

Taiwan under Ch'ing Imperial Rule, 1684-1895: The Traditional Economy*

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A traditional agricultural society, producing a very small surplus for trade, is subject in the short run to harvest fluctuations. The economic fortunes of farmer and merchant depend upon the vicissitudes of weather. Long-run economic growth depends primarily upon the increase in stocks of land and labor, and in particular, the active participation of labor to extract wealth from the land. As technology is still rudimentary, trial and error dictate to a considerable degree the expansion of labor's fund of knowledge. Some accumulation of capital naturally occurs, and men endeavor to improve their means of travel and transport. But unless new methods of organization and production are found and diffused throughout society, the growth of output will be determined mainly by population growth and the activities of labor to open up new land for agricultural purposes.

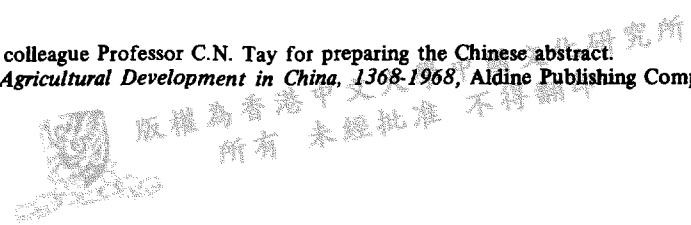
Such a historical process can gradually be altered to permit an increase in capital accumulation, rising productivity of land and labor, and increased welfare if new trade opportunities take place, and land and labor can become used in more specialized procedures of production. With specialization and increasing returns of output for the same amounts of land and labor as used formerly, the increased output, when exported at favorable terms of trade, will support greater purchase of imports and increase spending within the economy. Increased specialization and trade slowly stimulate new tastes and encourage new forms of production to emerge.

Prior to 1858 population growth, settlement of new land, and slowly expanding commerce determined Taiwan's economic growth. After 1858 new trade opportunities encouraged more specialization and greater production in agriculture for export. Although crop statistics are not available prior to 1895, we have some information to argue that the foodgrain supply and yield gradually rose over time. By making certain assumptions about the use of farm land and per capita consumption of foodgrain we can estimate the ranges within which yield probably increased. The method I use follows that of D. Perkins who made similar estimates for mainland China between 1368 and 1968.¹

Let us assume a minimum of 250 kilograms of foodgrain per capita consumed which includes a small allowance for seed, and further, let us also assume that foodgrain consumption remains

* I wish to thank my colleague Professor C.N. Tay for preparing the Chinese abstract.

¹ Dwight H. Perkins, *Agricultural Development in China, 1368-1968*, Aldine Publishing Company, 1969, Chapter Two.



stable over two centuries. Second, let us also assume that 80 percent of cultivated land was devoted to foodgrain production. While rice, sweet potato and other foodgrains were the basic staple products cultivated, sugarcane increased in importance over the period. But as cultivated land also rapidly increased, I assume that the share of land devoted to sugarcane remained stable over time. The following expression makes it possible to calculate the change in foodgrain yield over time.

$$(1) \quad \frac{\text{per capita grain output (kilograms) x population}}{\text{cultivated area of foodgrain (hectare)}} = \text{yield (kg/ha.)}$$

If we can obtain several annual figures for population and foodgrain cultivated area, we can show the trend in foodgrain yield over time required to support the existing population. By examining the long term foodgrain yield trend, we then observe how rapidly productivity increased and whether or not agriculture retained its vitality or stagnated. On the basis of some historical information for population and cultivated area, I have extrapolated and calculated hypothetical population and cultivated area for additional years by which to estimate yield.

The total Chinese population in 1684 probably did not exceed 20,000 to 30,000 persons, most of whom lived in the southwest corner of the island. The number of resident aborigines was unknown and are excluded from the estimates. Before 1760 immigration from the mainland to Taiwan was prohibited by law, but migrants were smuggled across the Taiwan straits every month. On the basis of historical data for the mid-eighteenth century I place the population size between 100,000 and 150,000 persons, a five-fold increase over 1684 numbers. Immigration and natural population increase combined to make for an annual growth rate 2.55 percent between 1684 and 1750. *Pao-chia* records cite Taiwan's population at around two million in 1811 and 3.2 million in 1877. The first Japanese census, taken in 1905, shows about 2,890,000 Chinese. It is very unlikely that population declined between 1877 and 1905 as indicated by Liu Ming-ch'uan's *pao-chia* estimate of island population. I have therefore rejected the *pao-chia* reports for 1811 and 1877 as too high. In order to obtain a population estimate for 1811, I used the population growth rate between 1684 and 1750 to extrapolate a population estimate for 1811 which gave a range of between 500,000 and 750,000 persons. In 1760 formal restrictions upon migration to Taiwan were removed, but there is no evidence to suggest that any acceleration in population numbers, particularly via immigration occurred to make the upper range estimate conform more faithfully to reality than the lower range. For cultivated land area, a firm figure exists for 1684 which I have converted from *chia* to hectares and then adjusted to obtain the foodgrain cultivated area. I have taken the cultivated area recorded in 1750 and adjusted in similar fashion. I derived the cultivated area for 1811 by extrapolating the cultivated land growth rate between 1684 and 1750 forward to 1811. The cultivated area figure for 1905 can be accepted as reasonably reliable. The results are set forth in Table 6 below.

TABLE 6
Estimates of Long Term Increase in Foodgrain Yield: 1684-1905

Period	Population	Cultivated Area (ha.)	Yield Range (kg/ha.)
1684	20,000 - 30,000	13,792	362 - 544
1750	100,000 - 150,000	40,846	613 - 919
1811	500,000 - 750,000	114,369	656 - 1,640
1905	2,890,000	499,601	1,446

Source: Lien Heng, *T'ai-wan t'ung-shih*, 6 volumes.

For cultivated area in 1684 see vol. 2, p.195.

For population in 1684 see vol. 1, p.152. Lien Heng cites sources showing 12,727 households with 16,820 persons. I have increased the latter to 20,000 to 30,000 to compensate for possible under-reporting.

For population in 1750 see vol. 1, p.156.

For population in 1811 based upon *pao-chia* records see vol. 1, p.157. I rejected the 1811 population figure as too high because the regional population distribution as compared to that of 1750 seems most unrealistic.

For population in 1877 see vol. 1, p.156.

I have assigned the cultivated area of 1744 for 1750; see *Ch'ing-tai T'ai-wan ching-chi shih*, p.25.

For cultivated area in 1905 see Rural Economics Division of joint commission on Rural Reconstruction, *Taiwan Agricultural Statistics, 1901-1965*, Taipei, 1966, p.11.

For Chinese population in 1905 see George W. Barclay, *Colonial Development and Population in Taiwan*, Princeton University Press: Princeton, 1954, p.16.

On the basis of my estimates, foodgrain yields over the 221 years increased between two and four-fold; there does not appear to be any evidence of a severe decline in yields unless the upper yield range for 1811 is accepted. The yield estimates for 1684 and 1811 can be criticized on the grounds that (1) population in 1684 should be higher and (2) population for 1811 should be higher to conform to the 2.0 million recorded by *pao-chia* records. I doubt seriously that my figures represent under-reporting in 1684 as the number of males greatly exceeded females and most households did not contain fully formed nuclear families. It is possible that population expanded more rapidly between 1750-1811 than between 1684-1750 as cited in table 6, but there appears to be no historical evidence to indicate that the number of Taiwan strait crossings greatly increased and natural population growth accelerated. We only observe new settlement patterns by the end of the eighteenth century as land in Taichung becomes farmed, and more people reclaimed land south and west of Keelung in northeast Taiwan. Even though Taiwan was spared the ravages of major rebellions like the Taiping which swept central China in the mid-nineteenth century, population pressure upon the land never became severe. For population to have been supported at minimally acceptable living standards, yield changes of the magnitude suggested in table 6 appear plausible. Whether or not some decline in foodgrain yields occurred between 1811 and 1905 remains open to speculation and conjecture. But as Taiwan did not become a major importer of foodgrains for any long period during this century and continued to export rice to the mainland, I think it more reasonable to accept the lower yield range in 1811 as reflecting the true conditions in agriculture.

Between 1684 and 1784 officials attempted to restrict trade between Taiwan and the mainland, but this policy proved very difficult to enforce. Harbors on the west coast gradually began to receive ships, and a variety of grain and raw materials were leaving Taiwan for north

China ports, Shanghai, Canton, and Hong Kong.² In 1858 Taiwan began trading with foreign countries, and western merchants began establishing their firms in cities to seek commercial gain. As a result exports increased rapidly, more goods circulated, expenditures increased, and prices rose. The three most important exports accounting for roughly four-fifths or more of the export trade consisted of tea, camphor, and sugar. I have calculated by three year average single commodity indexes to show their expansion rate.

TABLE 7
Growth of Three Export Commodities by Index, 1866-1895

Period	Commodities		
	Tea	Camphor	Sugar
1866-68	2	18	39
1869-71	7	29	74
1872-74	13	23	93
1875-77	37	20	101
1878-80	55	26	115
1811-83	62	12	110
1884-86	74	1	98
1887-89	84	7	91
1890-92	86	35	97
1893-95	100	100	100

Source: Calculated from data contained in *Ch'ing-tai T'ai-wan ching-chi shih*, pp.86-87 for tea; pp.89-90 for camphor; pp.91-90 for sugar.

Over the course of three decades the quantity of tea produced and exported, mainly to the United States, increased fifty times. The export of camphor rose much more slowly for the first fifteen years, declined greatly during the period when officials attempted to establish a camphor monopoly bureau, and then increased by five times before the end of the period. Sugar exports at first increased very rapidly, rising roughly two and a half times within ten years, declined slightly, and then rose moderately towards the end of the period. The growth rates of all three for the first fifteen years are very impressive.

Tea cultivation took place in the north in a very small area around Tanshui and Taipei. Davidson has described the importance of tea in overall trade as follows.³

Although occupying about one-sixth of the territory utilized by sugar, and only a fraction of that given up to rice, or the area covered with the vast camphor forests, the production brings to the island nearly five times the receipts obtained from sugar, over five times the receipts obtained from camphor, and more than one half of the total value of the whole export trade of Formosa.

2 Lin Tung-chih, "T'ai-wan mao-i shih" (A History of Taiwan's Foreign Trade), *T'ai-wan ching-chi shih wu-chi* (Economic History of Taiwan: No.5), Bank of Taiwan (Economic Research Section): Taipei, 1957, pp.45-46.

3 James W. Davidson, *The Island of Formosa: Historical View from 1430 to 1900; History, People, Resources, and Commercial Prospects*, p.394.

In 1865 the Englishman John Dodd began encouraging farmers around Tanshui to plant tea. In 1866 Dodd built kilns to fire the leaf and packaged the tea for export, while at the same time he continued to advance loans to farmers to induce them to expand tea cultivation still further. In 1867 Dodd built a small tea processing factory in Meng Chia just outside of Taipei.⁴ Soon Chinese merchants were following suit, and tea exports rapidly increased thereafter. As a result more and more farmers shifted from rice cultivation specialization to tea, so that by the 1880s land use in northern Taiwan had changed greatly. H. B. Morse, an imperial maritime customs officer in Tanshui during this time, writes as follows of the new land use pattern.⁵

Thirty years ago the arable land of north Formosa was chiefly devoted to the growth of rice, and, as a consequence, there was always a large surplus available for exportation. Since that time the population of tea growers has occupied the upland, a numerous body of tea sorters and packers come annually, and there is a large permanent garrison, increased occasionally for special needs. This large increase in the number of rice consumers who do not produce their own food has resulted in establishing, in an average of years, a good home market for all home-grown rice; and of late years, not only is there no surplus for export, but there is at times a deficiency which has to be made good by imports from the mainland.

Merchants in the Tanshui area quite often imported rice from central and southern Taiwan, thus encouraging rice production for export in these districts. For camphor production, merchants sent their people deeper into the forests of the interior, tapped more camphor trees, and established processing establishments to prepare camphor oil for export shipment. Sugar production for export increased more rapidly in the south than in the north because geographical factors favored sugarcane cultivation there. Foreign trade thereby encouraged farmers, laborers, and merchants to supply more raw materials to be processed for export. As additional resources now came to be employed in activities oriented toward trade, land, labor, and capital normally employed in other pursuits also began to specialize. These responses to the expansion of the market were still modest, but resource re-allocation did take place as factors of production moved to activities to earn higher income. That higher income was forthcoming from activities is demonstrated by the gains from trade.

Domestic prices of commodities entering foreign markets were valued greatly below the prices which these exports could be sold in the world market. Domestic sugar prices for the late 1850s and early 1860s are not available, but the tea price for Tanshui can be compared to market prices in Japan, London, and New York. For the mid 1860s the average Tanshui tea price was roughly 14.7 cents per pound compared to 20 cents per pound in Japan, London and New York.⁶ By the early 1870s foreign tea prices had climbed to between 20.5 and 30.5 cents per pound, while at the same time the Tanshui price had roughly doubled to become more in line with foreign tea prices. The initial differential between Taiwan and world market tea prices and the fifteen fold increase in quantity of tea exported for this brief period produced very large income returns to all factors of production engaged in the tea export industry of north Taiwan. The following table

4 Wu Fu-yan, "T'ai-wan ching-chi nien-piao" (An Economic Year Chronology for Taiwan), *T'ai-wan ching-chi shih ssu-chi* (Economic History of Taiwan: No. 4), Bank of Taiwan: Taipei, 1956, pp.92-93.

5 The Inspector General of Customs, *Decennial Reports, 1882-91*, First Issue, Shanghai, 1893, p.436.

6 For a similar approach to estimate the effects of prices on real income from trade of Japan in the late nineteenth century see J. Richard Huber, "Effect on Prices of Japan's Entry into World Commerce after 1858," *The Journal of Political Economy*, 79:3 (May/June 1971), pp.614-628.

shows the change in the prices for tea and camphor for this three decade period. As sugar prices probably moved in similar fashion, the large increases in both quantity and their unit values suggests that trade greatly increased real income for the island.

TABLE 8
Domestic price Change of Tea and Camphor Exports (1866-1895)

<i>Average Price in Tanshui Currency (US \$ per picul)</i>		
<u>Period</u>	<u>Tea</u>	<u>Camphor</u>
1866-68	\$ 9.00	\$13.33
1876-78	18.00	9.40
1886-88	36.37	14.14
1894-98	42.94	36.50

<i>Percent Change of Domestic Price</i>		
<u>Period</u>	<u>Tea</u>	<u>Camphor</u>
1866-68 to 1876-78	+100	- 29
1876-78 to 1886-88	+100	+ 51
1886-88 to 1894-98	+ 18	+158

Source: Price data obtained from James W. Davidson, *The Island of Formosa: Historical View from 1430 to 1900*, p.395 and p.442.

As commodity exports rose so too did the number of ships and their tonnages cleared at all Taiwan ports. Meanwhile, imports rose. Opium quickly dominated the import trade, but a variety of textile and iron products continued to be imported. H.B. Morse wrote in the early 1890s about the new demand for imports which had been taking place in the preceding decades.⁷

The most striking feature in the trade of this district during the past decade has been the great development of wants among the people, as exemplified by the number of articles included in our returns. No less than 16 kinds of cotton goods have been added to the 1881 list of 20 kinds.

During the 1860s Taiwan imported more commodities than could be supported by exports, but in 1872 a substantial favorable trade balance occurred, and thereafter a trade surplus ranging between two and three million haikwan taels was annually obtained.⁸

Short-run economic activity, usually of eighteen months to three years, continued to be influenced by harvest fluctuations. After poor harvests, exports declined, commodity prices rose, some cash moved from urban centers to villages, and rural indebtedness mounted. Specie became short in supply, interest rates rose sharply, and the price of conventional necessities increased markedly. At the same time trade began to slacken, unemployment became visible. When

⁷ J.D. Clark, (compiler) *Formosa*, Shanghai Mercury: Shanghai, 1896, p.64.

⁸ *Ch'ing-tai t'ai-wan ching-chi shih*, p.95.

the harvest improved, the economy again prospered. Trade surged upward, the supply of copper and silver expanded, and the prices of wage goods levelled off. Farmers began to repay their debts, and a modest cash flow to cities now took place. Households stocked goods, and affluency again became commonplace. Within the course of these harvest fluctuations and during the process when the economy moved from an extensive phase of agricultural development to greater specialization and foreign trade, the economic structure remained relatively unchanged. As we examine the agrarian system, the sugar industry, industry and commerce, and the credit system I will point out that this highly advanced and sophisticated pre-modern economy merely needed new trading opportunities and technological change to nudge it gently upon the course of agricultural transformation and industrialization. The section concludes with a brief discussion of the efforts of certain Ch'ing officials to develop Taiwan's defenses by launching new projects.

The Agrarian System

The island's soil and climate, especially suited for rice, sweet potato, sugarcane, and a variety of industrial crops, vegetables, and fruit, proved most beneficial for rapid development of agriculture. Chinese records extolled the favorable geographical conditions of Taiwan, perhaps even exaggerating how more prosperous Taiwan was than the densely populated provinces of the southeast China coast which had to depend upon poorer soils and an unstable climate.⁹

Although the coast line is sandy, the land is flat and fertile and exceptionally suited for planting crops. The landscape is verdant with bushes and trees; rice husks are as large as beans. The autumn harvest is usually twice as large as the mainland (for an area similar in size). Moreover, sugarcane is grown. Because all kinds of plants can be cultivated, the inferior crops of the mainland find no market in Taiwan.

The mild acidic but rich, humus soil, when given sufficient water, allowed for rapid growth and plant maturation, thus permitting two rice harvests throughout the central and southern districts of the island. Migrants at first obtained fairly high yields without having to apply the same quantity of fertilizer as used on the mainland, so that upon clearing the land households quickly became self-sufficient and independent of food imports. Rice and sugarcane became the prime cash crops cultivated by farmers, but households also cultivated indigo, hemp, flax, lichee nut, the peanut, and various fruits to exchange or sell for salt, sugar, tea, cloth, and farm tools.

Most of the migrants settling in Taiwan were experienced farmers.* The farming skills and technology they brought to Taiwan were far superior to those of the aborigine who practised slash-burn or shifting agricultural cultivation. On the mainland the slow accumulation of farming experience had been transmitted by father to son each generation for many centuries. A fund of farming knowledge gradually expanded, dovetailed to suit local conditions, and based upon practical experience and first hand observation. To be sure the household making use of this fund of knowledge had to be motivated for gain, equipped with average intelligence, and possessed of a will to work and sufficient discipline to organize the household working unit if high yields and output were to be obtained. The ability of farmers to capitalize upon this fund of farming

⁹ Inō Yoshinori, *Taiwan bunkashi* (A Cultural History of Taiwan), Tokoshoin: Tokyo, 1965, I, p.676.

* Throughout this study I will use the terms peasant and farmer interchangeably, mainly for purpose of style.

knowledge depended upon the distribution of these behavioral traits within the community as well as existing market conditions. Some households naturally performed better than others; some were more lucky in foresight and planning than others. Unpredictable circumstances often intervened to shape the future of a farming household, enabling one to become wealthy within several generations or forcing another to poverty and disrupting the family line.

As rice was the most important food crop, the skills required to cultivate this crop were fairly well developed by the early eighteenth century and improved only gradually in the twentieth century. Peasants selected the more ripened seeds from the harvest, placed them in bamboo baskets, and stored them until planting in seedling beds.¹⁰ To prepare for planting, peasants soaked the seeds briefly in warm water depending upon the locale: in northern Taiwan four days, whereas in the south for one night only. After drying the seeds outdoors, they were placed in straw to prevent the loss of heat until a small sprout began to emerge.

Meanwhile, the peasant selected a suitable site, protected from the wind, near the farmstead to make the seedling bed. After preparing, fertilizing, and irrigating the soil, the seeds were planted, broadcast fashion, in the bed. The peasants drained the water from the seedling beds each day, scattered straw and ashes about, and then irrigated every evening. According to the area, water was retained in the beds for different periods and then drained whereby this process was repeated. After the seedling had achieved a height of more than an inch, human compost in water was spread about the seedling bed. Constant irrigation and fertilization in the above prescribed manner continued for 40 to 50 days before the first harvest and 30 to 40 days before the second rice planting period.

At the same time farmers began preparing the fields for receiving the fledgling rice stalks. They ploughed the soil to a depth of 6 to 7 inches. Then about two weeks before transplanting, they irrigated the fields, weeded, and broke up any large clumps of soil. Just before transplanting took place, water was allowed into the paddies. Each peasant selected a certain paddy area, collected a quantity of stalks from the seedling beds and began to plant each stalk about 9 inches apart in a line, moving slowly backward, and repeating the process over and over. The higher quality the soil, the greater the density of stalks planted. After planting, more water was permitted into the fields. Fifteen days after transplanting, the peasants undertook the first weeding after which more water was then allowed into the fields. Ten days later they promptly weeded again and irrigated the soil once more. After the passage of another ten days, they completed the final weeding. Two major weedings in the manner just described were conducted only for the second harvest.

At the stipulated harvest time men gathered in the fields with sickles to cut the rice stalks about 5 to 6 inches above the ground. Other peasants followed behind to collect the rice stalks and carry the grain to a suitable area where several men flailed it to separate the rice from the stalks. After winnowing the rice, the peasants then dried and stored the rice from which a portion for next season's planting was extracted and the remainder kept for consumption or marketing.

¹⁰ Rinji Taiwan kyūkan chōsakai, dai nibu (Temporary Commission for the Survey of Traditional Customs in Taiwan, second section); *Chōsa keizai shiryō hōkoku* (A Report of Economic Survey Materials), Tokyo, 1905, I, pp.18-27.

Farming experience had taught the peasants that a fixed combination of labor and work animals were required to complete satisfactorily certain work tasks. This combination did not vary greatly even on large farms as such indivisibilities occurred for soil preparation, weeding, irrigation, and harvesting. To increase rice yields substantially, farmers would have had to obtain higher yield varieties than those they selected from each harvested crop. They also would have to obtain inorganic fertilizers to supplement or replace the home made organic fertilizers which they applied during soil preparation. These improvements alone would most certainly have increased rice yield, but they would not have greatly influenced the procedures used between planting to harvesting. Finally, by planting rice in line with seed drills and harvesting with a thresher instead of the tedious winnowing method farmers would have saved considerable labor which they could have allocated to other activities on the farm. These innovations were beyond the capabilities of this agrarian system to provide, but once new, modern organizations were created to make them available to farmers, the transition to modern farming represented not a great stride but merely a modest step.

The reader should not infer from the above that technological improvements did not occur during this two century period. Taking rice again as our example, early germinating rice seeds steadily attained widespread usage by the 1860s. For some districts we have the following estimates provided by an official for the percentage of rice harvest that originated from these early ripening seeds which had been brought from Fukien during the eighteenth century.

TABLE 9
Percentage of Rice Harvest Estimated from Early Ripening Seeds (ca. 1860s)

District	Percent of Rice Harvest
Tanshui sub-prefecture	70 and more
Ko-ma-lan sub-prefecture	70
Feng-shan district	70 and more
Chia-i district	70 and more
Chang-hua district	60

Source: Ino Yoshinori, *Taiwan bunkashi*, II, p.617.

Aside from also developing simple methods to deal with pests which attacked the crop, farmers managed to increase their supply of bullocks greatly over this period. The bullock was not only used for reclaiming land and transporting materials and goods by cart, but the animal greatly assisted the farmer in preparing the fields for planting. Ch'ing law forbade the slaughter of bullocks, and offenders were to be punished with 80 strokes of the cane.¹¹ In the Taichung region bullocks were particularly numerous and conspicuous.¹² Finally, farmers constructed reservoirs

11 Inō Yoshinori, "Ushi no torishimari ni kansuru kyūkan" (Traditional Customs Concerning the Management of Bullocks), *Taiwan kanshū kiji*, 1:9 (Sept. 1901), p.39.

12 Sekiguchi Masataka, "Taichū chihō ijūmin shi" (A History of Settlers in the Tai-chung Area), *Taiwan kanshū kiji*, 1:6 (June 1901), p. 14. This source states that "Everyone owned a water buffalo," and the author describes the importance of this animal in transporting rice.

(*p'i-ch'uan*) or ponds for the purpose of raising fish and irrigating their fields and gardens. As crop yields were much higher on irrigated land, the general development of irrigation played a key role in maintaining crop yields in older settled farming regions.

Officials quite often sponsored the construction of these ponds by advancing funds for hiring workers and purchasing construction materials. When individuals privately undertook to build these irrigation facilities a single wealthy person might finance the enterprise or a number of households might pool their capital according to investment shares.¹³ If water rights were then leased to other parties the rental income collected from the enterprise was then distributed to each shareholder according to the number of shares each held. When a large reservoir was constructed and operating, the owner or original sponsor of the project usually employed a head workman to manage the facility. His responsibilities were to provide repairs and collect rent from the users of the stored water. Depending upon the size of the facility he then selected subordinates to manage the sluices and make necessary repairs. The size of these ponds and reservoirs varied greatly, and as seen from the following table these very large and important facilities were quite numerous.

TABLE 10
The Number of Large, Man-made Ponds and Reservoirs in Taiwan by District
(ca. 19th century)

District	Number
An-p'ing	10
Feng-shan	26
Chia-i	34
Heng-ch'un	2
T'ai-wan	14
Chang-hua	12
Yun-lin	43
Miao-li	17
Tanshui	20
Hsin-chu	44
I-lan	13
Total	235

Source: Calculated from Lien Heng, *T'ai-wan t'ung-shih*, vol. 4, pp.671-686. Lien Heng provides information as to specific location of these irrigation facilities, when they were constructed, and their founders (whether tenants, officials, or wealthy households).

¹³ Rinji Taiwan kyūkan chōsakai, dai ichibu (Temporary Commission for the Survey of Traditional Customs in Taiwan, the first section), *Taiwan shihō* (Taiwan Private Law), Kobe, 1910, Vol. I, Part 2, p.122; also, see the excellent case study of official sponsoring of a large reservoir in Feng-shen during the Tao-kuang reign period (1821-1850) and the rules for managing, operating, and collecting water rents by Hanaoka Inosaku, "Sōkōshin kigen" (The Origin of the Ts'ao-kung Reservoir), *Taiwan kanshū kiji*, 1:8 (Aug. 1901), pp.25-35.

A striking feature of this agrarian system was the rapid emergence of private landownership based upon customary law and not formal imperial law. After the defeat of Cheng Ch'eng-kung, Ch'ing military units established camps away from settled, reclaimed areas. These garrison troops received plots of land to farm and for all practical purposes became self-supporting while preserving order. Within each district the local administration claimed considerable land as state land (*kuan-t'ien*). Officials leased this land to tenants and collected rent as official revenue. Officials usually selected a private individual and appointed him in charge of all matters related to these tenant lands.¹⁴ In the early eighteenth century very little private property existed, the bulk of it managed by the state with only a small share in the hands of individuals operating large estates and leasing to tenants around Tainan.

As settlers arrived in Taiwan and pushed northward from Tainan or southward from Tanshui the land reclamation and tenure arrangements practised in Fukien province were adopted. The procedure for opening lands had long been established by the Board of Revenue (*hu-pu*) but were modified to suit regional conditions.¹⁵ When an individual or group of people desired to reclaim land, they petitioned the district official. If the official agreed to their request, he granted a certificate or license (*keng-chao* or *chih-chao*) bestowing permission to the petitioner to reclaim a certain amount of land.¹⁶ For a given period, usually three years, the petitioner did not pay the

¹⁴ These superintendents or *chuang-t'ou* as they were called quite often collected as much rent as they could from their tenants and paid as little as was necessary to officials, a practice commonly referred to as *to-shou shao-na* or "collect much but pay little." See *Ch'ing-tai T'ai-wan ching-chi shih*, p.20.

¹⁵ For a statement of Ch'ing legal procedures for opening up new lands as expressed by the Board of Revenue and applied to various provinces see *Taiwan shihō*, Vol. I, Part 1, pp.248-268.

¹⁶ For descriptions of this procedure see the following studies: Okamatsu Santarō, "Daisoken no hōritsujo no seishitsu" (Characteristics of Large Rent Household Rights According to Law), *Taiwan kanshū kiji*, 1:1 (Jan. 1901), pp.4-14; Satō Kentarō, "Taiwan kyūkan ippan" (A Draft Outline of Traditional Customs in Taiwan), *Taiwan kanshū kiji*, 1:2 (Feb. 1901), pp.17-32; for an illustration of the *keng-chao* or *chih-chao* license granting the *ta-tsu-hu* permission to reclaim land see *Taiwan kanshū kiji*, 1:7 (July 1901), p.50; Okada Masao, "Daisoko nōzei no rei" (An Example of a Large Rent Household Paying the Land Tax), *Taiwan kanshū kiji*, 1:7 (July 1901), pp.51-52. "Shinchiku oyobi Tōshien chihō ni okeru tochi kyūkan" (Traditional Customs Pertaining to Land in the Regions of Hsinchu and T'ao-tzu-yuan), *Taiwan kanshū kiji*, 1:8 (Aug. 1901), pp. 58-67; Tainan ken chōsa, "Tochi ni kansuru kyūsei kyūkan shuchōsho" (Survey Records of the Traditional System and Customs Concerning Land), *Taiwan kanshū kiji*, 1:11 (Nov. 1901), pp.1-16; *Taiwan shihō*, Vol. I, Part 1, pp.268-274. The procedure by which migrants cleared, farmed, and obtained private title to land has also been described by the eminent Chinese economic historian Chou Hsien-wen in his compiled work *Ch'ing-tai T'ai-wan ching-chi shih*, p.19.

The early colonizers were called *keng-hu* (households clearing the land for farming), and some among them, referred to as *keng-ting* (cultivators), even cleared land for other *keng-hu*. Upon clearing some land successfully, these colonizers became landowners and managed their land under the title of *yeh-chu* (the primary enterpriser). Some *keng-ting* then became strictly tenants for the *yeh-chu* households. Government officials began to collect taxes from the *keng-hu*, who in turn exacted rent from their tenants in order to pay these taxes. If tenants could not pay their rent, they were compelled to give up all claims to the land they had reclaimed for the *keng-hu*; and these claims reverted to the *keng-hu*. As such rights were poorly defined, the tenant usually lost all claim to their capital. The *keng-hu* permitted the tenant to work the land in perpetuity, and he became referred to as the *hsiao-tsu-hu* or small rent household.

This process is not strikingly different from that described by Japanese specialists examining traditional customs in 1900 and 1901.

land tax. The petitioner or *ta-tsu-hu* (large rent household) usually possessed sufficient capital to mobilize a number of migrants to clear the land, construct irrigation facilities, and plant crops.* In return for reclaiming land and the grant of capital (funds for purchasing bullocks, seed, tools, etc.) these migrants paid a fixed rent to the *ta-tsu-hu*. They had the right to farm the land as they wished, but they were under obligation to pay an annual rent to the *ta-tsu-hu*. Meanwhile, the *ta-tsu-hu*, who under customary law did not really possess the right to use the land but only could claim the land's product, paid from the annual rent a land tax to the local administration tax office. An account of how land was reclaimed in northern Taiwan is as follows:¹⁷

The method by which the *ta-tsu-hu* reclaimed land appears to have been determined entirely by the conditions within each area. At first the *ta-tsu-hu* gathered many tenants around him, then gave them land, some tools, and capital to clear the land. From the harvest of various foodgrains the *ta-tsu-hu* took 15 percent and the tenant 85 percent—or if 100 *shih* of millet was produced, the *ta-tsu-hu* collected 15 *shih* and the tenant retained 85 *shih*. Then after three years, when some land had become irrigated and improved, the land tax had to be paid depending upon the amount of paddy and field land cultivated.

These tenants were called *hsiao-tsu-hu* or small rent household and under customary law possessed the right to use the land as they saw fit. As time passed other migrants arrived and many rented land from the *hsiao-tsu-hu* households and paid a rent in kind to them. Very informal relationships characterized tenant and *hsiao-tsu-hu* agreement for leasing land and paying rent: often a rent deposit was to be paid in advance by the tenant, especially for irrigated land; the amount of crop rent was paid as a percent of the harvest; this rent might be reduced in the event of a poor harvest; these terms of agreements were rarely put to writing. The terms of rent between *ta-tsu-hu* and *hsiao-tsu-hu* were typically fixed over a long period of time, whereas the length of tenure between *hsiao-tsu-hu* and their tenants changed every few years. Therefore the *hsiao-tsu-hu* successfully obtained rising rents from their tenants and their rental incomes increased greatly over time. Table 11 indicates the large differential which has arisen between rent paid by *hsiao-tsu-hu* and that collected from their tenants in the mid nineteenth century.

The *ta-tsu-hu* constituted a wealthy group living in small towns of district seats. Whereas some sold their rent collecting rights to other households, the transactions always being arranged by middlemen, it is not clearly known how often these transactions occurred or if the buyer was always another *ta-tsu-hu*. By the late 1880s their number was estimated to be around 40,000. In 1889 Viceroy Liu Ming-ch'uan increased the land tax and ordered that the *hsiao-tsu-hu* now pay the new land tax instead of the *ta-tsu-hu*. This new ruling elicited opposition by the *hsiao-tsu-hu* and created conflict between them and the *ta-tsu-hu*. Many *hsiao-tsu-hu* attempted to abrogate their rent paying obligations to the *ta-tsu-hu*. Meanwhile many *ta-tsu-hu* had frequently divided their land equally among their male heirs, and in the process it often occurred that a *hsiao-tsu-hu* rent contract was terminated. This complex land tenure system prevailed until 1903 when a land survey and land tax reform eliminated the *ta-tsu-hu* class, conferred complete legal right for land to the *hsiao-tsu-hu* class, and made them obligated to pay the new land tax in money.

* Officials often advanced funds to the *ta-tsu-hu* to open new lands to the plough.

17 "Shinchiku oyobi Toshien chihō ni okeru tochi kyūkan," pp.61-62.

TABLE 11
Comparison of Rents Paid and Received by *Hsiao-tsu-hu* in early
Nineteenth Century (ca. 1830s)

<i>Class of land (field) by grade</i>	<i>Hsiao-tsu-hu rent paid per chia (shih* of un- hulled grain)</i>	<i>Rent received by Hsiao-tsu-hu (shih)</i>	<i>Real Income of Hsiao-tsu-hu (shih)</i>
high	8	40	32
medium	6	30	24
low	4	20	16
<i>(Garden Land)</i>			
high	6	30	24
medium	4	20	16
low	2	10	8

*1 *shih* = 4.9629 bu.

Source: Chen Feng-yuan, "Taiwan no tochi seido to kosaku mondai" (The tenancy problem and land system in Taiwan), in Andó Seiji (comp.), *Taiwan bunka ronsō* (Essays on Taiwan Culture), Taipei, 1942, p.117. Also Azuma Yoshiō, *Taiwan keizaishi kenkyū* (Studies in Taiwan Economic History), Taipei, 1944, p.273.

This complex three tier land tenure system made it possible for migrants with little or no resources to be accommodated into agriculture. By enabling them first to begin tenants, many later were able to acquire land of their own and become part owners or full owner-cultivators. At the same time vast tracts of unreclaimed land became cultivated and made more productive to support a large population. The amount of cultivated land and privately owned land greatly increased with very little assistance from the public sector. On the other hand, the land tenure system made it extremely difficult for the public sector to collect taxes on newly cleared land, as this land was not always registered, and to increase taxes over time on land that improved in quality and productivity. This agrarian system could have provided greater tax revenue to the state, and this would have enabled the state to open new markets for farmers, improve transportation and irrigation, and provide new farming technology. As we will see below Viceroy Liu Ming-ch'uan tried to increase the land tax, but he was only partially successful. It remained for the Japanese colonial administration to follow in Liu's footsteps and initiate a major land tax reform.

Furthermore, this land tenure system made the purchase and sale of land complex and cumbersome business for households. As agreements were usually oral, the few written deeds frequently lost, and middlemen or witnesses to agreements or contracts often died or moved away, numerous disputes arose. Enforcement of formal law did not always guarantee secure, long term ownership and made land transactions very difficult; therefore, the efficient management of

land for the purpose of maximizing revenue from it was far from realized.* To be sure, local custom enabled this agrarian system to expand steadily, but at the same time it created new conditions, which if eliminated, would have increased greatly the efficient utilization of land.

The pattern of tenancy which prevailed at the end of Ch'ing rule over Taiwan is still not known with certainty. A Japanese study of the northern districts in 1899 estimated the percentage of tenants residing in villages to be extremely high — 80 or 90 percent of village households.¹⁸ An American scholar who has recently examined original 1880 land records for four villages in northern Taiwan also found that three out of four households were tenants.¹⁹ But what of the south and other districts? Land tenure studies undertaken by the Japanese in the late 1920s and early 1930s showed that a lower percentage of tenants characterized the southwest areas of the island as compared to the central and northern districts, but this evidence does not conclusively indicate that the same pattern prevailed before 1900. If further study could confirm that certain tenancy patterns were associated with given marketing systems and the level of commercialization achieved, it might be possible to describe the 1900 tenancy pattern from the prevailing marketing system and commercialization attained at this time.

The Sugar Industry

The most important agricultural product undergoing industrial processing for domestic consumption and export was sugarcane. Sugarcane probably came to Taiwan sometime in the twelfth or thirteenth centuries, either by travelers through the Pescadore islands or by merchants directly from Fukien.²⁰ The aborigine tribes did not cultivate the crop. Chinese settlers around Tainan cultivated sugarcane and produced sugar, whereas merchants exported sugar to Fukien, Luzon, and Japan.²¹ When the Dutch occupied An-p'ing they had tried to encourage the sugar trade for revenue raising purposes. Very quickly the quantity of sugar exported rose after 1636 from the low level of 120,000 to 300,000 cattles to an all time high of two million cattles in 1660.²² Even after the departure of the Dutch sugarcane cultivation continued, and sugar manufacturing and exports to Japan increased. Estimates of sugarcane productivity and the quantity of sugar produced are naturally subject to great error. The table below presents a comparison of sugarcane productivity and sugar production between 1724 and 1903 based upon historical records and a survey report on the status of the industry in 1903 to show that productivity did not rise over the period although the sugarcane cultivated area greatly increased.

* It might be argued that certain customs pertaining to land use and ownership arose out of the need to minimize risk, and that given the existing institutions, land was already being used efficiently to maximize income. If this be the case, the statement above that efficient land use was not achieved is incorrect. I made this assertion, however, on the premise that the income streams to land-holders would have been increased still more had formal, legal institutions been created by the public sector to enable landholders to circumvent these difficulties. Such institutional innovations that minimize risk for the property holder can conceivably lead to more efficient use of the existing resource, thereby increasing income to the resource owner and user.

18 *Taihoku kenka nōka keizai chōsasho*, p.85.

19 Edgar B. Wickberg, "Late Nineteenth Century Land Tenure in North Taiwan," in Leonard H. D. Gordon, edit., *Taiwan: Studies in Chinese Local History*, Columbia University Press, New York: 1970, pp.78-92.

20 Tai Koku Ki, *Chūgoku kansho tōgyō no tenkat* (The Development of the Sugarcane Industry in China), Ajiya keizai kenkyūjo: Tokyo, 1969, pp.134-136.

21 *Ibid.*, p.143.

22 *Ibid.*, p.150.

TABLE 12
Sugarcane Output and Sugar Production per Chia in the Early Eighteenth
and Twentieth Centuries

Year	Stalks per Chia	Amount of Cane per Chia (kin*)	Amount of Black Sugar per Chia (kin)	Amount of White Sugar per Chia (kin)
1724	6,000 - 7,000	60,000 - 90,909 70,000 - 106,060	6,000 - 7,000	3,000 - 3,500
1903	16,000	64,000	4,324 - 6,400	2,362 - 3,200

*1 kin = 1.32 lbs.

Source: Tai Koku Ki, *Chūgoku kansho tōgyō no tenkai* (The Development of the Sugarcane Industry in China), Ajiya keizai kenkyūjo: Tokyo, 1969, p.164. Tai used the conversion factors of the 1903 survey to calculate the amount of white and black sugar obtained from sugarcane for 1724.

In spite of the fact that sugarcane and sugar making productivity does not appear to have increased over the period, sugar production and export rose. From a level of 2 million catties exported in 1660 to over 100 million catties exported by the mid 1880s, we observe that total output (assuming domestic per capita consumption to have remained constant) increased about fifty fold or an annual growth rate for a 225 year period of 1.75 percent. This is a growth rate which this traditional agrarian system could have reasonably achieved, while at the same time increasing the supply of food grains to support a population growth rate in the vicinity of 2.0 to 2.5 percent per annum.

Throughout the eighteenth and nineteenth centuries sugarcane became an important cash crop for Chinese farmers and a very important source of income for merchants. A Chinese official living in Taiwan in 1893 described the importance of sugar in Taiwan as follows.²³

The people of this island plant sugarcane and make sugar of which the annual production is around 200,000 to 300,000 piculs valued at 1.2 million taels. The annual sugar harvest amounts to 600,000 baskets in which each basket holds roughly 170 to 180 catties. About 100 catties of black sugar obtains a price of 1/10 of a silver tael whereas 100 catties of white sugar brings a price of 1.1 taels. Therefore, a basket of sugar can bring about 2 taels, so that a total of 600,000 baskets are valued at more than 1.2 million taels. Today the area of southern Taiwan is rapidly being developed for sugarcane production. Northern Taiwan does not produce much sugarcane because the soil is unsuitable. Yet, there is still much fertile land lying idle throughout the island not producing any sugarcane.

The annual estimate of sugar by this writer comes to about 108 million catties which approximates the estimates of domestic production derived from sugar exports made by Japanese researchers in 1901-02.²⁴ Roughly a third of total production was domestically consumed with the remaining two-thirds exported.

23 Bank of Taiwan Economic Research Office, *Tai-yu jih-chi* (Diary of Travels in Taiwan), Bank of Taiwan: Taipei, 1957, p.64. A catty is equivalent to 1.33 lbs., and 1 picul equals 133.3 lbs.

24 *Chōsa keizai shiryō hōkoku*, I, pp.132-134.

Farmers selected the cane cuttings from the previous harvest as seeds for the next planting. Six main types of sugarcane predominated, but only three were highly favored, and among these the bamboo cane (*chu-che*) was preferred because it was more drought resistant, less susceptible to pests and plant disease, and produced the largest quantity of sugar.²⁵ Farmers ploughed the land, carefully breaking the clumps of soils, and making furrows about a foot to two yards apart. After selecting the best stalks from the previous harvest by cutting close to a foot from the top of the stalk, the farmer soaked these in water for two to three days until sprouts emerged. These stalks were then placed in the furrows about a foot to two feet apart and planted. After twenty days the farmer weeded his sugarcane field, applied fertilizer, and if there had been very little rain he irrigated the plants by hand from a cart carrying water. During the months of July and August when high winds frequently struck the island, the farmers constructed small wind breakers near their cane fields to protect the stalks from the wind's fury. Weeding was done periodically thereafter. Depending upon maturation, usually a year to eighteen months, the cane was then cut by hand, the stalks placed upon a cart, and the sugarcane taken to a small native crushing mill. The better stalks were retained for planting the next harvest. The same quantity of labor was required for soil preparation, and applying fertilizer, but for harvesting and carting the cane, about four times the average number of laborers were needed.²⁶

The native sugar manufacturing mill was an exceedingly small and primitive establishment comprised of a small shed containing large pans supported over an open hearth. Outside the shed a team of buffalo, led by a youth, turned large stone rollers which crushed the cane. The extracted juice then ran through bamboo pipes into the large pans placed in the mill for boiling. After boiling, the residue was moved to large jars upon which wet clay collected from the bottom of the sewers, canals, or ponds was placed. The moisture from the clay slowly trickled into the jar and washed "the face of the crystals, removing the adhering molasses" leaving crystallized material of different colors.²⁷ This method produced different grades of sugar which was then sold to merchants and exported. The records cite that during the 1730s around 3,000 boats annually shipped sugar to the mainland, and by the 1860s modern western ships carried sugar to the principal ports of China as well as to Japan.

Four types of production units processed sugarcane.²⁸ The smallest unit, comprised of between fifteen to forty farmers, processed and sold its sugar to small merchants or brokers. The

²⁵ *Ibid.*, pp.144-145.

²⁶ *Ibid.*, p.149. The following shows the labor input required for one *chia* of land.

<i>Farming tasks</i>	<i>Field hands (number)</i>	<i>Field hands for managing bullock (number)</i>	<i>Total</i>
Soil preparation	3	3	6
Planting	4	—	4
Applying fertilizer	4	—	4
Carting	12	6	18
Total Labor Requirements	23	9	32

²⁷ *The Island of Formosa*, p.451.

²⁸ The description of the production structure which follows was obtained from Rinji Taiwan kyūkan chōsakai, *Taiwan tōgyō kyūkan ippan* (A Draft Outline of Traditional Customs of the Taiwan Sugar Industry), place of publication unknown, 1910, pp.1-125.

second type unit, consisting of only five to eight wealthy farmers, typically purchased additional sugarcane from other farms to process and sell for a profit. The third type was organized on the basis of share capital advanced by wealthy individuals who employed a manager to operate the enterprise. The final type was quite large and financed and organized by a single person. These four types co-existed throughout south and central Taiwan, but the small unit operated by a score or more farms predominated.

A group of farmers contributed money to purchase a rolling stone, fuel, and pots and several bullocks. The total contribution each made was equated and converted to a standard unit equivalent to the drawing of a large stone by two or three bullocks for an hour or two. This standard unit was also given a monetary equivalent, so that peasants could contribute either money or bullock power according to a given number of these standard units. This procedure made it possible to value each peasant's contribution to the enterprise effort of producing sugar, and on the basis of each peasant contributing so many of these standard units, he received a part of the sugar produced or a portion of the proceeds when the sugar was sold directly to a merchant. If a large quantity of cane was to be processed so that great inputs of animal power, fuel, and labor time to tend the boiling of the extracted juices were required, each peasant was then assessed additional standard units, to be paid either in provision of money or bullock time and power. In order to service all farmers, the cane crushing and boiling operation were rotated from one farm to another. The farmer receiving these resources was made responsible for the task of organizing production. As farmers brought their harvested cane, his job was to schedule the use of bullocks to crush the cane and see that fires were maintained constantly by employing several laborers and supervising their activities, so that a residue was produced for filtering. Each farmer was permitted to process an amount of cane determined by the number of standard units of resource input which he had initially contributed. The sugar processed by these traditional methods was then distributed to each farmer on the basis of the number of standard units contributed.

The second type of enterprise, organized along similar lines, involved fewer but wealthier farmers. It not only processed sugarcane supplied by these same farms but purchased sugarcane from nearby farmers who had neither the time nor the means to organize sugarcane processing themselves. The third type of enterprise, called *kung-chia-pu* in Chinese, was organized according to procedures which governed all commercial and industrial enterprises of fairly large size. The following dialogue between several Japanese scholars and Chinese sugar merchants illustrates how this arrangement worked.²⁹

Question: What is the *kung-chia-pu*?

Answer: It is not any different from the organization involving a group of farmers who contribute capital to process sugarcane.

Question: Are the capital shares defined?

Answer: Yes they are; at most, there are twelve shares issued. One share is equivalent to three head of bullock. It requires twelve of these units to crush cane per day. This example represents a very large enterprises, whereas six of these units working half a day is

²⁹ "Kanshū kenkyūkai mondō hikki" (A Record of Questions and Answers Concerning the Study of Traditional Customs), *Taiwan kanshū kiji*, 2:4 (April 1902), p.280. This meeting took place on January 25, 1902 and dealt exclusively with the sugarcane industry.

commonly regarded as a small enterprise. There are no organisational units between these two.

Question: Does the share holder first advance money?

Answer: To establish the *kung-chia-pu*, money is required to buy tools and other items. If twelve shares are issued, these twelve share holders bear the burden and risk.

Question: If such is the case, are sugar processing expenditures also paid from these capital share contributions?

Answer: If thirty-six bullocks are used to manufacture sugar and ten baskets of sugar produced, six baskets are distributed between the share holders, and the remaining four baskets are sold to pay for labor and other manufacturing costs.

Question: Can groups of farmers producing sugar on a share contribution basis organize to form a *kung-chia-pu*?

Answer: Of course.

This larger sugar manufacturing enterprise used more labor animal power, crushed a larger supply of cane, and produced greater quantities of sugar residue than did the small-scale units consisting of a score or more of farmers. Quite frequently, the capital share holders numbered from two to five persons, employed a skilled manager and gave him working capital to rent bullocks, purchase fuel and pans, and employ labor to tend the fires. This manager received an annual salary, and it was common for him to buy a share in the enterprise as well. The fourth type of enterprise was even larger, with most of the capital advanced by one investor, often a very wealthy merchant or a *ta-tsu-hu* household with many tenants paying their rent in sugarcane. Such enterprises were also managed by a salary paid manager, and the sugar sold directly to a sugar merchant guild.

Before 1860 the southern ports of An-p'ing, Tainan, and Takao (present day Kaohsiung) served as export centers where merchant guilds arranged the packaging and shipment of sugar to points on the China mainland, Japan, and southeast Asia. These guilds purchased their sugar from small sugar merchant groups called *t'ang-hang*, located in small towns near sugarcane areas. They obtained sugar from small brokers who purchased sugar directly from the various types of sugar processing establishments already described above. The export guilds usually advanced cash to the wholesale merchants on the promise of delivering a certain amount of sugar at a given time. These wholesale merchants then advanced part of this cash to the brokers from whom they purchased sugar and negotiated with them to deliver different grades at a specified time. Many of these brokers then paid cash to the sugar processing firms or advanced cash on the promise of supplying a certain amount of sugar. At sugarcane harvest time a large flow of cash into the rural areas took place, followed by a outflow of sugar to the port towns. The export receipts earned by the sugar merchant guilds were estimated to be divided between these guilds and merchants of the interior on a share basis of 70 and 30 percent, respectively. This strongly suggests that the export guilds, by virtue of their strong monopoly power and informed knowledge of international prices, were able to offer a low price to merchant and producers in the interior and obtain a rather high price from overseas sales. Increased foreign trade in the 1860's broke down this monopoly and made the distribution of sugar much more competitive. In the 1860's foreign merchants arrived in the southern ports. They used a new class of native merchants to buy directly from sugar wholesale merchants, and by so increasing the demand for sugar and raising its price, they destroyed the century old monopoly hold of the sugar export guilds over the interior market. By the 1880's new

native merchant groups had entered the sugar export market and were competing alongside the old export guilds and foreign merchants, so that the system of sugar distribution became completely restructured.

Between the *t'ang-hang* and sugar mills operated six types of merchants and brokers.³⁰ Several types were commissioned by the *t'ang-hang* to deliver sugar consignments whereupon others operated independent of the sugar wholesale merchants and delivered on their own accord after negotiating an agreed price. These brokerage firms bargained directly with sugar mills on the amount, price and delivery time. They subjectively calculated the upper and lower price limits within which they could agree upon a price for either black or brown sugar and haggled vigorously with sugar processing firms to obtain a price which would yield a satisfactory profit margin. The upper price limit which they could offer and still obtain a profit was established by the terms they previously had agreed upon with the sugar wholesale merchants. The brokers, who served as direct buyers for these wholesale merchants, typically earned a small profit margin whereas larger, independent middlemen bargained with both the wholesaler and producer and often obtained a higher profit margin.

The entry of foreign merchants and Chinese middlemen (*compradores*) into the sugar export trade brought additional funds into the market to encourage producers to increase the sugar supply. Banks in Hong Kong advanced credit to a foreign merchant who then negotiated with a *compradore* to supply sugar of a certain amount at a designated time. The *compradore* then found several brokers or wholesalers to obtain the sugar he needed. A contract was drawn up, guaranteeing delivery at a price which would satisfy the foreign exporter. The *compradore* loaned funds to brokers at a monthly interest rate of 1.5 to 2.0 percent which was often slightly below prevailing money lending rates in the local market. As more of the trade became dependent upon this kind of credit operation, less bullion flowed from the southern ports to sugar producers in the interior. Rising exports in turn stimulated increased demands to import cotton textile products, iron tools, kerosene, and even opium. These items were shipped inland by merchants and brokers. The small cash which sugar producers received for their sugar was usually quickly spent on these goods, so that middlemen very quickly received a cash outflow; the circular flow of cash between merchants, sugar producers, and back to merchants eliminated the need for a large inflow of bullion. As the sugar season advanced, some bullion moved inland because the proceeds earned from sale of opium and other imported articles could not pay for the amount of sugar being exported. But as the export trade waned later in the year and purchases of imports remained brisk, the cash outflow from the countryside compensated for the small bullion inflow early in the sugar season.

Toward the late 1880's a redirection in Taiwan's sugar exports took place because of changes in international supply and price. The price of sugar began to level off because the supply of beet sugar throughout Asia increased. The cheaper, more rapid western ships began to carry larger quantities of Taiwan sugar to Japan and north China. Before the affect of more stable prices

30 *Taiwan tōgyō kyūkan ippan*, pp.125-126. See also Shōda Kumaemon, "Sato torihiki ni kansuru kanrei" (Customs Concerning the Exchange of Sugar), *Taiwan Kanshū kiji*, 7:3 (March 1907), pp.1-15; Part 2, 7:4 (April 1907), pp.1-12; Part 3, 7:5 (May 1907), pp.1-16; Part 4, 7:6 (June 1907), pp.1-14; Part 5, 7:8 (Aug. 1907), pp.6-25.

could be felt in Taiwan, production and trade fell drastically because rebellion broke out when the island was ceded to the Japanese in 1895, and sporadic guerrilla-type operations continued until 1899. Farmers shifted from sugarcane production to rice and other subsistence crops, and the industry suffered widespread, but only temporary depression.

Commerce and Industry

As early as the Sung period, and possibly before, Chinese merchants had created an informal institution for mobilizing fairly large sums of capital to organize large-scale production and long-distant trade. This institution differed from the single proprietorship and partnership in that two or more persons contributed different capital shares and received a percentage of the profits according to the capital share invested.³¹ Capital shareholders received lots indicating their expected share of the profits. The greater the amount of capital mobilized, the easier it was for these investors to employ a manager to operate the enterprise. This type of arrangement differed in several important ways from the nineteenth century joint stock company which achieved such popularity in the west. First, these capital shareholders were liable for claims that might exceed the amount of money each initially invested. Second, this funding arrangement did not possess a legal and independent life of its own which permitted the transfer of share holding rights and obligations to other parties by a simple transfer of share lots. This joint-share arrangement carried no special form of protection before the law, and when production and trade expanded or declined, so too did these joint-share arrangements. This institution solved the short-term problem of mobilizing sufficient capital to launch a business, but when individuals withdrew their capital or the business began to experience difficulties, the joint-share arrangement soon collapsed. By the end of the nineteenth century this joint-share type of business enterprise operated in a variety of trades throughout Taiwan such as textile production and dyeing, production of shoes, salt, silver, and furniture, rice and millet processing, fishing, timber collection and transport. The following table shows an estimate of their number and spatial distribution for 1900 as compared to single proprietorships.

TABLE 13
Joint-Share and Single Proprietorships in Taiwan, 1900

Area	Enterprise Number	Joint-Share Firms	Non Joint-Share Firms
South	2,351 (100%)	246 (11%)	2,105 (89%)
Central	1,228 (100%)	150 (13%)	1,078 (87%)
North	2,932 (100%)	122 (5%)	2,810 (95%)
Total	6,511 (100%)	518 (8%)	5,993 (92%)

Source: Calculated from data obtained in the Temporary Commission for the Survey of Old Customs in Taiwan (First Section; third Report), *Taiwan shihō* (Taiwan Private Law), Tokyo, 1912, Volume III, Part 1, pp. 128-146.

³¹ See "Shōgyō kumiai ni kansuru jikō" (Particulars Concerning Commercial Partnerships), *Taiwan kanshū kiji*, 2:7 (July 1902), pp. 23-30.

The small percentage share of business enterprises of the joint-share form merely represents economic conditions whereby few firms became large. The more commercially advanced south and central districts possessed a higher percentage of this business form than did the north which depended primarily upon the export commodity of tea.

The joint partnership firm or *ho-ku* organization possessed characteristics enabling it to mobilize capital and undertake commercial activities requiring considerable funding and skilled management. As these characteristics were determined by custom over a long period of time, they reflected the substitute arrangements which businessmen had created and found effective in carrying out production and trade. Naturally, difficulties and barriers existed to prevent these organizations from becoming truly large scale and mobilizing huge amounts of capital. These elements did not characterize the internal structure and function of the joint partnership but were exogenous to the organization. Only innovations launched by the public sector could have eliminated these difficulties. Such a step would have meant the creation of new institutions to provide efficient litigation procedures, better law enforcement, and improved transport and communications. The building of these new institutions would also have depended upon organizational reform within the public sector, and this subject, so germane to successful modernization, still awaits proper research and theoretical formulation. At this stage we must remain content to examine the internal structure and function of the joint partnership arrangement.

Holders of firm capital shares identifying the amount each invested were called *ku-jen*.³² From among these shareholders, one was elected as the head manager (*t'ou-chia*) to represent the partnership in all matters such as litigation and business conduct.³³ Group discussion by the shareholders determined the selection from either among their ranks or from outside a choice of the firm's supervisor (*chia-chang*) who was made responsible for the day to day operations of the business and supervised all staff. The selection of personnel such as an accountant, record keeper, clerks, and cooks, was commonly decided by this supervisor. At the end of each year business profits were distributed according to each shareholder's investment in the organization. This amount was usually calculated as a certain percentage of the firm's earnings shown as profit. Decision making concerning expanding or contracting the firm's activities, opening of new markets, or adjusting prices was conducted through group discussion by the shareholders. They also had the right to investigate the accounts and records, and if dissatisfied they could fire the supervisor at any time. In case of disagreement, shortage of capital, or other business difficulties the shareholders could freely disband, each withdrawing the amount of the money originally invested.³⁴

³² *Taiwan shihō*, III, Part 1, p.163.

³³ Quite often in matters of litigation against another partner, the shareholder who had invested the most capital made the major decisions concerning the suit. As this person was most often the head manager selected by the partners to handle and represent them, the *t'ou-chia* thereby dealt with other parties himself. See "Dai rokkai kyūkan kenkyūkai hikki" (Notes of the Sixth Session of the Committee for the Study of Traditional Customs), *Taiwan kanshū kiji*, 2:10 (Oct. 1902), p.39.

³⁴ *Taiwan shihō*, III, Part 1, p.164. For further details on procedures of investing capital, burden of risk and loss of capital investment, the organization of working personnel within this commercial firm and each's duties, rewards and functions, see the same source, pp.164-180.

These partnerships functioned efficiently for long periods if trust and honesty prevailed between the shareholders. Where a strong willed individual with integrity commanded respect from the partners, the partnership was very likely to remain intact and be profitable for all. When conflicts or disagreements arose, they had to be resolved within the existing firm through arbitration and compromise. These partnerships operated in commerce, advancing funds to buy raw materials or semi-processed goods for storing, packaging, and shipping to other buyers in distant places. They possessed valuable information of available sources of supply and existing buyers which enabled them to make profits if they successfully linked suppliers with buyers. Although not large by modern day standards, their typical capital of several bullocks and carts, a small ship, several buildings, and a shop represented a large outlay for businesses in this pre-modern economy. Aside from this fixed capital, the firm also usually had committed substantial funds toward inventory accumulation awaiting shipment to customers. These partnerships were active in rice marketing, noodle manufacturing, fish marketing, lumber storage and marketing, peanut processing and sale, fuel (coal) distribution, tea, paper, medicine, hemp, cotton, precious metals, and tobacco marketing.³⁵

Just as partnerships and single proprietorships specialized to carry out certain marketing and processing tasks, so too within a firm there existed a workforce hierarchy in which each worker fulfilled certain duties and received rewards commensurate with his skill and experience.³⁶ Each commercial firm had a director or general manager representing it, and below him was the supervisor or *chia-chang* who took charge of all personnel and managed the firm's day to day business transactions. His duties and salary were outlined in a contract signed between himself and the director or general manager. The smooth operation of the firm depended greatly upon the activities of the *chia-chang*. His selection was determined mainly upon mutual trust, his reputation for honesty, good references and often even a guarantor. The personnel below the *chia-chang* ranged from accountants (*chang-kuei*), handlers of money receipts and outlays (*yin-kuei*), clerks taking care of inquiries from afar (*ch'u-chieh ch'u-chuang*), to cooks (*tsung-p'u*). Their number depended upon the firm's size and its volume of annual business. This workforce hierarchy possessed an internal wage structure based upon rewards being paid according to required skills and experience. For example, accountants received a higher salary than did other personnel. An accountant had to be knowledgeable of different accounting systems and be able to read, write, and calculate.³⁷

35 These firms, as well as their functions, are listed by their commodity trade in "Kanshū kenkyūkai mondō hikki" (Notes on Questions and Answers of the Committee for Studying Traditional Customs), *Taiwan kanshū kiji*, 2:5 (May 1902), pp. 22-43.

36 The following discussion is based entirely upon Kamiuchi Kōsaborō, "Taiwan ni okeru shōgyō shiyōnin" (Employees in Commercial Enterprises in Taiwan), *Taiwan kanshū kiji*, 5:3 (March 1905), pp.26-36; Part 2, 5:4 (April 1905), pp.1-10. The information presented in this essay relates to employment conditions within commercial firms around Hsinchu at the turn of this century.

37 A thorough going study of Chinese accounting and bookkeeping procedures is sorely needed. An excellent source to begin is *Taiwan shihō*, III, Part 1, pp.230-248. See also "Shōgyō kumiai ni kansuru jikō," *Taiwan kanshū kiji*, 2:7 (July 1902), p.27. One type of account records (*tsung-pu*) covered commercial transactions with buyers or sellers in other areas; another (*ts'ao-ching-pu*) recorded day to day transactions; finally, the *jih-ch'ing-pu* method was a collection of all day to day recordings and summed up the daily business volume. See also Tōa Kenkyūjo (East Asian Research Institute), *Shōji ni kansuru kankō chōsa hōkokusho: gōkō no kenkyū* (A Survey Report of Traditional Customs Concerning Commercial Affairs: Research on the Ho-ku or Joint Partnership), Tokyo, 1943, pp.333-468.

The commercial structure within which proprietorships and partnerships operated ranged from simple to complex depending upon the development of the market and the type of market. Two market types predominated.³⁸ First, there were small produce and miscellaneous goods markets operating each day for a prescribed period of time, located typically near a temple, and situated in small towns or cities. Farmers brought their goods to these markets and merchants buying in other districts distributed their goods in these markets. These retail markets enabled the common people to buy directly for their needs. The second market type consisted of merchant shops specializing in stocking and selling certain goods to these shops located in certain streets or sections of market towns and larger cities. These firms bought and sold consumer durables such as furniture and ceramic ware as well as pongee silk, bolts of cotton cloth, and cotton silk yarn for households to make their own clothing. Some of these shops dealt directly with other retailers, with the consumer, or export merchants.

The example of the tea trade reflects the complexity which a market structure assumed after the opening of the country to foreign trade.³⁹ Merchant firms specializing in processing and sale of tea could be found in towns and cities of the north. Yet these firms were merely one link in an evolving commodity market structure of considerable interdependency and complexity. On the slopes of hills outside of Taipei and Tanshui peasants cultivated the tea plants. Small tea merchants called *tso-ch'a* purchased tea directly from the peasants, then dried, pressed, and fired it for sale to larger commercial firms called *ch'a-fan* who were located in market towns. The *ch'a-fan* sorted the tea by grade and type, selling some of it to retail stores and consumers, and quite often the better quality green tea to merchant wholesalers called *ch'a-kuan*. The *ch'a-fan* merchant shops represented the firms of the second market type described above. The *ch'a-kuan* continued to sort the tea by quality and type, conducted further drying and firing, and then packaged it for sale to foreign firms (*yang-hang*) or to Chinese wholesale firms in other cities or abroad. Three types of merchants were involved in the tea trade and functioned to distribute tea within the domestic market, to Chinese markets overseas, and to foreign markets. The backward conditions of transport, communications, and credit required that different merchants carry out these separate tasks. Had more modern marketing conditions existed, a single, large merchant firm could have carried out these multi-tasks at perhaps lower unit costs. This development could not take place as long as weights and measures were not properly standardized, the procedures for firing the tea and packaging were not subject to uniform quality control, and efficient communications did not exist to inform buyers immediately of prices prevailing in distant markets. Without these improved, external economies of scale the various middlemen continued to perform those vital functions necessary to overcome the marketing difficulties which backwardness had created.

The final type of mercantile organization was the merchant association or gild (*chiao*) which represented a group of merchants in one or more commodity lines of an important trading city

38 *Ch'ing-tai T'ai-wan ching-chi shih*, p.81.

39 These observations are based on a question and answer session between Japanese researchers and Chinese merchants of Taipei and Tanshui in late 1901. "Kyūkan mondō roku" (A Record of Questions and Answers Concerning Traditional Customs), *Taiwan kanshū kiji*, 2:1 (Jan. 1902), pp.27-39. For a similar discussion outlining the market structure for rice in the Taichung region see "Beisho ni kansuru jikō" (Particulars Concerning Rice Merchants), *Taiwan kanshū kiji*, 3:2 (Feb. 1903), pp.48-50. Rice merchants bought rice directly from farmers or middlemen (*mi-chung-mai* or *mi-i*) who then sold directly to the wealthy or other retail shops dealing in miscellaneous goods.

engaged in foreign trade. The purpose of the merchant gild was to provide the means by which a group of merchants of similar interests could be protected, communicate with one another, and eliminate competition or threats from merchants of distant areas.⁴⁰ Gild merchants were to behave honestly with their customers and one another so that the gild performed the function of policing business ethics, merchant standards, and marketing practices. In the event of disputes between merchants or their customers the gild operated to mediate and resolve the disagreements. If individual merchant firms encountered difficulties they might obtain help from the gild to weather the storm and continue operations. Finally, these gilds performed a number of public community services such as repair bridges, keep harbor facilities operating efficiently, contribute to charity organizations, and mobilize funds in the event of disasters. These same gilds usually maintained halls in their home base area as well as in important overseas trading centers where gild business was conducted. Each gild also elected a board of directors (*tung-shih*) which met in the gild hall to supervise and decide gild matters. A gild operated according to a book of rules established upon its founding, and from these rule books it is observed that gild officials usually served for a period of a year.⁴¹ A special officer was also chosen to conduct rites and sacrifices in the gild hall.

By the second quarter of the eighteenth century merchant gilds flourished in Tainan and Lu-tzu-chiang of Chang-hua district. They already had "extended their activities as far north as Shantung and as far south as Fukien and Kwangtung. They exported sugar, bean oil, and rice from Taiwan, and imported silk and satin materials, gauze, paper, pine board, tobacco, and cotton from the mainland."⁴² Each association depended upon smaller merchant firms to sell their imported articles in local markets and buy products from the interior for export. These small merchant groups, called *hang-chia*, "purchased those products imported from the mainland and sold them directly to retail merchants; they also purchased locally produced articles and sold these to the export wholesale merchants."⁴³ Below the *hang-chia* individual merchants operated retail shops or simply peddled their wares. Many of these local merchants depended upon brokers who were extremely knowledgeable of market conditions and currency exchange rates to obtain customers and credit. In spite of the slow growth in trade, a rather large volume of different commodities flowed to and fro between the hinterland and the coast port towns. This overseas export trade was extremely profitable as in the case of certain exotic products. For example, a cartload of bark nuts weighing 960 catties (nearly 1,300 lbs) when purchased in Pohson on the southeast coast for 70 cents per hundred catty weight sold from \$3.50 to \$4.50 in Wenchow of Chekiang.⁴⁴ A profit of 500 percent enabled the many brokers handling the shipment and the merchant exporter to earn a handsome profit.

Throughout the Ch'ing period commerce slowly developed on the basis of an expanding agriculture and the discovery of certain rare commodities such as camphor, nuts, and precious stones which could be obtained in considerable abundance without great cost. The export of foodgrains, sugar, and exotic commodities supported a large import trade of textiles which the

40 Kamiuchi Kōsaborō, "Kyūkan chōsa zuihitsu" (An Essay on the Study of Traditional Customs), *Taiwan kanshū kiji*, 4:9 (Sept. 1904), pp.13-27.

41 *Ibid.*, p.25.

42 *Ch'ing-tai T'ai-wan ching-chi shih*, p.82.

43 *Ibid.*, p.84.

44 G. Taylor, "A Ramble Through Southern Formosa," *The China Review*, 16, p.155.

Chinese used to make clothing. The gazetteer records for Chu-lo district reported that in the villages "women did not make clothing of silk but they were able to embroider. From the ages of ten years and above they were taught this skill, and the more skilled workers can support themselves and still produce a modest surplus. But these activities are not very profitable and fall far short of what could be earned if there was spinning and weaving."⁴⁵ In the early 1720s the Fukien official Lan Ting-yuan who had participated in the defeat of Chu I-kuei urged that a silk promotion agency be established in Taiwan and that silk reeling and weaving among the farmers be encouraged.⁴⁶ In spite of Lan's suggestions for how to develop Taiwan's resources so as to prevent another large rebellion from taking place a textile industry simply never took root. The reasons are partly geographic and economic. First, the farmers found it more difficult and costly to grow industrial crops for producing textiles because of excessive humidity and unsuitable soil conditions. On the other hand rice and sugarcane could be cultivated cheaply and produced in large quantity. Second, the terms of exchange between Taiwan and Fukien favored Taiwan to import textile materials and other processed goods such as wine and ceramic ware and pay for these through exports of foodgrains and sugar.

Credit, Money, and Prices

Households engaged in producing foodgrains, sugarcane, and tea shared their resources and pooled their funds to pay the factors of production employed to produce these commodities. Where producers or merchants combined to undertake production or trade upon a joint-partnership basis, savings were pooled and little or no borrowing took place. Therefore, the production and distribution structures within this traditional economic system operated mainly by mobilizing savings within the organizational unit.⁴⁷ Even after foreign trade increased during the 1860s, there is little evidence to argue conclusively that market expansion initiated new financial institutions or brought an inflow of foreign merchant credit to Taiwan which greatly influenced the traditional order and organizational activity. Demand for credit to expand production or to undertake new production never took place either before or after 1858 rapidly enough to elicit new, private arrangements to supply credit. This development can also be interpreted to mean that as the long run demand for savings increased, traditional means for mobilizing savings adequately met these demands.

Demand for credit mainly occurred between households for consumption purposes at festivals, for social occasions, or in time of hardship. The three principal forms by which households obtained credit were short term-small loan borrowing (*t'ai*), long term-large loan borrowing (*tien*), and borrowing from pawn shops (*tien-tang*). The custom of *t'ai* consisted of a prospective debtor

45 Inō Yoshinori, *op. cit.*, II, p.657.

46 *Ibid.*, p.658. For the biography of Lan Ting-yuan see Arthur W. Hummel, *Eminent Chinese of the Ch'ing Period* (1644-1912), Washington, U.S. Government Printing Office, 1943, Vol. I, pp.440-441.

47 This is particularly true in the tea industry. On the mainland the tea production structure that evolved in Kwangtung and Fukien depended greatly upon working capital advanced by the East Indian Company and other foreign merchants. For the best discussion and analysis of the evolution of the mainland tea industry see Hatano Yoshihiro, *Chūgoku kindai kōgyōshi no kenkyū* (Studies in Modern Chinese Industrial History), Tokyo, 1961, pp.97-130. In Taiwan there is evidence that merchants began buying and leasing land to guarantee a stable supply of tea, but my belief is that the farm family (tenants or freehold) still produced and self-financed the largest share of total annual tea supply. The best description of the tea industry in Taiwan is James W. Davidson, *op. cit.*, Chapter 23.

pledging some form of immovable property, e.g. land, structure, irrigation reservoir, as collateral for a loan in which interest would be paid. The Board of Revenue never made official reference to this type of transaction, so that this custom evolved between household seeking and dispensing credit.⁴⁸ In the case of *t'ai* the pledged asset did not pass into the hands of the creditor unless the debt was not paid on time, in which case the creditor had customary right to press for immediate debt repayment. If he could not collect, he could claim the collateral originally pledged as his own. The terms of such loans involved small sums to be repaid within a year in which the interest rate varied according to the region.

The practice of *tien* involved a prospective debtor exchanging a form of immovable property, usually a plot of land, for a loan.⁴⁹ Upon receiving the property, the creditor had the option to use the property as he saw fit: farm or lease it to another household. The household relinquishing rights and claims to all income from the property (*ch'u-tien-che*) neither paid interest nor tax on the property. The creditor (*ch'eng-tien-che* or *yin-chu*) now acquired full income from the property until the loan was repaid. Households usually arranged *tien* by oral agreement, but some written *tien* deeds dating as far back as the eighteenth century still exist.⁵⁰ The period of *tien* was invariably longer than a year, typically for three years, but sometimes as long as ten years. Custom dictated that when the debtor repaid the loan the creditor must return the property. If some damage had meanwhile been incurred on the property prior to the time for loan repayment, the custom in south Taiwan was for the debtor to make necessary repairs to restore the property to its original *tien* value; if damages occurred after the stipulated *tien* period, both creditor and debtor shared equally in paying for repairs of the creditor merely deducted his share of the expenditures from the original loan.⁵¹ In the event the creditor transferred the mortgaged property to another household, he was obliged by custom to make the transfer at a value not exceeding the original mortgaged value of the property and on the same terms which he and the debtor had formally agreed upon.⁵² This made it possible for the debtor to repay the loan and obtain his property from the third party now holding the mortgaged property. Under *tien* the moneylender had no right to demand that the loan be repaid, even after the agreed upon period for repayment had passed.⁵³ Chinese officials considered holders of mortgaged land to be the actual landowners and made them responsible for paying the land tax.⁵⁴

48 *Taiwan shihō*, I, Part 1, p.711. This custom was initiated by a borrower and referred to as *li t'ai-chieh yin-tzu jen* (a person who hypothecates property and borrows money).

49 *Ibid.*, p.651. For an excellent discussion differentiating between *t'ai* and *tien* see "Ten-tai ni kansuru jikō" (Particulars Concerning the Practice of *tien* (mortgage) and *t'ai* (pledge)", *Taiwan kanshū kiji*, 3:4 (April 1903), pp.33-36. In the dialogue between Japanese researchers and Chinese respondents these two customs were defined as follows.

Question: "How does one distinguish between *tien* and *t'ai*?"

Answer: "The custom of *tien* is when a section of land with a deed passes to money lender (*yin-chu*). It is optional for the money lender whether he leases or farms the land. The custom of *t'ai* is when only the deed to the land passes to the moneylender. In this case the moneylender only collects an interest payment from the tenant. The land does not pass into his hands, and the period of agreement is determined by mutual consent of both parties.

50 *Ibid.*, pp.693-700.

51 *Ibid.*, p.657.

52 *Ibid.*, pp.703-704.

53 Yamamoto Ryūzō, "Tenshū wa saiken teki kankei ni oite genten kagin no bensai seikyūkenri o yū suru mono ni arazu" (The Holder of Mortgaged Property Does Not Have the Right to Demand Cash Payment from the Debtor Under Such a Mortgage Relationship), *Taiwan kanshū kiji*, 4:9 (Sept. 1904), p.2.

54 *Ibid.*, p.4.

The customs of *t'ai* and *tien* operated in the countryside as well as cities and towns. However, in the urban sector of society an institution operated to distribute credit to households which was not always available to those living in the countryside: the pawnshop (*tien-tang* and *chi-tzu-tien*). The example of pawnshop activities in Tainan (*Taiwan-fu*) serves to illustrate how this institution functioned elsewhere.⁵⁵ The *tien-tang* shops were large establishments with considerable capital, capable of providing large loans for pawned articles, and charging low interest rates for long term loans. The *chi-tzu-tien* shops were smaller, with less capitalization, lending from only one-fourth to one-half the size loans of the *tien-tang* shops, and charging slightly higher rates for short periods. The large pawn shops issued tickets for items pawned, thereby allowing the debtor to redeem his pawned item with security, but the small shops did not issue tickets, merely recorded the items pawned, thus providing less guarantee for the debtor to redeem his pawned articles.

Loans granted by the *tien-tang* could extend between 1 and 3 years with interest reckoned and paid by the month. Such interest rates ranged between 2 and 2.5 percent per month. The *chi-tzu-tien* shops loaned up to several months and collected interest for every ten days or three interest payments per month. These interest rates ran as low as 3 percent and as high as 9 percent. Both shops had to obtain permission from local officials to open and conduct business. They paid a flat surcharge tax of 5 taels, totally unrelated to the firm's capital and monthly profits. Each shop also had to adhere to a strict set of rules as to the maximum interest it could charge.⁵⁶ Therefore, we can say that officials closely regulated pawnshop interest rates, period of loan, and hours of conducting business. This raises the interesting question of to what extent did pawnshop interest rates truly reflect general demand and supply conditions for credit or did official controls distort these rates, thereby causing a different allocation and use of credit than what market forces would have accomplished? This question is difficult to answer without long term monthly interest data, and until pawnshop records are found and examined, the question remains unanswered.

The credit issued by households or pawnshops consisted of copper or silver coins, as these comprised the elements of the money supply in this economic system. The silver unit or tael was used principally by merchants and officials for high value transactions. Copper coins, used by households for marketing, payment of debt, and hiring labor, was the principal medium of exchange for small value transactions.⁵⁷ Government minting bureaus in each province minted coins according to the imperial reign period and province. There were fourteen copper minting bureaus under the direction of the Board of Revenue; Taiwan depended upon Fukien for its source

55 The evidence for this discussion is based upon the study by Ta Shih-hsing, "Taiwan chihō ni okeru shichiya eigyō no kyūkan" (Traditional Customs of Pawnshop Business in the Region of Taiwan), *Taiwan kanshū kiji*, 1:10 (Oct. 1901), pp.1-16.

56 *Ibid.*, pp.7-8 cites 17 such rules these shops had to follow or suffer property confiscation by officials. The following interest rates are for large and small loans issued by these two types of shops.

Large loan shops

2.5 percent for 2 years
2.5 percent for 4 years, 4 months
2.0 percent for 30 months
2.0 percent for 40 months
3.0 percent for 1 year

Small loan shops

4 percent for 12 months
3 percent for 12 months
3 percent for 12 months
4 percent for 12 months
6 percent for 4 months

57 Inō Yoshinori, *op. cit.*, III, p.64.

of copper coinage. During the eighteenth century the main method by which the supply of copper coinage increased in Taiwan was from payments to the military for wages and expenditures for rice shipments during time of foodgrain shortage in Fukien.⁵⁸ In the 1820s and 1830s the supply of copper coinage became very scarce relative to demand for cash because of the outflow of silver from China. Private shops commenced minting counterfeit copper coins which circulated freely and were used for monetary payments.⁵⁹ During the 1850s and 1860s the Spanish Carolous dollar from the Philippines appeared in markets and became an accepted medium of exchange between traders. As the money supply became more complex in terms of different copper coinage, privately minted coins and non-Chinese currency, different money units were used for specific transactions as determined by price, goods being exchanged, and the individuals or organizations involved.⁶⁰ This gradual expansion of the money supply permitted a larger volume of transactions to take place, and throughout the nineteenth century it met the new requirements imposed by foreign demand for additional products. After 1895, when Japan began to initiate economic change, monetary reform became necessary. There is no evidence, however, that during the Ch'ing period diverse monetary units restricted the production of goods and service and impeded transactions. Nor did the money supply remain inelastic with respect to the demand for cash for any long period of time.

The prices of goods and services, wages for hired labor, interest for debt, rent for fixed wealth, and profits from business activities provide information to households and business organization to manage their affairs according to the ends each pursue. In the Taiwan traditional economy under Ch'ing rule these prices and payments were determined in highly competitive markets. In agriculture, handicraft, and commerce where households and business firms produced and competed, restrictive entry into the market did not exist. In large port cities merchant guilds appear to have possessed some monopoly control over supply and could influence prices for long periods of time. This monopoly control disappeared after the 1860s, and markets became more competitive. But even in the pre-foreign trade period numerous merchants and middlemen who served as brokers or jobbers between merchants and producers competed with one another for a share of the market and available profit. The prices of food products, textile articles, household items, and commodities used for construction and for ceremonies fluctuated seasonally as virtually all items were produced and processed from agriculture and the lumbering trade. Finally, prices of similar goods differed considerably from one area to another because of transportation costs. These regional price differences can be observed in Table 14 which contains information on rice prices in four regions over a three year period and their standard deviation. Even in this small region prices varied considerably between districts, and the standard deviation for price differences from the mean was high. If transportation and marketing had improved, regional price differences would have been reduced and the standard deviation approached zero.

⁵⁸ *Ibid.*, p.65.

⁵⁹ "Taiwan no senhō ippan" (A Draft on the Copper Money System in Taiwan), *Taiwan kanshū kiji*, 4:2 (Feb. 1904), pp.70-71; also *Ching-tai T'ai-wan ching-chi shih*, p.113; Inō Yoshinori, *op. cit.*, III, p.70.

⁶⁰ This same assertion has been made about the mainland monetary system during the Ch'ing period. See Frank H. King, *Money and Monetary Policy in China 1845-1895*, Cambridge, 1965.

TABLE 14
Rice Prices in Four Regions of Taiwan between 1890-1893 and their Standard Deviation

Region	Year (price in taels per shih)			
	1890	1891	1892	1893
Taichung	1.65	1.75	1.75	1.80
Hsia-mang cheng-chang	1.75	—	1.80	1.70
Miao-li	2.22	2.00	1.93	1.93
Pu-li-ts'e	1.11	1.15	1.06	1.06
Mean	1.68	1.63	1.64	1.62
Standard deviation	0.39	0.36	0.34	0.33

Source: Data obtained from Chou Sheng-jen, "Ch'ing-tai T'ai-wan mi-chia chih" (A Record of Rice Prices in Taiwan during the Ch'ing Period), in *T'ai-wan Ching-chi shih shih-chi* (Economic History of Taiwan: No. 10), Taipei, 1966, p.125.

In an economic system constantly threatened by fluctuations in raw material and food stocks, prices are influenced by the severity of external factors randomly affecting the harvest and inventory holdings. These are natural disasters and wars. Taiwan's economic system expanded over time because of the extension of cultivated land, the increase in supply of labor in agriculture, and the rise of a more specialized commercial network. The price level might rise in the short run because of rising demand from population growth and foreign trade expansion. The process by which short run supply and demand adjustment produced a long term upward drift in prices has not been examined in detail for pre-modern economies, and as detailed information on commodity prices for traditional Taiwan is not yet available, I use only two commodity prices to argue the following proposition. Demand factors produced temporary supply scarcities which in turn increased the prices of commodities, thereby making them more profitable for existing producers to increase production. As resources were fully employed, producers merely bid up the prices of the necessary resources thereby causing production costs to rise.⁶¹ Modest shifts in demand produced gentle staircase jumps in prices that simply reflected these small surges in production costs. The long term upward drift in prices, created by these short run price jumps should not be considered inflationary but merely reflect short run demand and supply adjustments. Had these upward price increases been inflationary some redistribution of income between social classes would have taken place, but there is little evidence that such redistribution took place. I contend that this traditional economy was a full employment economic system because when very large demands were suddenly imposed, severe commodity shortages took place because of the scarcity of labor and rising money wages: the very rapid price rise that then occurred properly deserves to be called inflation. Except for short run price fluctuations, rapid, long term price rise simply did not take place in Taiwan until the period 1896 to 1903 when new demands for labor and the injection of new money into the economy greatly accelerated price increases. For support of these assertions, I trace the long term trend in rice price for the period.

61 The assumption will hold true in particular if markets are competitive and factors of production have already been allocated to their highest paid use.

Between 1683 and 1765 the price of rice fluctuated rather violently in the short run because of poor harvests and large purchases from Fukien to supply the military, but the rice price level does not seem to have risen.⁶² The price of 1 *shih* of rice between 1683 and 1710 appears to have been rather stable ranging between .3 and .6 taels, and between 1750 and 1765 the most frequent price observation was .6 taels. Rice prices rose greatly between 1710 and 1715 (between 1.0 and 2.0 taels), again in 1721 to similar levels and in 1748 to 3.0 taels. By the nineteenth century the most frequent price quotations ranged between 1 and 1.5 taels. To be sure, rice prices still rose to very high levels in certain years: in 1788 they were 3.0 taels; in 1795, 5.0 taels; in 1806, 2.0 taels; in 1860, 3.0 taels. Between 1875 and 1895 rice prices constantly fell within the range of 1.0 to 1.8 taels. Therefore, it appears that a long term upward drift in rice price had taken place. Between 1683-1710 the typical rice price per *shih* ranged between .3 and .6 taels whereas between 1875-1895 the price range typically fell between 1.0 and 1.8 taels. When the growth rate for rice prices over this 220 year span is calculated according to these terminal year rice price ranges we obtain a crude average growth rate for rice prices of around 2.30 percent per annum which very closely approximated the growth rate for agricultural products and population.

Rice was only one of several important wage goods. For another commodity price series, pork, between 1875 and 1886, the annual price increase rose only 1.32 percent, a growth rate very similar to that of rice for the same period.⁶³ The further back in time one goes, say the early eighteenth century, the price of pork, like rice, must also have been at a very much lower level; if so, then the long term growth of pork price might have closely corresponded to the rice price increase. This assertion is merely hypothetical and awaits further information for testing, but what can be argued with certainty is that general commodity prices between the mid-eighteenth century and the early 1890s rose very gradually, probably at an expansion rate of less than 2.0 percent per year or very close to that of the population and food supply growth rates.

This traditional economy seems to have been spared increased demands for its resources for prolonged periods of as long as a decade. But between 1895 and 1902 a distinct acceleration in prices took place for the first time. On the basis of price data for twenty-one agricultural products for north and south Taiwan, raw and processed, I have computed a simple unweighted, aggregate index for the years 1896, 1899, and 1902. The base index for 1896, set at 100, rose to 124 in 1899 and then to 133 in 1902.⁶⁴ The annual growth rate for price increase between 1896 and 1899 (four years) was 5.53 percent and between 1899 and 1902 (four years) it was 2.60 percent or an average of 4.07 percent for the entire period. This growth rate was twice that of the long term rice price growth rate during the Ch'ing period. Several new developments greatly affected price change during this brief period to produce a different price trend than what occurred during the next thirty-three years. Between 1903-05 and 1936-38, for example, the annual growth rate of the

⁶² The prices quoted for rice were obtained from Chou Sheng-jen, "Ch'ing-tai T'ai-wan mi-chia chih," pp.126-137.

⁶³ "Tōshinanbei" (East-West-South-North), *Taiwan kanshū kiji*, 3:2 (Feb. 1903), p.78. This study presents the price of slaughtered pork for the period 1875-1886 (price per 10 catties) for the Taichung area. In 1897 roughly 22,900 head of pork were slaughtered for a total value in excess of 4.0 million yen.

⁶⁴ Calculated on the basis of raw price data contained in "Rōgin ippan" (A Draft Outline of Money Wages), *Taiwan kanshū kiji*, 6:2 (Feb. 1906), pp.12-13 and p.16.

Taipei retail consumer price index rose at roughly 2.0 percent which corresponded closely to that of price increase between 1899 and 1902 and prior to 1895.⁶⁵

Between 1896 and 1899 the Japanese military conducted many expensive field campaigns to pacify the island. Military units required vast amounts of labor for carrying supplies, building fortifications and structures, and constructing roads. This new, unprecedented demand for labor created great labor scarcity in the countryside and involved the injection of new money into this traditional economy. The scarcity of labor was so acute in the Chang-hua and Taichung districts, for example, that the bean oil and sugarcane processing industries declined because of the shortage of raw materials attributed to a reduction in cultivated area.⁶⁶ As wage labor became more expensive, farmers simply could not afford to employ the same amount of labor as in the past. Therefore, they hired less labor and reduced the sown area. Even if the village economy could have released some labor on a seasonal basis, military demands for labor usually extended for a longer time, so that rural wages ultimately rose, thereby pushing production costs upward. The increased purchasing power that stemmed from military wage payments also increased the demand for wage goods, and many commodities were domestically purchased rather than exported. As a result exports of foodgrains declined between 1896-1899, and their prices also rose.

During the 1899 to 1902 period Japanese demand for labor continued, but as this labor was now employed to build a trans-island railroad, Keelung harbor, and other assorted projects which improved transport and reduced marketing costs, farm labor was able to become more specialized and increase supply for an expanding market.⁶⁷ Therefore, the continued mobilization of labor for projects which very quickly promoted an increase in supply of agricultural products even before entirely completed served to dampen price increase. These new developments suggest the

65 Calculated from the consumer retail price index for Taipei estimated by Toshiyuki Mizoguchi, "Taiwan oyobi Chōsen ni okeru bukka shisu no chōki keiretsu no suikei" (An Estimate of Long Term Price Indices for Taiwan and Korea), *Hitotsubashi Ronsō*, Part 1, 65:5 (May 1971), p.65.

66 "Rōgin ippan," p.12.

67 For evidence of greater specialization and increased output and expanded cultivated area for various districts after 1898-99, I offer the following information obtained from the source *Chōsa keizai shiryō hōkoku*, I. In Keelung prefecture rice cultivated area and production rose steadily after 1900 (p.461). In Miao-li prefecture sugar production and output of peanut, sesame, sweet potato, and beans increased after 1899; rice cultivation fluctuated and showed a trend downward suggesting a shift of labor and land away from rice to other crops for specialization purpose (pp.504-507). In Taichung prefecture tobacco output and rice production rise rapidly after 1898 (p.556 and p.560). In Chang-hua prefecture rice production increased after 1900 (p.588). The output of indigo also rose significantly after 1899 (p.598). In Nan-t'ou prefecture rice cultivated area and production increased steadily after 1899 (p.604). In Tou-liu prefecture tea production increased (p.611), sugarcane production and cultivation also rose dramatically (p.629), but rice output and cultivated area fluctuated and showed a trend downward between 1901-1902 (p.622), suggesting an allocation of resources from rice to other crops. In Chia-i prefecture there occurred a great increase in over-all cultivated area after 1899 (p.651), but again a pattern of resources moving out of rice production into sugarcane and indigo production (pp.658-694). In Yen-shui-chiang prefecture total cultivated areas rose impressively after 1899 (p.698) and sugar output rose also from 9 to 10 to 23 million *kin* between 1900-1902 (p.701). Rice production for these same years showed a slight decline (p.708). In Taiwan prefecture sugarcane production, occupying between 25 and 30 percent of island output (pp.721-722), showed an impressive increase in cultivated area and output (pp.717-718). Although these years might have been marked as good harvest years, it is significant that in virtually all prefectures cultivated area increased, some re-allocation of resources took place, and the general output trend for prime crops of each prefecture was upward after 1899.

following observations. This traditional economy could not release labor from agriculture for periods longer than a farming season without wage labor and farm product prices rising very rapidly. However, if farm labor was mobilized for projects which reduced production and marketing costs for the agriculturalist and favored greater specialization of farm labor, the elastic supply response to new market demand considerably dampened price increase. The opposite was true if rural labor was employed in activities which did not favorably influence farm production.

Late Ch'ing Efforts to Strengthen Taiwan

The Ch'ing government sent several officials to Taiwan in the 1880s and early 1890s to preserve Chinese sovereignty over the island. These officials made feverish, energetic efforts to bolster Taiwan's military defenses. Some of these efforts have been called modernization efforts, but they properly were activities aimed at improving defense capabilities against foreign encroachment. These efforts deserve comment because (1) they reflect in mirror fashion Ch'ing self-strengthening efforts on the mainland and should be compared with those efforts; and (2) some of these policies would have transformed this traditional economy as they were the identical measures the Japanese colonial officials later introduced during their first decade of rule. Although these officials did not succeed in keeping Taiwan under Ch'ing imperial authority, they pioneered small changes which later became the basic reforms that profoundly influenced the island's next half century of economic and social development.

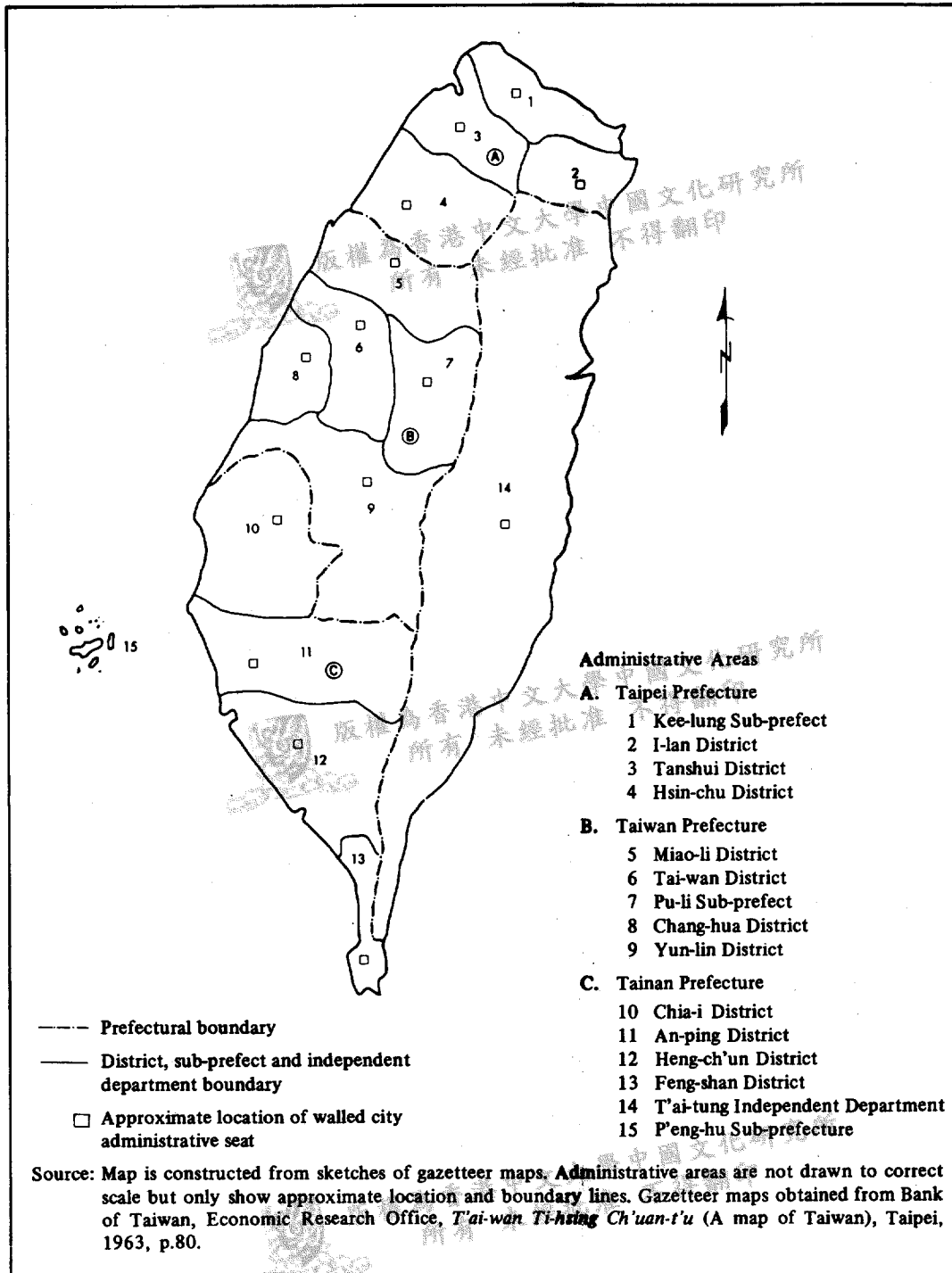
By the early 1870s the island's abundant, fertile land, natural resources, and potential sites for good harbor and commercial development had encouraged one foreign visitor to remark that "everything there was in its infancy," merely awaiting to be tapped.⁶⁸ The following narrative of Ch'ing officials' efforts to develop the island's resources more intensively than in the past indicates a new official attitude toward economic development.⁶⁹

In 1870 Shen Pao-chen arrived to strengthen the island's military defenses. He tried to promote coal mining, but before this scheme and others could take form he was replaced by Ting Jih-ch'ang in 1876. Ting installed a telegraph line between Kaohsiung and Tainan. In the summer of 1884 Liu Ming-ch'uan replaced Ting with orders to prevent a French invasion as war with France had broken out in late 1883. In 1885 Liu began to take steps to bring changes to Taiwan. In October he was appointed governor of Taiwan. In the next two months he established a credit association in northern Taiwan and two bureaus to establish an arsenal and to create a telegraph system. In 1886 work commenced to lay an undersea telegraph cable between Taiwan and Foochow. In May of the same year Liu set up a land tax reform bureau (*Ch'ing-fu-chü*) and initiated a land cadastre survey. He also established land reclamation and forestry bureaus. Finally, he issued new rules on how a likin tax system would be introduced. In 1887 the entire administrative system of Taiwan was restructured (see Chart 1). The land tax reform rules were also issued which ordered (1) a reduction in the rents *ta-tsu* households collected from *hsiao-tsu* households by 40 percent and (2) the land tax be paid by the *hsiao-tsu* instead of the *ta-tsu*. Liu also established a railway bureau which began work on constructing a railway line between

⁶⁸ Herbert J. Allen, "Notes of a Journey through Formosa from Tansui to Taiwan-fu," *Proceedings of the Royal Geographical Society*, 21 (1876-1877), p.265.

⁶⁹ This narrative is based upon evidence in *Taiwan ching-chi shih ssu-chi*, pp.97-98.

CHART 1
Taiwan Province (1885-1895)



Keelung and Taipei. He also purchased a steamship for the purpose of carrying goods and people between Taiwan and mainland China. This vessel was to be the first of several such ships for bringing Taiwan closer to the mainland. Liu also established a camphor bureau to control supply, fix prices, and manage export earnings. The likin tax was finally introduced. In addition Liu founded a Western School in Taipei. In 1888 Liu's administration successfully built a light house at Tanshui harbor, established a postal bureau to manage the postal service, created a coal mining bureau with an advance of 400,000 taels, and set up the salt bureau. In 1889 Liu began to rebuild and modernize Taipei city to make it the island's new capital. In the same year construction of the telegraph between Tanshui and Foochow was successfully completed, as well as a telegraph line between Taiwan and Taipei. In 1890 the administration established a bureau to regulate monetary affairs and a sericulture bureau. Liu Ming-ch'uan finally departed from Taiwan after six active years to be replaced by Shen Ying-k'uei. In 1891 Shen's office succeeded in establishing the An-p'ing light house. Government offices and bureaus now began to locate in Taipei. Construction and improvements of the city had been completed. The railroad between Taipei and Keelung had opened for traffic. In 1892 the Kaohsiung light house had been completed; a new gold mining bureau had been created. In 1893 the railway between Taipei and Hsinchu had been completed and opened for traffic. In 1894 governor Shen was replaced by governor T'ang Ching-sung. In the very next year, March 26, Japanese troops occupied the Pescadores, began to land troops in northern Taiwan, and for a brief period the Taiwan People's Republic flourished with T'ang Ching-sung as president and Liu Yung-fu as vice-president. Our story ends with this year.

Most of the major reforms and projects initiated and completed were sponsored by Liu Ming-ch'uan during his five years as governor. In no other province of China had so many important new policies and projects been initiated and completed with moderate success.⁷⁰ To be sure, the impact of these projects on the economy proved to be very slight: coal production never rose sufficiently to become a key export and source of revenue for the province; Liu failed to establish a shipping line to the mainland; the Keelung to Hsinchu railroad frequently broke down and traffic had to be halted temporarily; and the land tax reform appears to have been only successful in the north and scarcely at all in the south. These projects requiring new funding which could only be satisfied by introducing new bureaus to exercise control and collect new taxes, and even then continual difficulties were encountered because of inadequate working capital. Nevertheless, an impressive start had been initiated in Taiwan which had little precedent for any single province on the mainland, and the administration proved to be in complete control over these new developments. Much depended upon the quality and capability of bureaucratic leadership to introduce innovations and supervise the successful completion of early projects. Probably the most important and significant reform launched by governor Liu which greatly increased administrative revenue was the land tax reform.

The Land Tax Bureau consisted of two main offices in Taipei and Taiwan with branches in each district. The Bureau was placed under the office of the vice-governor (*pu-cheng-shih*), then Shen Ying-k'uei. In each branch office personnel were instructed in surveying, mapping and other duties required to make new land cadastre maps. In April of 1888 the survey commenced.⁷¹ The

⁷⁰ Samuel C. Chu, "Liu Ming-ch'uan and Modernization of Taiwan," *The Journey of Asian Studies*, 13:1 (November 1963), p.53.

⁷¹ Inō Yoshinori, *op. cit.*, II, pp.581-602.

first problem that arose was to obtain a correct count of the existing number of households. Governor Liu ordered that within two months *pao-chia* registers be consulted and brought up to date. The purpose of this count was to determine the amount of grain tax each household paid, so that this measure could be used to determine a new tax schedule. By June of 1888 the Land Tax Bureau had completed its count of *pao-chia* registers, and the land survey began at that time. Ch'ing officials were well aware of the fact that since the late eighteenth century great tracts of land had become farmed but not registered for establishing ownership and paying taxes. Certain households paid a much higher tax than they were supposed to pay, while other households scarcely paid any tax at all. The purpose of the land cadastre adjustment was to equalize tax burden and increase land tax revenue.

Land survey teams in each district chose a township from within which a certain land area and number of households were selected for surveying. After new land maps were made for this sample, the amount of registered land for taxing purposes was computed on the basis of the *pao-chia* records for that district. New deeds were made up for the households which had been sampled, and this step paved the way for issuing new deeds for other land owners. Officials then classified land according to three classes in which each class had three grades. Irrigated land was differentiated from nonirrigated land. The land survey moved slowly in spite of Liu's urgings to complete it quickly. But finally in 1890, the land survey ended. Yet, many land owners had successfully bribed land survey teams to reduce the amount of land they surveyed and reported.⁷² On the basis of the land survey, new tax schedules were drawn up, the tax burden was shifted to the *hsiao-tsu* households, and their rent to the *ta-tsu* households was reduced by 40 percent. The old land tax had netted around 491,120 taels, but the new land tax collected in 1891 yielded 674,168 taels. While the land survey was incomplete, the reform still produced additional revenue for the administration and initiated the first phase for conferring formal landownership rights to households which actually owned and used land.

Japanese colonial administrators carefully studied Liu's land tax reform attempts, and they profited greatly from learning about the difficulties Liu had encountered. Because the Japanese could exercise greater power, they would be able to survey all land, prevent farmers from bribing officials to alter the new land maps, and eliminate entirely the power of the *ta-tsu* class. Upon completion of their land tax reform, the Japanese would increase tax revenue even more than Liu had done and then confer complete ownership rights to the *hsiao-tsu* class. Liu Ming-ch'uan's land tax survey proved to be the only major provincial tax reform of its kind launched during the Ch'ing period. It was not until the early 1930s that similar land surveys were undertaken in Kiangsu and Chekiang provinces for the same purposes which Governor Liu had initiated his land tax reform program. From the additional revenue Liu obtained from agriculture, his administration was able to begin financing railway construction, telegraph communication, new harbor works, modern schools, and a commercial steamship line. Although these funds did not entirely cover the expenditures required for creating this new infrastructure, and other sources had to be found, the procedure of making agriculture contribute a greater financial share for building new infrastructure was exactly the same method used by Japanese colonial officials when they greatly increased investment for these same kinds of social overhead facilities. Late Ch'ing officials in Taiwan had adopted the correct strategy to increase output and income as this new infrastructure would have

⁷² *Ibid.*, p.590.

increased marketing opportunities for farmers, reduced their cost of shipping goods to market, and increased farming profits—developments that took place after 1900 and later gradually set in motion forces which would contribute significantly to gradual modernization of the economy.

Conclusion

This traditional economic system steadily increased the production of goods and services over two centuries to support a population which increased at least sixty times and probably even more. Our statistical information is insufficient to trace this development in terms of growth rates or cyclical phases of contraction and expansion. Chinese colonists increased agricultural output because they cleared and reclaimed land, thereby extending cultivation enormously. Crop yields did not decline because farmers took steps to maintain soil fertility by building irrigation facilities, selecting improved seeds on the basis of experience, and making effective use of the best farming practices of traditional technology. When trade expanded, farmers were able to specialize their production, increasing yields and output still further. During the 1860s and after an acceleration in production occurred when new foreign trade increased profits for farmers and merchants alike. Before this modest growth spurt took place, which appears to have continued until Japanese take-over of the island, economic growth was gradual and characterized by frequent upward surges and contractions of varying severity depending upon the quality of harvest.

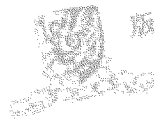
The public sector contributed next to nothing either in terms of building an infrastructure to increase exchange and trade or directly promoting agricultural expansion. Officials remained content to collect enough taxes to support the bureaucracy, which in turn functioned to preserve peace and order, indoctrinate the masses, recruit able officials to staff its offices, and arbitrate disputes over interpretation of customary law. The progress that occurred owes much to the hard work of the common people, their desire to build a better life for themselves, and their ingenuity and skill to create organizations and share scarce resources among themselves. The village was the basic social community and agriculture the mainstay of the economy. Farms adopted land tenure customs to clear land and accommodate poor immigrants to farming. The farming technology borrowed from Fukien was improved upon, particularly in irrigation. Mineral processing and manufacturing or processing by handicraft were relatively non-existent except for the principal agricultural products such as sugarcane, rice, and indigo. Commercial organizations, while small and numerous, remained specialized and interdependent to enable a thriving trade in sugar, and later, tea, to develop. In these important export trades, large guilds often controlled prices for long periods, but further inland and closer to the sources of supply, market exchange relationships became more competitive. The export trade enabled merchants to import textiles and other finished goods from the mainland to provide the essentials demanded by the people.

Households and commercial firms worked out arrangements between themselves to allocate scarce credit which took into account the size of the loan and the lender's risk. These procedures enabled household consumption levels to be maintained even during hard times. Over long periods, prices rose moderately, and this suggests that new demands quickly elicited the required supply. Severe resource and commodity scarcities did not emerge except at times of very poor harvests. Although migrants steadily arrived seeking employment and a new life, by the mid and late nineteenth century sufficient agricultural and commercial progress had taken place to absorb new laborers into diverse occupations at a fairly rapid pace. There appears at this time, simply because

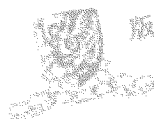
economic development was more stable and yet rapid, to have been very little land and labor in this traditional economic system which remained unemployed for any long period without eventually being put to some economic use. Households and small business firms using a primitive technology and backward system of transport and marketing provided the catalytic force for economic expansion in this system. It now remains to examine how communities formed, how they organized, and the quality of life which people enjoyed to assess the performance of this economic system.



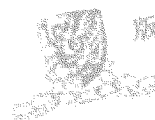
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馬若孟

一六八四—一八九五年 清朝統治下台灣經濟之變遷與組織

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(摘要)

馬若孟

台灣傳統經濟制度在清朝統治下二百餘年間逐步促進貨品與服務的生產，使在此期間增加達六十倍以上的人口獲得供給。吾人所擁有的統計資料不足以追溯此種發展之增長率與消長循環狀態。中國移民開拓荒地，大量擴張耕種，增加農業生產。農民又致力於水利設施的興建，維持土地肥饒，憑經驗選擇改良品種，並有效地運用傳統農作技術，使產額不致下降。當貿易擴張時，農民又能從事專門生產，使產量更加提高。至一八七〇年代以後，因對外貿易使農民與商人兩獲其利，生產曾一度增速。迄至日本佔據台灣，此適度激增情形似乎一直存在。於此之前，台灣經濟增長緩慢而多伸縮，其劇烈性視收穫之豐歉而定。

政府方面，對於建設基層結構以增進交易與商業，以及對農業發展之直接推動，其貢獻幾等於零。官吏但求徵收足量稅款，供給百僚，以便維持治安，教導民衆，招募能員，並經由習慣法之闡釋解決訴訟。所有發展大都歸功於一般平民的勤勞，嚮往前程，運用機智創造會社以分配稀少物資。社會組織以鄉村為基礎，經濟以農業為首要。田地採用租地法開拓荒土，容納貧困移民。農作技術以福建省為借鑑，並加改良，尤其水利建設。除主要農產物如甘蔗、米、和靛青外，礦物加工與手工業製造和加工比較的不存在。商業組織雖小而衆，仍維持其專業性，並互相倚賴，使蔗糖及後期之茶葉貿易得以繁盛。對此種主要出口貿易，大同業公會常長期操縱價格，但在內地及比較接近供應來

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源地區，物資交易較為競爭化。出口貿易使商人得以輸入大陸布匹及其他製成品，供應人民之必需。

民戶與商店依除貸之多寡與放賬之危險程度，將稀有之貸款安排分配，使家庭消費水準雖在困難時期亦能維持。物價在長時期中適度的上漲，暗示新需求很快的將供應吸收。然而資源與商品的缺乏，除非在極度歉收時期，並不呈現。移民雖陸續入境尋求職業與新生活，但在十九世紀中期及末期，充份的農商業發展已能相當快速地将新來工人安插於各種各樣的職業。由於經濟發展的平穩和快速，此傳統經濟制度中之土地和勞力，在此期間似乎甚少被長久閒置而終不被利用。家庭與小商店藉原始技術和落後運輸與交易制度，成爲此種制度下經濟發展之觸發劑。

