghai*, 20–1.

<sup>106</sup> Shima, 74–5.

<sup>107</sup> *Ibid.*, 78.

<sup>108</sup> Li Honglue, “Guangdong jingji de jiepou,” *Xianggang huashang zonghui yuekan*, I:5 (Jan. 1935), (*jia*), 63.

<sup>109</sup> Li Mianqun, “Guangdong siye gaikuang,” *Xianggang huashang zonghui yuekan*, I:5 (Jan. 1935), (*jia*), 106.

<sup>110</sup> Li Honglue, 63.

<sup>111</sup> D. K. Lieu, *The Silk Reeling Industry in Shanghai*, 22.

<sup>112</sup> Shima, 79.

raising became unprofitable in turn, the demand for and the price of mulberry leaves also fell.

Beginning in 1931 peasants in the sericultural counties of Jiangnan started to chop down mulberry trees and convert mulberry farms into rice fields. Between the fall of 1931 and the spring of 1932, one-third of the mulberry land in Wuxi was converted into rice paddy. By 1933 rice riots involving starving peasants had become frequent.<sup>113</sup> At Wuxing, the price of mulberry leaves fell to 10 percent of the level before the decline in silk prices, and all but one of 24 traditional banks were bankrupt.<sup>114</sup> In 1930 there were 94 silk brokerages at Wuxing; by 1932, only one was open.<sup>115</sup> Some sericultural farmers in the Huzhou area and Western Zhejiang attempted to react to the depression by growing watermelons, but the resultant glut only led to a fall in the price of watermelons as well.<sup>116</sup> At Chongde, 280 families reported an average decline of 57 percent in sericultural income between 1928 and 1933.<sup>117</sup>

The fall in income coupled with the bankruptcies of or reluctance to lend by the brokers and traditional banks resulted in a rural credit crisis and forced the peasants to resort to usurious forms of borrowing, including the purchase of goods on account. One of the most vicious forms of loan was the rice loan: a merchant would sell Shaoxing rice to the farmers in the winter and collect money at the close of the cocoon season the following year, at an effective interest rate of close to 5 percent per month. Another exploitative form of loan was the "rice circulation" (*juan midou*), whereby a farmer who borrowed one shi of rice was obligated to return 1.6 shi upon harvest.<sup>118</sup>

Between 1932 and 1934 the price of cocoons fell from \$2.00 to 30 cents at the Canton Delta. In Shunde, where 70 percent of all cultivated land had been devoted to mulberry, 30 percent of total mulberry acreage was abandoned. Silkworms were thrown into the ponds to feed the fish, and some of the land that had been devoted to mulberry was turned into sugarcane plantations. Unfortunately for the peasants, the price of fish had also been declining, and the price of sugar was dependent on the

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<sup>113</sup> NYS, III, 622-7.

<sup>114</sup> Wu Xiaochen, "Cansang shuailuo zhong de Wuxing nongcun," DFZZ, XXXII:8 (April 1935), 85.

<sup>115</sup> China, Rural Reconstruction Committee, *Zhejiang sheng nongcun diaocha* (Shanghai, 1934), 5.

<sup>116</sup> Wu Xiaochen, "Zhejiang Hushu yidai de canyong shenghuo," in Yu Qingtang, ed., *Nongcun shenghuo congian* (Shanghai, 1937), 111.

<sup>117</sup> *Ibid.*, 125.

<sup>118</sup> Lieu (1940), 50-1; *Zhongguo jingji zhi*, I, 50.

supply from Java and Taiwan.<sup>119</sup> Because of the slump in silk trade and the consequent erosion of disposable income, the economy of the silk counties, particularly Shunde, was in dire straits. About 200,000 of the 270,000 woman filature workers were thrown out of work; many went to the cities or to Southeast Asia in search of employment.<sup>120</sup> Teahouses and restaurants, which had been enjoying a thriving business, were virtually empty, and over half closed down. Only a few silk piece-goods shop stayed open.<sup>121</sup> The downward spiral in raw silk prices had also worked itself forward into the weaving sector.

The fate of the peasant who had become dependent on sericulture has been encapsulated by Mao Dun in his 1932 short story "Spring Silkworms," the first part of a trilogy depicting the collapse of the Chinese rural economy. Laotongbao, a sixty-year-old peasant who had borrowed money to purchase mulberry leaves, had undertaken a 270-li, six-day journey to Wuxi to sell his cocoons, but he was able to sell only one basket at extremely harsh terms to the filature. His wife reeled silk from the remainder of the cocoons but found no buyers and had to exchange it with the pawnbroker for a load of rice the family had pawned previously. The reward of one month's arduous labor to produce a bumper crop of cocoons was greater indebtedness and the loss of their mortgaged mulberry trees.<sup>122</sup>

There were government attempts in the 1930s to deal with the distress of peasants engaged in sericulture and of filature operators. In 1932 the Nationalist government announced a plan to save the silk industry. Measures included (1) the abolition of silk export taxes and surcharges and the raising of rayon import duties, (2) the issuance of \$30 million worth of bonds to finance a support price of 100 taels per picul for the unsold accumulating stocks of silk, and (3) the maintenance of cocoon price and the promotion of peasant cooperatives for the drying, transporting, and sale of cocoons. The plan was a failure. The abolition of silk export duties was only carried out in May of 1933. As for the price support, the amount was too little and it was only for the year 1932. Most important, the controlled cocoon price was set low, and in effect sacrificed the welfare of the peasants.<sup>123</sup>

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<sup>119</sup> Chen Han-seng, *Landlord and Peasant in China*, 66-7, 86-7.

<sup>120</sup> Qian Tianda, *Zhongguo cansi wenti* (Shanghai, 1936), 50-2.

<sup>121</sup> "Shunde shangwu shengshuai gan," 150.

<sup>122</sup> Mao Dun, *Chun Can* (Hong Kong, 1954).

<sup>123</sup> Shima, 77.

The program failed largely because the government turned to prominent silk manufacturers, notably Xue Shouxuan of Wuxi, to manage it. Already from 1927 on, some of the silk filatures at Wuxi had begun to set up their own egg producing stations. In 1930 Xue Shouxuan, who owned or operated most of the Wuxi filatures, established with official blessing a model area of sericulture; instructors were sent to all parts of Wuxi to instruct the peasants in the raising of cocoons from eggs distributed by Xue. In 1934 the National Economic Committee instituted the Committee to Improve Sericulture, with elaborate plans to save the silk industry. State regulation of cocoon production was established in Jiangsu and Zhejiang: the old-style cocoon brokerages were abolished and new ones set up under government regulation. Prominent among those who were appointed by the government to regulate cocoon production, however, was Xue Shouxuan, who along with other filaturists involved were much more interested in obtaining a cheap and reliable supply of cocoons than in improving the welfare of the peasants. With his official appointment Xue extended his sphere of influence beyond Wuxi to many parts of Jiangnan, including Yixing and Liyang. Xue and other filaturists who managed the state cocoon control program could rely on the public security bureau and the police to suppress any dissent. (Police action was indeed necessitated when, in the wake of government confiscation of silkworm eggs of the native variety, riots broke out at Xiaoshan and at Yuhang; it is not certain whether these riots were spontaneous or whether they were instigated by native egg producers and silk merchants.) Silkworm cooperatives were established to instruct and to supervise the sericultural farmers in the production of better cocoons. Peasants were induced to join by the offer of credit and of bonuses for superior quality eggs; egg sheets of the improved varieties were sold to them below the market price. However, in return the peasants were bound to sell to Xue's filatures only. Xue would make a big profit by classifying the cocoons at grades lower than they should be and by paying the peasants less than the market price. Members who objected would be charged with instruction and other fees. Since they were offered prices much below the market value, peasants began to give up cocoon production altogether.<sup>124</sup>

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<sup>124</sup> NYS, III, 163-8, 228-9, 487-92; Zhu Zhenzhi, "Cansi gailiang hui tongzhi xia de Jiang-Zhe cannong," *Zhongguo nongcun*, II:2 (July 1936), 31-6; Zhejiang sheng, jiansheting, guanli gailiang cansang weiyuanhui, *Zhejiang sheng jiansheting ershier nian gailiang cansang shiye huibao* (Hangzhou, 1934), 35, 69.

In a time of expansionary market demand, the integration of sericultural production with silk-reeling might have allowed all parties to share in the profits and strengthened the competitive position of the Chinese industry in the international market. But for the contractionary period of the 1930s, the merchant managers of the government program merely tried to gain at the expense of the peasant producers. Regardless of the greed of the merchant managers, the doom of the silk industry and sericulture was already sealed by external economic changes. To make matters worse, military incursion took an even bigger toll. After 1937, Japanese occupation forces caused irreparable damages to the silk industry in Jiangsu, Zhejiang, Guangdong, Shandong, and elsewhere by cutting down millions of mulberry trees and destroying filatures and egg-producing stations.<sup>125</sup> The devastation was such that even by the 1950s mulberry-leaf production per mu had not recovered to prewar levels.<sup>126</sup>

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<sup>125</sup> Tan Xihong and Xia Daoxiang, "Shinian lai zhi can de shiye," in Tan, ed., *Shinian lai zhi Zhongguo jingji* (Shanghai, 1948), C-9.

<sup>126</sup> Chen Hengli, 28-9.

## VII

# The Japanese Silk Industry: A Comparison

Before concluding with an evaluation of the significance of the silk industry in modern Chinese socioeconomic history, we will examine some of the reasons for the success of the Japanese silk industry in its competition with the Chinese for the world market, focusing on the differences between China and Japan in the institutional links between the silk industry, the foreign sector, and the hinterlands, and in the role of the government.

The idea that Japanese success was due to technological progress in sericulture and silk reeling, supported by a number of institutional innovations, has a kernel of truth,<sup>1</sup> but it is overly simplistic for two reasons. First, like sociocultural explanations of the Japanese success versus the Chinese failure in modernization, it ignores the international context in which Japanese silk export growth took place. Second, the importance of technology to Japan's success in the silk market varied according to the time period. Before 1900, when the Japanese silk export trade had already begun its spectacular growth, the Japanese silk industry did not enjoy any clearcut technological edge over its Chinese competitor; only after 1900 did technical innovations become important in maintaining and expanding Japan's share of the fast-growing American market. Thus, technology and government support for sericultural research cannot be a total explanation of Japan's success over China; changes in international demand, in transport, and in communications must also be taken into account.

### Japanese Silk Exports and the American Market

The phenomenal growth of Japanese exports of raw silk cannot be fully understood without taking into account the stimulus of the expan-

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<sup>1</sup> Y. Hayami and V. W. Ruttan, *Agricultural Development: An International Perspective* (Baltimore, 1971), 301.

sion of American demand. Just as Japanese exports in the late nineteenth century depended more on world demand than on competitive position,<sup>2</sup> so too Japanese silk exports initially depended more on the expansion of the American market than on any intrinsic superiority of Japanese silk. Japan enjoyed a locational advantage over China in trade with the United States. Although it lay on the periphery of the continent that was the center of European commercial expansion, Japan did serve as a logical stopover for the replenishment of fuel and supplies for American ships crossing the Pacific. In 1850 California clippers opened a four-port route among New York, San Francisco, Canton or Shanghai, and London; however, it was necessary to have intermediate ports over the Pacific stretch. Moreover, shipwrecked sailors of the burgeoning American whaling industry were often imprisoned by the Japanese.<sup>3</sup> Thus, it was not accidental that the Americans were the ones who took the initiative in the opening of Japan.

After the conclusion of the unequal treaties it was again the United States that developed the most intimate commercial relations with Japan. Despite its greater proximity to the United States, Japan initially suffered a disadvantage in the American silk market vis-à-vis China, for East Asiatic silk had to be shipped into the marketing and weaving centers of the east coast of the United States via Europe, where the best lots were taken.<sup>4</sup> But the completion of the Great Northern Railway linking San Francisco and New York in 1884 drastically altered the situation by making possible the direct transportation of Japanese silk by ship to the West Coast of the United States via the Pacific and then by rail to the New York market.<sup>5</sup> Other things being equal, it became cheaper and faster for the United States to import silk and other raw materials from Japan than from China. In the late 1920s transport cost of 100 pounds of silk from Japan was \$4.50 to the West Coast of the United States and \$9.75 directly to New York via the Panama Canal, whereas for Chinese silk the cost was \$6.75 and \$12.00.<sup>6</sup> Ironically, one of the sources of capital for American railways and other industrial enterprises in the second

<sup>2</sup> Masao Baba and Masahiro Tatemoto, "Foreign Trade and Economic Growth in Japan: 1858-1937," ch. 6 in Lawrence Klein and Kazhushi Ohkawa, eds., *Economic Growth: The Japanese Experience Since the Meiji Era* (Homewood, Ill., 1968), 181.

<sup>3</sup> Ohara Keishi, *Japanese Trade and Industry in the Meiji-Taisho Era* (Tokyo, 1957), 57; Allen and Donnithorne, 186.

<sup>4</sup> F. R. Mason, "The American Silk Industry and the Tariff," *Publications of the American Economic Association*, 3rd series, XI (1910), 630.

<sup>5</sup> Ohara, 22.

<sup>6</sup> *Xinjianshe*, no. 3 (Oct. 1929), 120.



half of the nineteenth century came from repatriated profits of those Boston traders (such as J.M. Forbes of Russell and Company) who had dominated the China trade in tea, silk, and opium before the 1860s.<sup>7</sup>

While Japanese raw silk exports to Europe expanded very slowly, exports to the United States, starting from a minuscule level, grew phenomenally (see Table 7.1). Between 1867–1873 and 1888–1893, the former increased only 1.4 times, the latter 70-fold. Just as American silk weaving had overtaken Europe by the mid-1880s, so too did Japanese exports to the United States catch up with exports to Europe. In 1890 Japan already accounted for about half of the American raw silk imports, while China accounted for about a quarter. In 1920 the Japanese share was three-quarters, compared to the Chinese one-fifth.

TABLE 7.1  
JAPANESE RAW SILK EXPORTS, 1867–1919  
(ANNUAL AVERAGE IN BALES)

	Europe	U.S.	Total
1867–1873	13,066	328	13,394
1873–1878	16,271	407	16,761
1878–1883	15,929	6,874	22,003
1883–1888	15,144	14,052	29,196
1888–1893	18,049	23,251	41,264
1893–1898	23,125	27,796	51,101
1898–1903	25,583	38,699	64,282
1903–1908	26,094	65,111	91,205
1909–1913	47,408	111,577	158,985
1914–1918	33,153	178,848	212,001
1919	9,743	279,014	288,757

SOURCE: Hayakawa Naose, *Kiito to sono bōeki* (Tokyo, 1922), 17.

On the other hand, the locational advantage of Japan was obviously reversed in the European market. Even in the heyday of Japanese domi-

<sup>7</sup> The importance of the China trade to the participation of Boston merchants in American railroad building goes beyond the provision of capital. Other valuable legacies include the formation of a network of intimate relationships between members of different Boston firms reinforced by ties of blood, marriage, and friendship (which became an in-group in domestic investment); the establishment of connections with financial houses of Europe (particularly Britain); and an entrepreneurial experience with enterprise founded on uncertainty and over great distance. See Arthur M. Johnson and Barry E. Supple, *Boston Capitalists and Western Railroads* (Cambridge, Mass., 1967), esp. 19–32.

nance of the world raw silk market, the Chinese continued to capture the largest proportion of the French market; in 1920 the Chinese share of French raw silk imports was 47 percent, compared to the Japanese 27 percent.<sup>8</sup>

By emphasizing the complementary relationship between Japanese raw silk and American weaving and between Chinese raw silk and French weaving, we do not mean to imply that the phenomenal growth of Japanese silk exports and the slow growth of Chinese silk exports were exclusively functions of the fast expanding American market and the slow growing French market (see Figures 7.1 and 7.2). Locational advantages as reflected by freight and insurance cost differentials were not the sole determinants of exportability. Differences in quality, production costs, and ability to expand the quantity of production were at least as important.

### **Productivity Increases and Quality Improvements in Silk Reeling and Sericulture**

There is some plausibility to the argument that quality requirements in France and the United States differed and that the Japanese, by promoting scientific innovations that made possible the massive exports of high-quality silk most suitable to the highly mechanized American market, were able to dominate that market. In France, where silk weaving continued to be carried out to a large extent on hand looms and where labor (cheap relative to American labor) was available for sorting, cleaning, and reeling, less expensive silks from China and the Levant were preferred.<sup>9</sup> As late as 1900, power looms amounted to only one-third of France's 90,000 looms.<sup>10</sup> From the 1870s on American silk buyers frequently complained about adulteration and the deteriorating quality of Chinese silk while at the same time complimenting the Japanese for improving the quality of their silk.<sup>11</sup>

Yet one must be careful not to carry the argument too far. To begin with, from the 1870s to the 1930s Japanese silk seems to have fluctuated in quality; periodically American silk buyers complained about problems of adulteration and unsatisfactory quality. Misclassification and substitution of inferior grades of silk was charged against Japanese

<sup>8</sup> Computed from Ishii, 22.

<sup>9</sup> Silk Association of America, 44th Report (1916), 27; W.D. Darby, *Silk, the Queen of Fabrics* (New York, 1924), 18; Matsui, 147.

<sup>10</sup> Ohara, 257.

<sup>11</sup> Silk Association of America, 3rd Report (1875), 20; 6th Report (1878), 12.

Figure 7.1. Raw Silk Imports into the United States, 1875-1935  
(five-year moving averages)

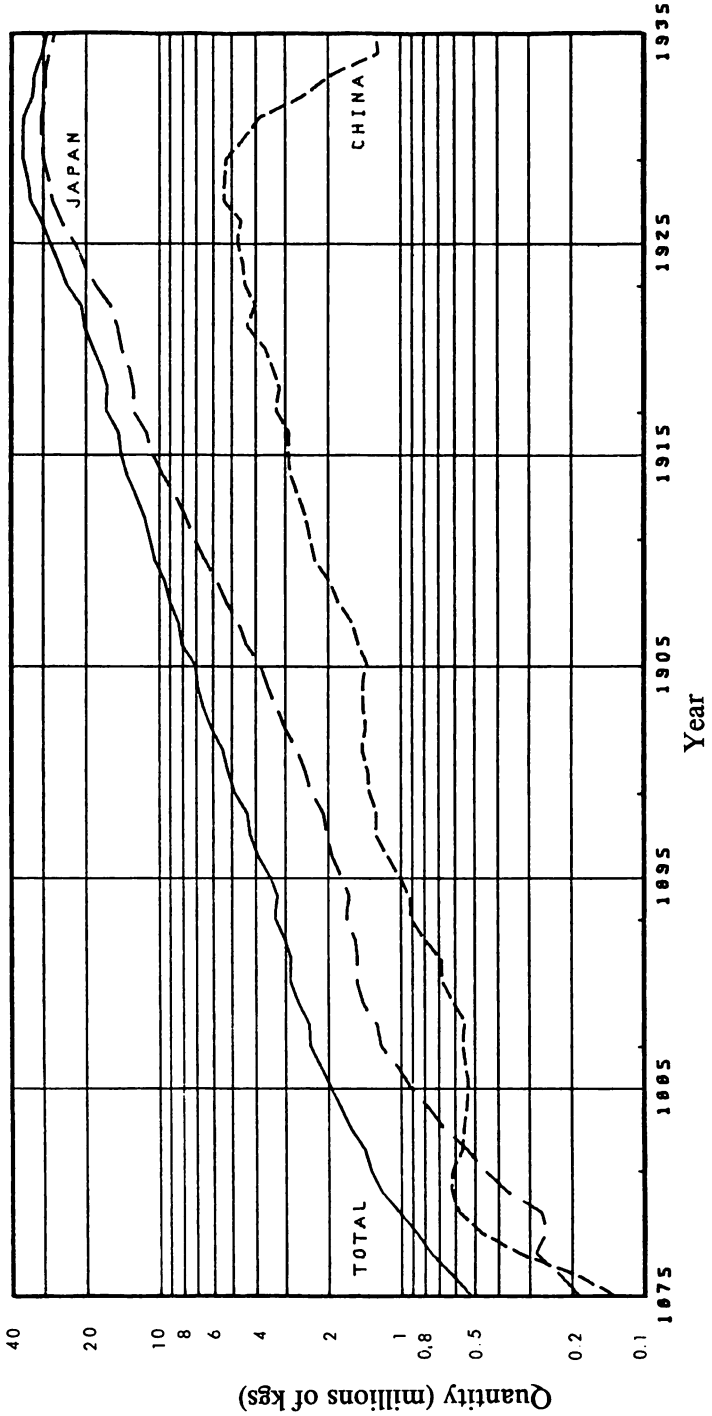
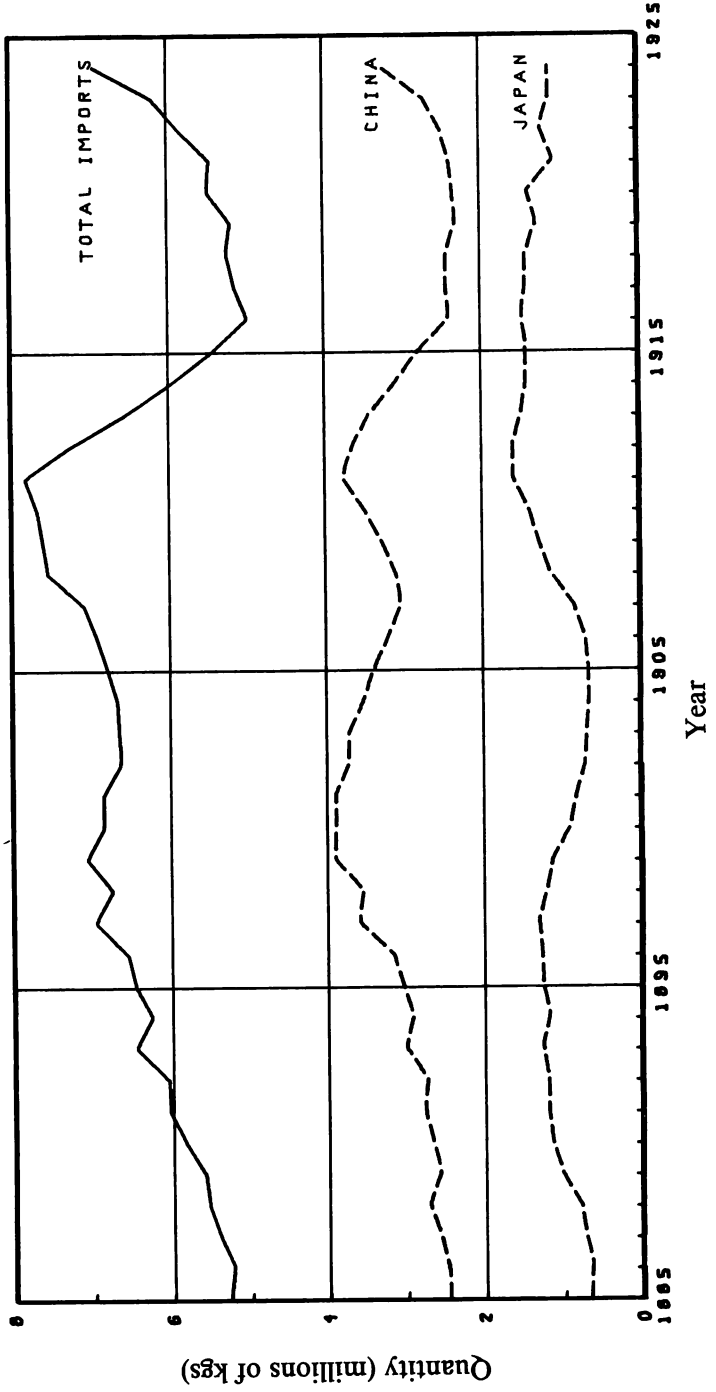


Figure 7.2. Raw Silk Imports into France, 1885-1924  
(five-year moving averages)



reelers.<sup>12</sup> Indeed, American preference was for the higher quality French and Italian silk, except for their high cost and unavailability.<sup>13</sup>

In talking about quality of silk from one country, we must take into account variations over time and between different grades and regions. As we have seen, in the case of Chinese silk we must distinguish not only between filature and hand-reeled silk, but also between Canton and Shanghai filature silk. So too in Japan a distinction must be made between standard silk used mainly as weft and superior silk used mainly as warp. Before 1900 producers of standard silk dominated the Japanese silk-reeling industry. They used wooden reels modified from Italian or traditional Japanese models and powered by foot treadles or by water. The Tomioka Filature, a model government plant founded in 1872 and managed by the Frenchman Brunat, did not serve as a successful model of filatures utilizing modern equipment. It was only after about 1900 that producers of superior silk, who used the most modern steam machinery, gained ascendancy.<sup>14</sup>

Nor was high quality Japanese silk superior to Shanghai filature silk,<sup>15</sup> which continued to command an equal or higher price on the New York market. Fukazawa, a Japanese expert who surveyed the conditions of the Chinese silk industry during the late 1890s, remarked on the excellent equipment and product of Shanghai filatures<sup>16</sup> Another Japanese who visited Shanghai in 1895 warned that Chinese silk might come to dominate the warp market, leaving only the weft market for Japan.<sup>17</sup> Around 1897 a Japanese, who was dubious about the criticism of American manufacturers about the deficiencies of Japanese silk in comparison with Italian, French, and Shanghai silk with regard to regularity, purity,

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<sup>12</sup> Silk Association of America, 16th Report (1882), 10; Mason, 636; C.H.C. Cansdale, *Cocoon Silk* (London, 1937), 205; British Foreign Office, "Reports on the Raw Silk Industry of Japan," *Diplomatic and Consular Reports*, Miscellaneous series no. 672 (Jan. 1909), 7; James Chittick, *Silk Manufacturing and Its Problems* (New York, 1913), 20, 25, 28; Ratan C. Rawley, *Economics of the Silk Industry* (London, 1919), 334; Duran, 100, 119-20; Charles J. Huber, *The Raw Silk Industry of Japan* (New York, 1929), 7; for complaints by American buyers at the third American-Japanese Silk Industry Conference in 1923, see Ishii, 50.

<sup>13</sup> Cansdale, 205.

<sup>14</sup> Ishii, 83; Kozo Yamamura, *A Study of Samurai Income and Entrepreneurship* (Cambridge, Mass., 1974), 179; Mataji Miyamoto, Yotaro Sakudo, and Yasukichi Yasuda, "Economic Development in Pre-Industrial Japan, 1859-1894," *Journal of Economic History*, XXV:4 (Dec. 1965), 557.

<sup>15</sup> Duran, 138.

<sup>16</sup> *Nongxue bao*, juan 77:4b.

<sup>17</sup> Ishii, 33.

and strength, visited the United States. He reported that the American criticism was valid and warned that Shanghai might become a formidable rival to Japan.<sup>18</sup>

Thus, before about 1900, Japanese success must be attributed less to qualitative superiority than to the already mentioned lower shipping costs to the fast-growing American market, lower production costs, and greater ability to expand quantity. Although the Japanese silk-reeling industry did not enjoy any technological advantage over European and Shanghai competitors, it undoubtedly faced lower production expenses. Partly because of inferior reeling equipment, the productivity of Japanese reelers was about half that of Italian workers in the late nineteenth century; while in 1898 a Shanghai reeler reportedly produced as much as 100 *momme* (13 ounces) per day, a Japanese reeler typically produced around 45 *momme* (6 ounces).<sup>19</sup> This lower productivity was offset (relative to France and Italy at least) by lower wages, so that production cost per given quantity of silk was already lower in Japan than elsewhere. After 1900, as superior silk producers continually expanded their market share in Japan, productivity in silk-reeling rose rapidly, so that by the 1920s it far exceeded China's: productivity in Nagano was higher than in Shanghai by 20 percent, and in Canton by 200 percent (see Table 7.2).

This differential in productivity was due not only to the adoption of superior machinery but also to superior Japanese labor recruitment and exploitative disciplinary methods. As in the cotton industry, many Japanese silk manufacturers recruited woman workers by advancing money to their parents. Most workers lived in dormitories provided by the filatures. The typical woman worker, however, stayed only about three years before marriage,<sup>20</sup> and to offset competition arising from this high turnover, employers not only recruited from outside their districts or even prefectures, but also formed employers' associations that enforced the rights of particular employers to particular employees: a worker could not change place of work until her new prospective employer paid a sum to her former employer.<sup>21</sup>

Even more invidious was a system of payment according to relative grades of productivity, which was invented in the 1870s and was particularly prevalent in filatures producing standard silk. Under this system,

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<sup>18</sup> *Nongxue bao*, *juan* 11:7a.

<sup>19</sup> Ishii, 244–5; note 23, 251.

<sup>20</sup> C. C. Ghosh, *The Silk Industry of Japan* (Delhi, 1933), 24.

<sup>21</sup> Ishii, 277–8.

TABLE 7.2  
 QUANTITY OF SILK REELED PER REEL PER DAY  
 IN CHINA AND JAPAN, C. 1927

	Actual ( <i>momme</i> )*	Index
Shanghai	100.0	83.3
Guangdong	40.0	33.3
Sichuan	60.0	54.1
Shandong	60.0	50.0
Hankou	90.0	75.0
China (mean)	71.0	59.1
Japan (Nagano)	119.8	100.0

SOURCE: Shima, 71.

NOTE: Figures for China are for 1926–27, and Japan for 1927.

\* 1 *momme* = 0.1325 ounces or 3.75 grams.

workers were paid once a year at rates determined by their productivity classification grades; the standards, however, were determined only at the end of the year according to the productivity of all workers during the year. The rates paid to the most productive workers were in turn used to attract potential workers. In this way, workers were forced to compete against each other in producing the largest amount of silk.<sup>22</sup> This was more suitable to production for quantity rather than for quality, but even filatures producing superior silk, which commonly employed an absolute piece-rate system, increasingly adopted this relative piece-rate system after about 1900.<sup>23</sup>

Thus, recruitment was less haphazard than in China, and either the absolute or the relative piece-rate system used by Japanese filatures was more cost-effective in the extracting of higher labor productivity than the daily wage system in force in both the Cantonese and Shanghai filatures. During the depression of the 1930s, Shanghai filatures, too, turned more and more to piece rates.<sup>24</sup>

<sup>22</sup> Ibid., 291–5.

<sup>23</sup> Ibid., 348–50.

<sup>24</sup> Shima, 79.

However, the quality and availability of cocoons was an even more decisive determinant of production cost. Not only did cocoons figure as the highest percentage of filature operating costs, but cocoon quality affected both the silk-cocoon output ratio and the efficiency of workers: despite the superior equipment, Shanghai filatures were hampered by poor cocoon quality, which necessitated an ever larger number of cocoons to produce a given quantity of silk and caused slowdowns whenever breakages occurred.

The single most important advantage enjoyed by Japanese reelers over both European and Chinese producers was low cocoon prices. In the earlier 1900s Italian silk competed on the American market with some success; thereafter it faded out of competition with Chinese and Japanese silk because of high cocoon cost.<sup>25</sup> By 1930, the cocoon cost to produce 1 picul of Chinese silk was 950 taels compared to 450 taels for Japanese silk. This cost differential was due to a combination of higher productivity and the lower cost of Japanese cocoons: while it took 4.8–6.5 piculs of cocoons to manufacture 1 picul of Chinese silk, it only took 2.8–4.0 piculs for Japanese silk; at the same time Chinese cocoons were over 30 percent more expensive.<sup>26</sup>

Unlike in China where atomized small-scale production prevailed in sericulture, in Japan there were many specialized cocoon farms enjoying the economies of scale.<sup>27</sup> But more important from the viewpoint of the silk manufacturer, the Japanese silk reeler enjoyed a bargaining advantage over the cocoon grower in the setting of prices. Initially, cocoon trade was dominated by middlemen who bought cocoons from the farmers and then sold them to the reelers. But cocoon markets soon developed, and the silk manufacturers, at least the bigger ones, resorted to direct purchase from the peasants. By 1923 direct transactions amounted to 47 percent of all cocoon sales, transactions at cocoon markets (which usually did not involve middlemen) 24 percent, and middlemen only 30 percent.<sup>28</sup> Manufacturers and cocoon brokers enjoyed the upper hand in their bargaining with the peasants, who were ignorant about price movements and had to sell their fresh cocoons in about ten days.<sup>29</sup> Unlike the Shanghai reelers, Japanese reelers were able to bypass the middlemen and thus buy cocoons cheaper. Japanese farmers on

<sup>25</sup> Silk Association of America, 32rd Report (1904), 44.

<sup>26</sup> Computed from Chen Zhen et al., comps., IV:1, 105.

<sup>27</sup> *Nongxue bao*, *juan* 30:5a; Ishii, 374.

<sup>28</sup> Ishii, 404.

<sup>29</sup> *Ibid.*, 400.



their part tried to improve their bargaining position by forming cocoon associations, of which, however, there were few before World War I. Moreover, silk manufacturers were able to counter with collective purchase arrangements and, if necessary, with a collective refusal to buy cocoons.<sup>30</sup>

As early as 1887, manufacturers of superior silk, who were as anxious about cocoon quality as about availability, began to distribute superior grades of silkworm eggs to farmers and contract them to produce cocoons.<sup>31</sup> Again, they possessed an indisputable advantage over the peasants, who in many cases had borrowed capital from them. Cocoon prices were set by the manufacturers according to the classification grades, determined by their own tests.<sup>32</sup>

The distribution of superior silkworm eggs to farmers was but one aspect of the involvement of manufacturers in improving sericultural techniques and the quality of cocoons. From about 1887 on, European and Chinese varieties were introduced into various parts of Japan in an effort to improve silkworm races. Crossbreeding was carried out by the research teams of various companies. Mototada Otaka, manager of the Tomioka Mill, had discovered in 1875 how to postpone hatching of hibernating varieties and thereby make summer-fall culture practicable. Thus, sericulture could now be carried out almost continuously, from the middle of April to the end of October, with only two short periods between crops. The introduction of the summer and fall silkworm crops increased the efficiency of the use of resources, as labor and equipment that had been seasonally idle when only one crop was raised were now fully employed. Otaka continued to promote the summer-fall rearing of silkworms in Nagano prefecture. Starting from a modest level of 11,000 tons in 1887, production of summer-fall cocoons increased annually, attaining 45,000 tons by 1907, or 35 percent of total cocoon production.<sup>33</sup>

In conjunction with private entrepreneurial efforts, the Japanese government played an important role in the technological progress in sericulture. Between 1897 and 1920 several laws to control and improve the quality of cocoons and silk were passed.<sup>34</sup> The opening of nine sericulture schools between 1892 and 1897, the establishment of reproductive egg production stations by many prefectures from 1910 to 1911, the

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<sup>30</sup> *Ibid.*, 402-4, 413-6; Ohara, 292-3.

<sup>31</sup> *Ibid.*, 422.

<sup>32</sup> *Ibid.*, 432-8.

<sup>33</sup> Ogura, 544-45; Hayami and Ruttan, 301; Huber, 12.

<sup>34</sup> Yoshimaro Tanaka, *Sericology* (Bombay, 1964), 86.

organization of silk inspection stations at Kobe and Yokohama in 1896 and of the Yokohama Conditioning House in 1896, the founding of sericultural colleges in Tokyo (1896), Kyoto (1899), and Ueda (1920)<sup>35</sup>—such government activities facilitated the development and the propagation of new scientific techniques in sericulture and enforced the quality of exports. A noteworthy innovation was the  $F_1$  hybrids, developed by the National Reproductive Silkworm Egg Production Station. These hybrid varieties had shorter rearing periods, higher survival rates, and higher silk yields than traditional varieties. During the Taisho era (1912–25) there was a shift by farmers to the  $F_1$  hybrids.<sup>36</sup>

However, these innovations based on the application of modern science really only bore fruit from the early twentieth century. Even as late as 1910, productivity in sericulture as measured by the number of cocoons produced by a given quantity of silkworm eggs in Japan was about half that in France and Italy, and it was not until the 1920s that productivity increased phenomenally and surpassed French and Italian levels.<sup>37</sup> Just as technological improvements in Japanese agriculture during the Meiji period depended on the diffusion of traditional techniques (*rōnō gijutsu*) by veteran farmers (*rōnō*) rather than on imported Western techniques,<sup>38</sup> so too in sericulture, before 1900 it was the propagation of traditional techniques by veteran farmers in Nagano, Gumma, and Fukushima that supplied the initial expansion in sericultural production.<sup>39</sup> Japan's ability in the late nineteenth century to meet the explosive American demand was thus based on its ability to expand mulberry acreage and the on diffusion of the best available traditional sericultural techniques. As seen in Table 7.3, cocoon production only increased faster than mulberry acreage after 1900. The rising ratio of cocoon production index to mulberry area index indicates a productivity jump, not only in cocoon raising but also in mulberry planting.

<sup>35</sup> Ogura, 548–9; Hayami and Ruttan, 302; Ohara, 22.

<sup>36</sup> Tadao Yokoyama, *Synthesized Science of Sericulture* (Bombay, 1962), 203; Ogura, 549–52.

<sup>37</sup> Shinohara, figure 5, 236. For 1909–1913, average yield of cocoons per kilogram of eggs was 940 kilograms in Japan, as compared to 1,517 in Italy; for 1924–1928, Japanese yield (1,914 kilograms) had surpassed Italian yield (1,769 kilograms). Bacon and Schloemer, 460.

<sup>38</sup> Yujiro Hayami and Saburo Yamada, "Technological Progress in Agriculture," in Klein and Ohkawa, eds., *Economic Growth: The Japanese Experience Since the Meiji Era* (Homewood, Ill., 1968), 145.

<sup>39</sup> Ogura, 547.

TABLE 7.3  
 INDICES OF MULBERRY AND COCOON PRODUCTION  
 IN JAPAN, 1881-1930

	Index (A)	Index (B)	B/A
1881-1890	100	100	1.00
1891-1900	176	172	.98
1901-1910	234	263	1.12
1911-1920	307	470	1.53
1921-1930	371	714	1.92

A = mulberry production.

B = cocoon production.

SOURCE: Compiled and computed from Hemmi, 317.

To sum up, from the viewpoint of the raw silk producer, Japan enjoyed a number of advantages over her competitors. Her sericulture sector was supply elastic. In France, relatively high labor cost prevented a full recovery of the sector, while in Italy, the weaving industry absorbed much of the sericultural capacity. In China, while expansion of mulberry acreage and cocoon production did take place, it was hampered by political fragmentation, which limited the mobility of inputs and diffusion of technology. Thus, by 1900, while silk-reeling technology in Shanghai remained comparatively advanced, the level of technology in sericulture, as several Japanese observers scornfully pointed out, was no higher than it had been in Japan at the beginning of the Meiji period.<sup>40</sup> Moreover, through the practice of cocoon production contracting, the collusion of manufacturers' unions, and other means, silk producers were able to impose their terms on cocoon growers. In Jiangnan (though not in Guangdong), Chinese manufacturers were subjected to a cost squeeze from the cocoon brokers. In both regions, Chinese reelers were plagued by the problem of silkworm disease. In contrast, Japanese reelers enjoyed a cheap, abundant, and higher quality supply of cocoons. Time was saved for them as refuse, double, colored, and pierced cocoons were eliminated and the floss removed before cocoons were sold.<sup>41</sup>

<sup>40</sup> For example, the reactions of a Mitsui representative who visited Jiangnan around 1897 and was favorably impressed with the Shanghai filatures. *Nongxue bao*, juan 12:7a.

<sup>41</sup> R. E. Buchanan, "A Comparative Study of Cocoons," *China Journal*, VIII:5 (May 1928), 234.

### **Government Aid, the Rise of Shipping and Direct Export, and Market Structure**

Moreover, the Japanese producers were able to enjoy an advantage over Chinese competitors in the distribution end as well. Initially, Japanese reelers were also dominated and exploited by the Western merchant houses because of their ignorance of overseas conditions. A group of wholesale merchants (*urikomitonya*) generally acted as intermediaries between Japanese silk producers and the Western firms. The wholesaler dominated the silk reelers through advances of capital. Cash was advanced with the silk as collateral, and repaid upon payment by the Western firm. From 1888 on some of the more powerful wholesalers turned to cash advance without collateral to reelers for cocoon purchases.<sup>42</sup> The interests of the wholesalers and the reelers vis-à-vis the foreign houses coincided, however, since the former received a 1.5 percent commission. A favorite tactic of the Western merchant house to squeeze the Japanese wholesaler worked as follows. The Western firm purchased a small quantity of silk initially and announced that it was prepared to buy much more. The Japanese wholesaler was thereby lured into committing his resources to purchasing large quantities of raw silk. After the Japanese wholesaler had used up his own capital and borrowed more and tried to sell his consignment to the Western firm, the latter would announce that conditions had changed and prices had declined. The Japanese wholesaler had little choice but to accept the reduced price at a loss to himself.<sup>43</sup>

The Japanese effort to regain control of the export sector began no later than 1870, when Hayami Kenso, manager of a wholesale firm, discovered that wide margins existed between prices of raw silk in Japan and on the overseas markets. Thereupon he and his protégés initiated a direct export movement. Between 1876 and 1880 some Japanese silk reelers attempted to sell their silk directly to American markets. They found it unprofitable, however, because they lacked financial and shipping facilities and the foreigners had extraterritorial rights.<sup>44</sup> In September 1881, 27 Yokohama silk wholesalers formed the United Raw Silk Acceptance Center (*rengō kiito niazukarisho*) in an attempt to enforce collective bargaining between themselves and the foreign houses. The Western establishments were asked to purchase the silk directly from the association. The Western firms countered by forming a nonpurchasing

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<sup>42</sup> Ishii, 163-4.

<sup>43</sup> Yamamura, 168.

<sup>44</sup> Ohara, 236-7.

alliance. Despite a low-interest loan of ¥1,000,000 from the government, the association collapsed because accumulating stocks forced some wholesalers to dump their goods on foreign merchants.<sup>45</sup>

The Movement for Recovering Commercial Rights (*shōken kaifuku undō*) did not gain momentum until the necessary supportive infrastructure, particularly in transportation and finance, had been established, partly through government support. The wholesale system was given financial assistance by the Bank of Japan and the Yokohama Specie Bank, especially during the 1890s.<sup>46</sup> With the rise of the Japanese shipbuilding industry, facilitated by government aid in the form of subsidies, low-cost loans, and preferential orders,<sup>47</sup> and with aggressive invasion of the American market by the stationing of reliable agents there to study conditions first-hand,<sup>48</sup> the Japanese were finally able to gain considerable control over the export sector.

In 1898 the Raw Silk Direct Export Law was enacted and export duties on silk removed.<sup>49</sup> By the 1900s Japanese exporters were beginning to cut into the market of the Western houses. In 1904-05, the Japanese cornered 47 percent of their raw silk exports, in 1913-14, 65 percent, and in 1925-26, 87 percent (see Table 7.4). Interestingly, while the Japanese exporters dominated the American market, they controlled only a small fraction of the European market. Already in 1899-1900, while the Japanese firms accounted for a mere 4 percent of Japanese raw silk exports to Europe, they cornered 45 percent of silk shipments to America. In 1924, while the Japanese completely dominated exports to the United States, with 86 percent of the silk trade, they were responsible for only 30 percent of the European trade. On the other hand, exports to the United States constituted 96 percent of total Japanese raw silk exports.<sup>50</sup> This is undoubtedly related to the fact that while American shipping in Far Eastern waters declined rapidly from the last quarter of the nineteenth century, British shipping continued its dominance.<sup>51</sup> It

<sup>45</sup> Ohara, 235-8.

<sup>46</sup> Ishii, 177-8.

<sup>47</sup> Tuvia Blumenthal, "The Japanese Shipbuilding Industry," Patrick, ed., *Japanese Industrialization and its Social Consequences* (Berkeley, 1976), 136.

<sup>48</sup> Denzo Kume, "Will America Make Good in Japan's Raw Silk Trade?" *Silk*, VII:3 (March 1914), 22.

<sup>49</sup> Ohara, 22.

<sup>50</sup> Calculated from figures in Silk Association of America, 28th Report (1900), 80, and in Raw Silk Association of Japan, *Outlines of the Raw Silk Industry in Japan* (New York, 1926), 39.

<sup>51</sup> The major factors in the decline of American shipping from about 1855 to 1914 were continued superiority of British technology in steam and iron and hence in the building of iron ships, continued higher costs of shipbuilding in American as compared to British yards

was easier for Japanese shipping to make inroads in the U.S.-East Asia route than in the Europe-East Asia route. Moreover, because the United States lacked a sericultural tradition, the American silk interests had expertise in manufacturing aspects only and not in judging the quality of raw silk; hence they generally relied on French or Swiss agents while buying raw silk in East Asia.<sup>52</sup> It was easier for the Japanese to displace these foreign agents than to displace agents of the European weaving interests, who tended to be fellow nationals.

TABLE 7.4

## EXPORT FIRMS AND MARKET SHARES IN THE JAPANESE RAW SILK TRADE

	Number of Japanese Firms	Number of Foreign Firms	Percent of Japanese Firms in Total Trade
1901-1902	4	16	42
1904-1905	4	18	47
1913-1914	4	16	65
1919-1920	18	15	80
1925-1926	10	12	87

SOURCE: Matsui, 74.

The rise of Japanese shipping and direct export was facilitated by the disruption of Western shipping during World War I. In 1918 Mitsui alone accounted for 25 percent of all silk exports from Japan. At the same time, Japanese firms were also establishing a firm foothold in the Canton and Shanghai export market. At Canton, Mitsui had become the second largest exporter of silk to the United States, behind only Reiss and Company; its subsidiary shipping company occupied a dominant position in the Canton-U.S. route.<sup>53</sup> In 1918 Mitsui accounted for about 5 percent of total Chinese raw silk exports, and ranked third among

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because of higher labor costs and higher taxes on capital goods, and the refusal of the American government to grant subsidies to the shipbuilding industry (James Morris, *Our Maritime Heritage* [Washington, 1979], 115-8). Consequently, American ships accounted for a very small portion of the Asian market before World War I; in 1904, while the share of American shipping was 1.5 percent of total tonnage in China, British share was 51.5 percent ("Industrial China," *U.S. Consular and Trade Reports*, no. 278 [July 1905], 40).

<sup>52</sup> Denzo Kume, 22.

<sup>53</sup> Tōa dōbunkai, comp., *Shina shōbetsu zenshi*, I, 35-6.

Shanghai exporters, behind only Jardine, Matheson and E. Huber and Company.<sup>54</sup>

Japanese progress in the shipping and export sectors was accompanied by advances in the legal sphere. In 1896 tariff autonomy was regained by treaty, and in 1911 the unequal treaties were fully abrogated.

In terms of market structure, the Japanese silk-reeling industry was competitive in comparison with the monopolistic cotton industry. A host of small companies existed alongside a few relatively large firms such as Katakura Filature concern, which was the biggest one in Japan and grew to control more than 20,000 basins by the late 1920s.<sup>55</sup> The superior silk production sector was monopolistic by the third decade of the twentieth century: in 1926, the top three producers accounted for 21.3 percent of exports from Yokohama and Kobe.<sup>56</sup> But even a smaller producer, through government subsidies in times of crises, could act as a monopoly and wield considerable clout on the world market; in 1920, for example, a syndicate was formed with government loans when the silk trade went into a slump.<sup>57</sup>

Government export subsidies helped to cushion the shock for the Japanese silk industry during the slump of the 1930s. Japanese manufacturers were able to sell below cost and maintain or even expand their overseas markets. While Chinese silk exports declined 50 percent between 1930 and 1935, Japanese exports only fell 15 percent.<sup>58</sup> While the Chinese share of the American market declined from 14 percent in 1930 to 2 percent in 1934, the Japanese share increased to 97 percent in the latter year. Even in the French market, where Chinese silk had been dominant, the Japanese were able to cut into the Chinese share, which fell from 50 percent in 1930 to 37 percent in 1935; Japan expanded silk exports to France seven times over the same period and grabbed 57 percent of the market. Thus, the reduction in Chinese exports was much greater than the fall in demand, thanks to Japanese dumping on overseas markets, facilitated by government support.<sup>59</sup>

Unlike the Chinese, the Japanese were able to exercise considerable market power and to internalize profits accruing from domestic and

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<sup>54</sup> Export percentages for 1918 were calculated from figures in Silk Association of America, 47th Report, 112-4.

<sup>55</sup> C. C. Ghosh, *The Silk Industry of Japan* (Delhi, 1933), 23.

<sup>56</sup> Ishii, 458.

<sup>57</sup> K. Sugawa, "Silk Syndicate Millions to Help Industry," *Trans-Pacific*, VII:5 (Nov. 1922), 77-80.

<sup>58</sup> Computed from Chen Zhengxiang, 5.

<sup>59</sup> Shima, 74.

overseas price differentials and shipping and insurance charges. Hence, the industry must have had a proportionately bigger impact on the domestic economy. At the same time, it is important to note that the Japanese silk industry was not a leading sector that singlehandedly transmitted changes to other sectors and transformed the entire economy. Rather, it played the important role of earning foreign exchange within a favorable social and political framework and international context. Not only did the Japanese government enforce policies that encouraged technological growth in the silk industry, but, more generally, it provided a supportive infrastructure for economic development.



## Conclusions: The Significance of Silk in Modern Chinese Economic History

In contrast to the Japanese silk industry, the Chinese was hampered not only by lack of leadership from government in the reform of sericulture, but also by the imposition of likin and export duties, by the failure to develop financial institutions and transport systems, and by the prohibition of the development of Chinese shipping. The few direct ventures in silk reeling by the Qing government were abortive. As governor of Zhejiang between 1877 and 1879, Mei Qizhao developed a strong interest in Western technology and purchased some silk-reeling machinery from abroad in hopes of establishing a filature; before his plans could come to fruition, however, he was transferred from his post. Subsequently, the machinery was sold to some Shanghai filaturists.<sup>1</sup> In 1887 Li Hongzhang, impressed with the progress of filatures at Shanghai, became interested in establishing a modern filature of the “official-supervision merchant-management” type, but he apparently failed to find willing merchant participants.<sup>2</sup> During his tenure as governor-general of Guangdong-Guangxi, Zhang Zhidong intended to but never did establish a filature at Canton; after his transfer to the post of governor-general of Hubei-Hunan, he founded the Hubei Filature at Wuchang in 1894 with the participation of the Shanghai silk manufacturer Huang Zuoqing, who also had a silk firm at Hankou. However, this filature was much smaller than its Shanghai prototypes and produced silk far inferior in quality. In 1897 Huang, unhappy that his suggestions were ignored and that the filature was losing money, withdrew from the enterprise.<sup>3</sup> Upon the outbreak of the 1911 Revolution, the filature was permanently closed down.<sup>4</sup>

On the one hand, government participation in economic enterprises tended to be limited by the inertia of the bureaucratic system and by the

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<sup>1</sup> GYS, I, 973.

<sup>2</sup> GYS, I, 72–3.

<sup>3</sup> *Ibid.*, 951–6.

<sup>4</sup> Chen Zhen et al., comps., IV:1, 109.

officials' lack of expertise in technical and managerial matters. On the other hand, bureaucratic involvement tended to be particularistic: those entrepreneurs with connections to the right officials gained access to monopolistic privileges (as in the case of the Wuxi Xue family) while others were shut off or discouraged because of actual or potential state interference and exploitation.

One must not forget, however, that the Chinese government's options were limited by imperialist aggression: indemnities due the foreign powers helped drain the Qing dynasty of its financial resources and forced it to turn to such taxes as the *likin*. By the time the Nationalist government successfully negotiated the return of tariff autonomy and initiated a program of economic modernization, its plans were fatally aborted by Japanese aggression. Without denying the energetic reform efforts of the Japanese government, it may be observed that it operated under a much lower intensity of foreign pressure: the Westerners in the second half of the nineteenth century looked to China rather than to Japan as the market with rich potentialities.<sup>5</sup> The misgivings of the Westerners about the viability of Japan as a market,<sup>6</sup> the Japanese government's prohibition of mining and railway construction by foreigners in 1872, which went unchallenged by the Westerners, and the fact that Japan contracted very few foreign loans prior to the Sino-Japanese War, permitted Japan to escape from foreign domination.<sup>7</sup>

Moreover, Chinese government branches under foreign management were not necessarily more effective agents of constructive reform. The Maritime Customs, for example, was set up to facilitate and provide order in the China trade and to efficiently collect customs revenues that were hypothecated for foreign loans; the development of China's export potential was not one of its major objectives.<sup>8</sup> It is therefore hardly surprising that, although several customs officials and commissioners suggested government assistance to the silk industry, the Maritime Customs never even bothered to establish a silk inspection station, which might have controlled the quality of silk exports and thus improved the competitive position of Chinese silk in the world market.

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<sup>5</sup> Allen and Donnithorne, 186; Albert Feuerwerker, *China's Early Industrialization* (New York, 1970), 56.

<sup>6</sup> Allen and Donnithorne, 225.

<sup>7</sup> Saburo Okita and Takeo Miki, "Treatment of Foreign Capital—A Case Study for Japan," ch. 3 of John H. Adler, ed., *Capital Movements and Economic Development* (New York, 1967).

<sup>8</sup> The Maritime Customs is probably the only case of a foreign trade department of a sovereign country that published import statistics before export statistics.

Capital for the Shanghai silk-reeling industry came almost entirely from Chinese sources, and even the few foreign firms depended in large part on Chinese capital. To be sure, some capital (of both Chinese and Western origins) was rechannelled by the foreign banks through chop loans to the traditional Chinese banks to finance foreign trade (including the silk export trade), and in turn the Chinese banks supplied the filature operators with working capital. Nonetheless, it is safe to conclude that the presence of Western capital did not confer any real advantages on the Shanghai silk-reeling industry over its Cantonese competitor.

The Cantonese silk-reeling industry demonstrates that, given the proper stimulus, Chinese could start modern enterprises on their own, by adapting Western machinery to their own use, and that Chinese-generated capital might be a more stable and reliable source of investment funds. The availability of a female labor force and overseas mercantile remissions, the control of traditional banking by natives from the silk districts, and the lower requirements of working capital owing to favorable climatic conditions might well help to explain the larger scale of production, earlier and faster development, and greater stability of Cantonese filatures.

Given the history of violent antiforeign outbursts in Canton, it is understandable that the Westerners refrained from direct investment in that region. But why did the Westerners, apart from a few pioneers, stay out of silk reeling at Shanghai? Was it because, as Rhoads Murphey and others have argued, Chinese merchants were able to retain economic control in the hinterlands and to some extent even in the treaty ports, with the result that the material impact of the Westerners on China was limited by their inability to penetrate the indigenous economy?<sup>9</sup> With respect to the silk industry, Shannon Brown has shown that the Ewo Filature's attempt in the 1860s to secure a reliable supply of good-quality cocoons was thwarted by the opposition of traditional silk merchants (with the cooperation of Chinese authorities) who felt that their interests had been threatened.<sup>10</sup>

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<sup>9</sup> See Murphey, "The Treaty Ports and China's Modernization," in Elvin and Skinner, eds., *The Chinese City Between Two Worlds*, 17-71; a fuller and richly documented exposition of Murphey's thesis in a comparative context is his *The Outsiders: The Westerners' Experience in India and China* (Ann Arbor, 1977). For views similar to Murphey's, see among others, Thomas G. Rawski, "Chinese Dominance of Treaty Ports and Its Implications," *Explorations in Economic History*, VII:4 (June 1970), 451-73, and Shannon R. Brown, "The Partially Opened Door: Limitations on Economic Change in China in the 1860s," *Modern Asian Studies*, XII:2 (1978), 177-92.

<sup>10</sup> Brown, "The Ewo Filature," 561-2.

There are two alternative (and not mutually exclusive) explanations for this “helplessness” of the Westerners in their attempt to penetrate the Chinese economy. One could argue that the Westerners were defeated not so much by the opposition or conspiracy of entrenched Chinese economic interests<sup>11</sup> as by their misjudging or premature exploitation of commercial possibilities (partly a product of their own ignorance of language and local conditions). Many Westerners in the nineteenth century harbored unrealistically sanguine expectations about the China market. The experience of Standard Oil of New York around 1900 proves that, given the availability of agents trained in the Chinese language and in American methods of sales promotion, it was possible for a foreign firm to penetrate deep into the interior and to create a market for a new product (in this case, kerosene).<sup>12</sup> The Ewo Filature’s attempt to develop fully its own cocoon purchasing and processing facilities was cut short by Major’s untimely death in 1869,<sup>13</sup> but in any case overseas demand for Chinese silk was not yet strong enough to exert any pressure on Chinese production to induce technological and organizational changes. As this overseas market did become significant by the 1880s, the silk merchants were among the first to participate in the modernized silk-reeling sector (either as investors or as managers), and subsequently, cocoon markets did spring up to serve the needs of the newly established filatures. Entrenched economic interests were not immutable and in fact responded positively to the changing requirements of outside market forces when these became strong enough.

Another explanation of the apparent “helplessness” of Westerners may lie in the “Rashomon effect,” postulated by M. D. Morris to explain why various Indian groups and foreigners each reacted differently to the economic environment of nineteenth-century India and participated in different types of economic activities. Because of imperfect knowledge and capital markets, there was no single set of expected costs and profits all groups could respond to. Different groups, indigenous and foreign, had different perceptions of costs and expected gains, and might also respond to different profit maximization rates. Even more important, their costs might actually differ because of differences in access to capi-

<sup>11</sup> For a fascinating study of the Swatow Opium Guild Case in 1879, in which two Western merchants sued the guild for allegedly excluding Westerners from opium distribution in Zhenjiang, see Gary G. Hamilton, “Nineteenth Century Chinese Merchant Associations: Conspiracy or Combination?” *Ch’ing-shih wen-t’i*, III:8 (Dec. 1977), 50–71.

<sup>12</sup> Albert Feuerwerker, *The Foreign Establishment in China in the Early Twentieth Century* (Ann Arbor, 1976), 84.

<sup>13</sup> Brown, “The Ewo Filature,” 563.

tal, market information, and business connections. Thus, different groups had comparative advantages in different areas of economic endeavor, and it is hardly surprising that indigenous personnel dominated internal trade, while Westerners controlled foreign trade.<sup>14</sup>

The ascendancy of the Chinese in certain sectors such as domestic trade, therefore, and the inability of the Westerners to break into those areas was a function of the superior accessibility of the Chinese to local market information and business ties. Moreover, it was often to the Westerners' advantage to leave these activities in Chinese hands. The symbiotic working relationship between Chinese and Western factors (such as that between traditional and foreign banks, or that between Chinese filatures and Western export firms) was an indication as much of the resilience and adaptability of Chinese institutions as of the foreigners' preference to deal with and work through preexisting indigenous economic organizations and facilities, a far less costly option than creating their own infrastructure.

Westerners did not invest directly in silk reeling because they did not enjoy any not easily transferable advantages in such enterprises over the Chinese: in contrast to cotton mills, filatures required relatively little capital to construct and operate, and their technology was relatively simple. Extraction of raw materials and production of semimanufactured goods therefore took the path of least resistance; as long as indigenous personnel could adequately carry on the collection and processing of primary materials, foreigners would be content with the control of the foreign trade sector. By staying out of the production phase they would bypass problems of labor recruitment and securing of raw materials. Moreover, profits were highest in the foreign trade and finance sectors, where the Westerners did enjoy an insurmountable advantage. Thus, the foreign trade companies jealously protected their advantages at the distribution end.

These advantages were as much political as economic. The key to the supremacy of the foreign firms was their inspection rights supported by the extraterritorial system. In 1908 a Chinese censor, Wang Lukang, suggested to the Ministry of Agriculture, Industry, and Commerce that a silk inspection station be set up at Shanghai to control the quality of exports and reverse the qualitative decline. His proposal was vigorously opposed by the Chinese silk merchants at Shanghai: they argued that there was no adulteration of silk along the route to Shanghai and that the

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<sup>14</sup> Morris D. Morris, "South Asian Entrepreneurship and the Rashomon Effect," *Explorations in Economic History*, XVI (1979), 341-61.

inspection system would impose on them additional costs in repackaging and for damages incurred during the examination and also cause them to lose time and perhaps miss marketing opportunities. Undoubtedly the merchants were motivated by a desire to escape government regulation. Yet another part of their argument was irrefutable: the inspection system carried out under Chinese auspices would not be acceptable to the Western merchants.<sup>15</sup>

To be sure, the interests of the silk-weaving industry in the United States were hardly identical with those of the silk export firms in China (which were not directly involved in any production process). The profit margins of the latter depended on the differential between the price they received in New York (over which they had little control) and the price they paid Chinese filaturists (to whom they could dictate terms). Allegations of qualitative defects were among their chief bargaining tactics, and the frequent discrepancy between quality and price received must have discouraged the Chinese filaturists from undertaking improvements. The Silk Association of America, on the other hand, was anxious both to expand the quantity and to improve the quality of Chinese silk, and sponsored several institutions in China to push for that goal.

In 1921 the Shanghai International Testing House was founded by the International Committee for the Improvement of Sericulture. The Testing House was supported by many Chinese reelers, who hoped that the dependence on foreign inspectors with their penchant for fault-finding would be eliminated. The exporters, on the other hand, opposed the establishment of the Testing House because it might threaten their price-bargaining advantage.<sup>16</sup> By 1923 many Chinese filaturists in Shanghai had their silk tested systematically at the Testing House, for their own information and for quality control, with a resultant improvement in quality.<sup>17</sup> Such testings, however, were largely ignored by the foreign export firms, which insisted that their own tests were to decide matters and thereby preserved their bargaining advantage vis-à-vis the Chinese silk producers.<sup>18</sup> The opening in 1929 of the Shanghai Bureau of Inspection and Testing of Commercial Commodities as a department of the Chinese Ministry of Industry, Commerce, and Labor finally filled the

<sup>15</sup> The memorial from the ministry on this proposal is reprinted in DFZZ, VI:4 (March 1909), 8–10.

<sup>16</sup> D.E. Douty, "The International Testing House at Shanghai," *Silk*, XV:3 (March 1922), 40; Leo Duran, "The Silk Situation," *Silk*, XV:8 (August 1922), 43.

<sup>17</sup> *Trans-Pacific*, X:24 (April 19, 1924), 18.

<sup>18</sup> Paul K. Whang, "Testing Bureaus and the Silk Industry," *China Weekly Review*, XLIX:4 (June 22, 1929), 160.

need of a governmental organ for quality control of export items. In April the Silk Department of the Bureau was organized; in October it took over the functions of silk inspection from the International Testing House.<sup>19</sup> Yet many Chinese remained skeptical about the export firms accepting the Silk Department's ruling if they were contrary to their interests.<sup>20</sup>

To be sure, price cutting by foreign buyers was not the only problem faced by filaturists in both regions. They also faced a cost squeeze from the production end because of the deteriorating quality and rising cost of cocoons. As sericulture spread throughout the Jiangnan and Canton regions in response to rising silk exports, so too did the incidence of silkworm disease as breeding practices deteriorated. The spread of silkworm disease not only limited the expansion of cocoon production and kept up the price of cocoons, but also increased the number of dried cocoons needed to produce a given quantity of raw silk because of increased breakage and wastage.

For Shanghai filaturists, the quantity of cocoons was further restricted and prices kept high by the monopolistic control over the distribution of cocoons by licensed cocoon guilds in Jiangsu and Zhejiang. If the Shanghai industry suffered from the additional costs from the *likin* on cocoons collected by these guilds, the Canton industry suffered from the *likin* on silk as it was transported from the hinterlands to Canton for export.

Since the Chinese manufacturers faced both a cost squeeze at the production end and a price squeeze at the distribution end, what induced the continual influx of new firms into the industry? Before the onset of the Depression and increasing competition, a fair profit could still be made in silk reeling, where foreign demand outstripped domestic supply, except in some bad years. In 1922, for instance, all but 3 of 67 Shanghai filatures were making profits, with the rate of return ranging between about 2 percent and 15 percent.<sup>21</sup> In Guangdong around 1923, filatures could still make a profit of 6–13 percent above costs.<sup>22</sup> The years 1925 and 1926 were the last good years with regard to returns from silk reeling.<sup>23</sup> After about 1925, profit margins started to decline, and already in 1927 producers of second- and third-grade silk in Shanghai

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<sup>19</sup> Lieu (1940), 148.

<sup>20</sup> Paul K. Whang, "Testing Bureaus and the Silk Industry," 160.

<sup>21</sup> Based on the very rough figures on profits and outlays in *Chinese Economic Bulletin*, no. 123 (June 30, 1923), 3–6.

<sup>22</sup> Calculated from figures in Howard and Buswell, 139–40.

<sup>23</sup> Lieu (1933), 114.

faced prices below production cost.<sup>24</sup>

Our study of the Chinese silk industry demonstrates the fallacies of the revisionist paradigm in its overestimation of the positive contributions of the Westerners and in its underestimation of the importance of foreign trade to the Chinese economy. Western capital and the foreign-run Maritime Customs played a minimal role in the development of silk reeling. Moreover, it is too simplistic to think of foreign firms as necessarily agents of technical innovation, which need not always be equated with the maximal exploitation of market opportunities. Self-interest could call for the foreign institution playing a role in the introduction of modernizing reforms, as in the case of the Silk Association of America. But, on the other hand, considerations for the maximization of profits led Western export companies to resist the introduction of a third-party inspection system that might have enforced the quality of silk exports but would have deprived these firms of an advantageous price-fixing weapon. Lillian Li has asserted that more direct foreign investment would have induced greater stability in the silk industry;<sup>25</sup> in reality, the Western export firms promoted speculation in the business by their price manipulations, which provided disincentives for the Chinese producers for qualitative improvements. Li's rejection of imperialism as an important factor in the Chinese silk industry is contradicted by our findings. Despite the absence of direct foreign investment, the silk industry strongly exhibited all the consequences of economic imperialism. The Western exporters were able to obtain raw silk at prices lower than free market ones because of their extraterritorial status and support by their home governments; much wealth was drained from the Chinese economy not only by the exporters but also by the foreign banks and the shipping and insurance companies. Finally, emphasis on macroeconomic statistics by the revisionists obscures the fact that large areas of Jiangnan and Guangdong had been transformed into monocultural economies subject to the vagaries of the world market; peasants had become almost wholly or largely dependent on their sericultural income for the import of foodstuffs and other necessities, for the financing of rice growing, for rental and interest payments, and for ceremonial and luxury expenditures.

At the same time, the neo-Marxist paradigm has overemphasized the immiseration of peasants. For a period, export growth did promote economic welfare. Peasants were not blind victims of external circumstances; they responded actively and rationally to new economic op-

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<sup>24</sup> "Shanghai Silk Filatures" (1928), 60.

<sup>25</sup> Lillian Li, 205.



portunities by shifting from rice planting to sericulture and from silk reeling to cocoon production. Under favorable market conditions, all phases of the silk industry were highly profitable. Whenever overseas demand was down, the expedient of shifting back from cocoon production to silk reeling permitted the peasants to adjust to external fluctuations. All the same, by making their supply of raw silk insecure and costly, silk export expansion did have a disastrous effect on traditional silk weavers; their plight was further aggravated by official oppression, decreased demand, and competition from the modern silk-weaving industry.

What our study of the silk industry reveals, therefore, is a social reality that is more complex than is allowed for by the simpler versions of the revisionist and neo-Marxist paradigms. Rather than assigning praise and blame to foreign and domestic factors, one must consider them as mutually interacting forces leading to ambivalent consequences: some groups were conferred benefits while others were injured; differential effects were produced on the same group or on one region over time as well. The economic growth that ensued from the expansion of silk exports was delimited and circumscribed because of China's internal structure and external connections and their interactions. Contrary to the formulations of the revisionist and the neo-Marxist paradigms, imperialism was neither a purely progressive nor a purely destructive force. Rather, imperialism (especially in its Anglo-American guise) sought to achieve its ends through the most economical means. In practice this led to using indigenous personnel and institutions as much as possible. The more sophisticated and highly developed the native economic, social, and political systems, the less the Westerners would resort to disturbing and displacing them. At the same time, however, the presence of the Western imperialists did in the long run undermine the indigenous social and political structures that they found accommodation with in the short run; domestic factors that thrived on the foreign connections were also simultaneously exploited by them.

As indicated earlier, links were developed between the treaty ports and the hinterlands. Rather than being shut off from the interior, the Westerners were able to extract resources from there through the compradors, the foreign and traditional Chinese banks, and the silk and cocoon brokerages. Whenever possible the Western factors preferred to appropriate and adapt existing Chinese institutions and arrangements for their own advantage. The situation in the political sphere is analogous: Western imperialists generally favored working through existing indigenous political structures and institutions and superimposing a super-

visory agency, rather than restructuring the whole political system. In China, this meant Western support of conservative rather than revolutionary regimes—the Qing rather than the Taiping, the Beiyang warlords rather than Sun Yat-sen's Canton government, the Nationalists rather than the Communists.

In the social system, silk export expansion indirectly strengthened the traditional landlord order, since land concentration was promoted by the rise in mulberry land value. This was especially true of the Canton Delta, where the gentry and the lineages directly invested in the building of filatures and markets dealing in the rural products of different stages of silk production. Such a development partly accounted for the course and outcome of the Communist peasant movement in Guangdong province during the 1920s. Hofheinz has argued against Marxist interpretations of the Chinese peasant movement, which claimed that support for the agrarian radicals of the Peasant Institute came primarily from distress caused by the commercialization of agriculture and the concomitant rise in land prices, in tenancy rates, and in indebtedness. He points out that it was precisely in the areas where agriculture was most commercialized and tenancy rates highest—the Canton Delta—that the Guangdong peasant movement during the 1920s had the least success. He argues instead that political organization, the nature of the land-man relationship, and ecological factors were more important determinants of revolution than economics.<sup>26</sup>

However, as our study suggests, there were economic reasons for the failure of rural revolution in the Canton Delta. Economic prosperity from silk export growth actually strengthened the hold of the gentry lineage leaders over a village. Profits derived from the silk industry, through rent from the filatures and the markets and through interest collections, enabled the lineages to purchase more land and thereby contributed to rising tenancy rates. At the same time, however, these profits also permitted a lineage to bail out its indigent members by giving them relief or employment and to maintain the ancestral temple, the focus of lineage loyalty; cocoon likin receipts financed the gentry-dominated militia, which preserved local order and kept out labor agitators. Most important, if the commercialization of sericulture increased tenancy rates, this increase was more than mitigated by income-earning opportunities in all phases of sericulture and the silk industry. This is not to deny the existence of rampant banditry in the Canton Delta; in fact, silk from the countryside had to be transported in armed vessels. However, the tenant

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<sup>26</sup> Roy Hofheinz, Jr., *The Broken Wave* (Cambridge, Mass., 1977).

elements who were targeted by the agrarian radicals were on the whole benefitting from silk export expansion. Although Shunde county had one of the highest tenancy rates and one of the worst man-land ratios in the province, and prices there were higher even than in Canton, growing income from the silk industry enabled its population to enjoy the highest standards of living in Guangdong. With a significant proportion of the villagers in the Canton Delta participating in one phase or another of the silk industry and sharing in its prosperity, commercialization strengthened rather than weakened the solidarity of the village and the fabric of rural society.

In the long run this export dependency exposed the peasantry to economic ruination. Nevertheless, just as political organization by itself could not create revolution out of a vacuum, social distress did not suffice to break the strong hold of the landlord order; in South China, revolution did not materialize until the Communist victory in 1949.

The degree of accomodation that the Western factors made with the traditional Chinese economy might also be seen in the structural similarities and parallels between the treaty port economy and the rural hinterlands. Despite the superficial resemblance to a competitive market structure suggested by the multiplicity of foreign export firms and cocoon brokerages, each of which accounted for only a small share of the market, in reality monopsonistic competition prevailed, with each buyer exercising monopsonistic power over a portion of the market. This situation was due to a number of factors. First, given the underdeveloped capital market, the credit system was based on personalized and interlocking transactions: the debtor or seller had to be personally known to the buyer or creditor, or a third-party guarantee had to be given; a loan was often given only with the debtor's future crop or merchandise as lien, and the creditor was often the debtor's marketer as well. Economic relations were particularistic: just as a silk weaver might be bound to a particular silk merchant or accounting house, or a cocoon or mulberry grower to a particular broker, so too a filaturist might be bound to a particular export firm. Thus, the seller in the silk export market was frequently the comprador to the export firm, which would be reluctant to do business with a seller with whom it had no other relationships. The buyer-creditor limited his market to ensure the dependability of the seller-producer, and was thus able to reduce his risks considerably.

Given the fact that the comprador after about 1900 was usually a lowly employee without considerable wealth, it would be difficult for him to bargain with his employer about the terms of trade. In the rural market the peasant who placed his mulberry, cocoon, or other cash crop

as lien usually had to contract a loan with the merchant-usurer when his credit was tight because of the seasonality of agricultural production. The monopsonistic power of the foreign firms and the Chinese brokers was also enhanced by the asymmetry of access to other markets and information. Just as the Chinese filaturists were ignorant of overseas market conditions and demand, so too the Chinese peasants were uninformed about conditions in the treaty ports. This made it possible for the export firms and the Chinese brokers to use psychological tactics in conjunction with price bargaining, such as pleading a downswing in the market or downgrading the merchandise offered for sale. If what the peasant offered for sale was perishable, like cocoons, his bargaining power was further reduced: he could ill afford to shop around for other buyers.

Finally, the dominance of the buyers was bolstered and reinforced by political and legal compulsion: the foreign factors were protected under the umbrella of extraterritoriality and insulated from any possible suits brought against them; the cocoon brokers, given their connections to the locally powerful and to the gentry, and sometimes to the foreign firms, could rely on state and police power.

Paradoxically, a state of symbiotic antagonism existed between the seller-debtor and the buyer-creditor; usurious or onerous as the conditions of trade and loan might be, the seller might be getting the best deal available to him: a stranger would insist on more unfavorable terms since risks were correspondingly higher. The filaturist who turned to an export firm other than the one that employed him or his middleman as comprador or the peasant who tried to borrow from or sell to a broker or merchant unacquainted with him would end up getting a worse offer.

This economic system gave rise to a segmentation of the market preventing horizontal integration, and the disintegration of the phases of production and merchandising. Driven by the profit motive and the desire to reduce risks, the foreign factors proved just as reluctant to alter the market structure as domestic factors. On the one hand, integration of production and marketing became well nigh impossible, since middlemen thrived on precisely the fragmented nature of the market. On the other hand, this system provided disincentives for the producers to produce goods of quality; instead, quantity regardless of quality was emphasized, because price was not always congruent with quality of the merchandise, given the bargaining tactics of the middlemen, and also because the producer had no further interest in his product once it was sold.

Thus, Chinese filaturists were discouraged from undertaking qualitative improvements by the foreign firms' price-fixing tactics. As in the case of the problem of the quality of silk exports, the problem of silkworm disease in both the Jiangnan and Guangdong regions was in part structural: the separation of production and marketing, the proliferation of middlemen, and the vertical disintegration between stages of silk production promoted production for quantity over quality. The pervasiveness of rentier mentality—the propensity of owners of land and capital to rent them out rather than to use them directly for productive ends—hindered vertical integration; the resultant limitation on quantitative expansion and qualitative improvement in turn ate into the entrepreneurs' profits.

The pervasiveness of the rentier mentality in the premodern Chinese economy was a function of the scarcity of land and capital, which led to higher profit rates, smaller risks, and fewer managerial hassles for the rentiers as compared to the capitalist-producers on the one hand, and, on the other, to the inability of those lacking land and capital to undertake more than one stage of production. In Japan, on the other hand, the rentier mentality was comparatively absent. One reason might be the removal of the samurai from the countryside in the late sixteenth and early seventeenth centuries. The resultant bifurcation between administrative power and private wealth might have enabled the Meiji government to act autonomously of any class interest in pursuing national wealth and power.<sup>27</sup> In China, on the other hand, despite the openness and the high rates of mobility in the civil service examination system, bureaucratic power and landed wealth were closely connected and mutually reinforcing. The conjuncture of political and landed power meant that in China all governments before the People's Republic had to make accommodations with the landlord class. Another reason for the relative absence of the rentier mentality in Japan lay in the inheritance system of primogeniture, which forced younger sons to seek their fortunes in careers other than tending the family farm; consequently, landownership did not assume as great a social and economic importance as in China.

In contrast to Japan, which, after the Meiji Restoration was moving from a feudal system to a centralized state with an integrated national economy in which the movement of goods, people, and information was constantly facilitated, China after the great mid-nineteenth century rebellions became increasingly fragmented and parochial in both the political and economic spheres. Both countries enjoyed a rising surplus derived

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<sup>27</sup> Theda Skocpol, *States and Revolutions* (Cambridge, U.K., 1979).

from the international silk trade, but the uses, destination, and impact of that surplus differed. In China, much of the surplus generated from the profitable silk trade leaked abroad through foreign middlemen and shippers. The Chinese silk-reeling industry, while benefiting in some respects from the foreign presence, also suffered from the unequal relationship between Westerners and Chinese. The filatures depended on the Western trading companies for the distribution and sale of their products, and even registered as foreign firms to escape government taxation and oppression. Consequently, those entrepreneurs who thrived in the silk-reeling business generally had solid foreign connections. At the same time, this dependence both reinforced and was reinforced by the Chinese failure to develop shipping and direct trading. Entrepreneurs were discouraged from entry into shipping because the presence of established foreign firms lowered the potential profits and government interference (both actual and potential) raised costs. Foreign firms, on the other hand, were immune from the threat of state interference and discrimination. The resulting leakage of profits minimized the impact that the growth of the industry could have had upon the economy.

Even that portion that was retained domestically went largely into consumption rather than investment. Many of the silk traders and reelers put their profits into land purchases. The peasants used their increased income to improve their standard of living. Moreover, although there were profound structural changes in the rural economy, which saw increasing concentration on sericulture and reliance on food imports, the silk-reeling industry despite the fact that it attained a degree of success, did not initiate widespread structural changes to the economy outside the rural sector. Its forward linkages, which measure "the inducement to invest in domestic industries using the output of the export sector as an input," were necessarily weak because of its export orientation. Modern silk weaving was poorly developed and not integrated with reeling on the whole. In terms of backward linkages, there was little long-term stimulation of the machinery industry because of a tendency to keep using obsolescent and worn-out equipment. Instead, the machine shop bosses took over the functions of maintaining the equipment and supplying the raw materials, and in some instances even became rentiers of the filatures themselves. Thus, although some transport facilities did spring up to service the shipment of cocoons and silk from the hinterlands to the treaty ports, the commercial aspects were developed while the technical side suffered. The final demand linkages, which measure "the inducement to invest in domestic industries providing consumer goods for factors in the export sector," were probably stronger in the countryside

where the demand for imported foodstuffs and other consumer goods rose. In the port cities such linkages were likely to be weak, as it is probable that Chinese and foreign factors spent much of their incomes on foreign imports.<sup>28</sup>

The weakness of silk reeling in inducing changes in other sectors can be seen from the fact that although the Canton silk industry succeeded as well as or better than its Shanghai counterpart, there was little industrialization in the province, even in Canton. In 1930 there were 106 modern factories at Canton; however, 73 percent of the capital was contributed by the public utilities, which supplied electric lighting and water but not industrial power. The private industrial enterprises were mostly in textiles and food-processing; they were so small in scale that annual production per worker was only \$1,665 Canton.<sup>29</sup>

In Japan, on the other hand, the leakage abroad was plugged with the rise of the indigenous export houses and shipping companies. Rather than fueling consumption, the surplus went into investment and capital imports through the hands of entrepreneurial landlords and the development-minded state. Thus, in Japan there was a transition from silk to steel that failed to take place in China.

On the one hand, the Japanese state was able to act autonomously over and above any class interests, and on the other hand, the apparent unattractiveness of Japan as a potential market and place of investment to the Western powers permitted Japan to have a long gestation period during which the infrastructure for economic and military modernization could develop in a piecemeal and experimental fashion. Western imperialism had a much greater direct impact on China. Far from posing a challenge to the existing structure, the Western imperialists found accommodation within the traditional Chinese system in ways that proved advantageous to them and that shifted as much of the risks to the Chinese as possible. The Western presence was Janus-faced, introducing some progressive notions and institutions on the one hand, and actually reinforcing traditional structure and retarding change on the other. While the opening of China created or enlarged commercial opportunities such as the silk trade, the unequal relationship between Chinese entrepreneurs and the foreign factors, which was buttressed by political and military

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<sup>28</sup> For a theoretical formulation of the relationship between staple trade and economic growth, see Melville H. Watkins, "A Staple Theory of Economic Growth," *Canadian Journal of Economics and Political Science*, XXIX:2 (May 1963), 141-58.

<sup>29</sup> Li Honglue, "Guangdong jingji de jiepou," *Xianggang huashang zonghui yuekan*, I:5 (Jan. 1935), (*jia*), 59-60.

force, and the symbiotic antagonism between the state and the mercantile elite and between the brokers and the peasants ultimately limited the potential benefits such opportunities could have presented to the Chinese economy.



# Glossary

Akeda Hirome 明石弘

Anning 安宁

Anzhan Filature 安栈丝厂

Arnhold, Karberg & Co.

瑞記洋行

baila 白拉

baobao 宝宝

baojuren 包主人

baolanren 包揽人

Baoshan 宝山

baoweituan 保卫团

canjian tongji 蚕茧统制

Caoe jiang 曹娥江

Cen Chunxuan 岑春煊

Cen Guohua 岑国华

Cen Xin 岑信

Chang Kee 公和永

Changhua 昌化

Changshu 常熟

Changxing 长兴

Changzan sizhuang 昌栈丝庄

Changzhou 常州

Chen Desan 陈德三

Chen Lianbo 陈廉伯

Chen Qishu 陈啓枢

Chen Qiyuan 陈啓沅

Chen Zhiqu 陈植渠

Chen Zhishu 陈植恕

Chencun 陈村

chengguan 承管

China Merchants' Steam

Navigation Co. 輪船

招商局

Chino-European Filature 延昌永

Chongde 崇德

chouzhuang 绸庄

Chuzhou 滁州

Daliang 大良

Dalun 大纶

Dantu 丹徒

Danyang 丹阳

dashu 大叔

Datong 大同

dazao 大造

Dent &amp; Co. 宝顺洋行

Deqing 德清

Ding Rulin 丁汝霖

Dongguan 东莞

duan 缎

E. Huber &amp; Co. 慎餘洋行

ergui 二軌 (鬼)

ershu jihu 二叔机户

Ewo Silk Filature 怡和絲厂

feisi 肥絲

Feng Xiaoqing 馮曉青

fengshui 風水

Foshan 佛山

Fujian 福建

Fukazawa 深澤

Fuzhou 福州

Gaochun 高淳

Gaoyou 高郵

Gean 葛岸

gongtou 工頭

gongyue 公約

guandu shangban 官督商辦

Guangdong 广东

Guangdong liwu zongju

广东厘務总局

Guangxi 广西

Guangxu 光緒

Guanshan 官山

guanyaju 官押局

gubu 谷埠

Guizhou 桂州

guojingshui 过境稅

guotanghang 过塘行

Guzhen 古鎮

- Haimen 海门
- Haining 海宁
- Haiyan 海盐
- hangtie 行帖
- Hangzhou 杭州
- Hangzhou jiye huiguan  
杭州机业会馆
- Hangzhou School of Sericulture  
杭州蚕学馆
- He Xiangchi 何香池
- Henglin 横林
- Heping 和平
- Hexi Corridor 河西走廊
- Hongkong-Shanghai  
Banking Corporation  
汇丰银行
- Hu Guangyong 胡光镛
- Huang Jingshen 黄景森
- Huang Zuoqing 黄佐卿
- huangjinshu 黄金树
- hujian 沪捐
- Hulin 虎林
- Hushuguan 浒墅关
- Huzhou 湖州
- Iveson & Co. 公平洋行
- Jardine, Matheson & Co.  
怡和洋行
- Jiangbao 江堡
- Jiangnan 江南
- Jiangning 江宁
- Jiangpu 江浦
- Jiangsu 江苏
- Jiangsu Provincial Women's  
Sericultural School 江苏  
省立女子蚕业学校
- Jiangsu-Zhejiang Silk Piece  
Goods and Textile Dealers'  
United Association  
江浙丝绸机织联合会
- Jiangyin 江阴
- jianhang 茧行
- jianjuan 茧捐
- Jiaxing 嘉兴
- Jichanglong 继昌隆
- Jierboman (translit.)  
吉爾帛曼
- jifang 机房

jihu 机户

jijuanju 机捐局

jingji 经纪

Jinglun tang 经纶堂

Jingui 金匱

Jintan 金坛

Jiujiang 九江

jizaoju 织造局

jizhan 籽毡

juangun 捐棍

juanmidou 转米斗

Jurong 匀容

Kaihua 开化

Kee Chong Silk Filature

旗昌洋行

Kunji 坤记

Kunshan 昆山

laodi chukou juan

落地出口捐

laogui 老轨(鬼)

Lappa 拱北

Lechang 乐昌

Leliu 靴流

li 里

Li Baoxiang 李宝祥

Li Hongzhang 李鸿章

liang 两

lienü 烈女

lijin 厘金

lijuan ju 厘捐局

Lin Dichen 林迪臣

Lingnan zizaochang

岭南织造厂

lingtou 领头

Linping 临平

Lishui 溧水

Liyang 溧阳

Liu Shuncai 刘顺才

Liuhe 六合

Longshan 龙山

Lü Guifen 吕桂芬

Lun Chong Silk Filature

纶昌丝厂

Lunhua 纶华

Luo Zhenyu 罗振玉

mai guiye buru yang bingcan

买贵叶不如养病蚕

- mashou 杓首  
 Mayar 美亚  
 Mei Eqing 梅峨卿  
 Mei Qizhao 梅啓照  
 miaosang 秒桑  
 minwei bangben 民为邦本  
 Mo Shangqing 莫觞清  
 Mu Ke 穆克  
 Mu Zhiying 穆志英  
  
 Nanghai 南海  
 Nanhui 南汇  
 Nanjing 南京  
 Nantong 南通  
 Nanxiongzhou 南雄州  
 Nanxun 南潯  
 National Southeastern  
   University 国立东南大学  
 neichengguan 内承管  
 Ningbo 宁波  
 nongwu xuetang 农务学堂  
  
 Ouyang Lin 欧阳霖  
  
 Panyu 番禺  
 Pinghu 平湖  
 Pukou 浦口  
 Puyuan 濮院  
  
 Qian Weiqi 钱维琦  
 Qiankang 乾康  
 qianke 捐客  
 qianzhuang 钱庄  
 qing 顷  
 Qingcheng 庆成  
 quanyedao 劝业道  
  
 Reiss & Co. 泰和洋行  
 Rong Zongjing 荣宗敬  
 Rongqi 容奇  
 Ruilun 瑞纶  
 Russell & Co. 旗昌洋行  
  
 sanshu jihu 三叔机户  
 Sansui 三水  
 shangbannian kao can, xiabannian  
   kao tian 上半年靠蚕，  
   下半年靠田  
 Shanghai Silk Filature 宝昌丝厂

Shanghai Steam Navigation Co.  
旗昌輪船公司

Shaoxing 绍兴

Shaozhou 韶州

Shenbao 申報

Shengxian 嵯县

Shengze 盛泽

shexiao 賒銷

Shi Hechu 施鶴初

shifu 師傅

Shijing 世经

Shilong 石龙

Shimen 石门

shizai 师仔

Shuanglin 双林

shuidou 水斗

shuijie 水结

shuijiebu 水结布

Shuiteng 水藤

Shunde 顺德

sida laogui 四大老轨(鬼)

sihang 丝行

sihao 丝号

sijinghang 丝经行

sijuan 丝绢

Sin Chong Silk Filature  
信昌絲行

sishui liuji 四水六基

sitongshi 丝通事

siye gonghang 丝业公行

Siyi 四邑

sizan 丝栈

sizhuang 丝庄

Steam Filatures and Cocoon

Merchants Guild of

Jiangsu-Zhejiang-Anhui  
江浙皖絲廠  
蚕业总公所

Suzhou 苏州

Tai hu 太湖

Tan Tonghui 谭彤辉

Tan Xihong 谭熙鸿

tanggongjuan 塘工捐

Tianzhang 天章

Tongxiang 桐乡

Tongzhi 同治

tubu 土布

- tusi lichang 土丝厘厂
- urikomitonya 壳达问屋
- waichengguan 外承管
- Wangjiangjing 王江涇
- Wang Shutang 汪树堂
- Weicheng 缙成
- weiguan 围馆
- Wu Chaoshu 伍朝枢
- Wu Dengying 吴登瀛
- Wu Shaoqing 吴少卿
- Wu Shenbo 吴申伯
- Wu Weichen 吴伟臣
- Wujiang 吴江
- Wuxi 无锡
- Wuxing 吴兴
- Wuzhen 乌镇
- xiangju 乡局
- Xiangshan 香山
- xianxiao 现销
- Xiaolan 小榄
- xiaolingtou 小领头
- Xiaoshan 萧山
- Xichao 西樵
- Xinan 西南
- Xinchang 新昌
- Xindeng 新登
- Xinhui 新会
- xisi 细丝
- Xu Gengbi 徐赓陛
- Xue Fucheng 薛福成
- Xue Nanming 薛南溟
- Xue Shouxuan 薛寿萱
- Xuetang village 学堂乡
- Xunzhou 循州
- Ye Chengzhong 葉澄衷
- Ye Manqing 葉縵卿
- yeji sichang 野鸡丝厂
- ying 营
- yinhao 银号
- yinpu 银铺
- yinshi shenshi 殷实绅士
- Yixing 宜兴
- yong 勇

Yongchang 永昌  
 Yuanchang 源昌  
 Yuhang 余杭  
 Yuhouchang 裕厚昌  
 Yuqian 于潜  
 Yuyao 余姚  
  
 Zeng Guofan 曾国藩  
 Zhang Jian 张謇  
 Zhang Jisheng 张积盛  
 Zhang Zhuzai 张竹斋  
 zhangfang 帐房  
 Zhejiang 浙江  
 Zhejiang Provincial Sericultural  
 School 浙江省立  
 甲种蚕业学校  
 Zheng Ziqing 郑紫卿  
 zhengjuan 正捐  
 Zhenjiang 镇江  
 Zhenze 镇泽  
 zhepiao 折票  
 Zhili 直隸  
 zhizaoju 织造局  
 Zhong Tongxuan 钟桐轩

zhongnong yishang 重农抑商  
 Zhongshan University 中山大学  
 Zhou Pan 周潘  
 Zhou Shunqing 周舜卿  
 Zhu Dachun 祝大椿  
 Zhu Jing'an 朱静庵  
 Zhu Langfang 祝兰舫  
 Zhu Xiaohu 朱小笏  
 zhuangpiao 庄票  
 Zhuji 诸暨  
 zishunü 自疏女  
 ziweituanju 自卫团局  
 zizhan 籽毡  
 zongban 总办  
 Zongli Yamen 总理衙门  
 Zuo Zongtang 左宗棠



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