

THE RICE INDUSTRY OF MAINLAND SOUTHEAST ASIA 1850-1914

by

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PREFACE

This article was originally written for a seminar on mainland Southeast Asia conducted by Dr. Neon Snidvongs at the University of Michigan, April 1970. It was not a "research paper" as such, since the primary sources (official statistics) were not available to me; rather it was a compilation of statistical material already published, a study-guide. It has been submitted for publication only because there is, to my knowledge, no such synthesis in print.

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I. INTRODUCTION

The remarkable development of the export of rice from Burma, Siam, and Vietnam during the last half of the nineteenth century is a commonplace of Southeast Asian history. Several studies have been published on the individual countries; indeed, this paper is based on just such secondary works, especially those of Cheng Siok-Hwa, Albert Coquerel, and James C. Ingram.¹ But to my knowledge no one has attempted a cumulative and comparative study of all three together, treating the three concurrent agricultural booms as one single phenomenon, comparing and contrasting the dimensions and directions of rice trade and its implication in internal developments. This paper is a tentative venture into such a study.

Since the paper is a study of the *growth* of an export industry, it is natural that the critical element in producing this growth should receive pride of place. The assumption on which I have structured this paper is that this critical element is the development of external markets, creating a regular cash demand for rice at the ports of Rangoon, Bangkok, and Saigon/Cholon. This assumption is accepted by most students of the subject, expressed perhaps most succinctly by J. Homan van der Heide, first head of Siam's Irrigation Department:

Development of modern means of transportation created a regular and increasing demand for bulk commodities like rice and teak.

In consequence of the regular demand for rice, the production became stimulated and increased; and development of trade ensued.²

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- 1) Cheng Siok-Hwa, *The Rice Industry of Burma: 1852-1940* (Kuala Lumpur, 1968); Coquerel, *Paddys et Riz de Cochinchine* (Lyons, 1911); Ingram, *Economic Change in Thailand since 1850* (Stanford, 1955), hereinafter cited as Ingram, *ECT*; Ingram, "Thailand's Rice Trade and the Allocation of Resources, in C.D. Cowan, ed. *The Economic Development of South-East Asia* (London, 1964), 102-126, hereinafter cited as Ingram, "Rice."
 - 2) van der Heide, "The Economical Development of Siam During The Last Half Century," *Journal of the Siam Society*, III (1906), 82. Also quoted in Ingram, *ECT*, 41, and Chang, 223,

Other developments concurrent with the expansion of the export trade seem to be consequences or concomitants rather than causes. Government policies formalized and secured the market relationship created by this external demand for rice.³ Hydraulic engineering had very little direct connection with the expansion of rice acreage except in a few areas of Lower Burma; the French concentrated their efforts in Tonkin, while Siam did almost nothing.⁴ The growth of population in itself does not produce food surpluses. The expansion of acreage occurred only as response to cash demand for surpluses, not as a result of technological breakthroughs. The introduction of foreign capital, the influx of alien rice brokers and moneylenders, and the development of internal transportation are all integral to the growth of the rice trade, but they neither produce the supply nor create the demand. They are intermediaries both in function and in time. Landholding patterns do not alter the traditional technology of production; large estates are not operated as plantations, but rented to tenants who farm exactly as smallholders do.

This historical development, I believe, should influence the shaping of this paper. Most writers on rice choose to trace it step by step from planting to eventual export, in order; you begin in Chapter One with a seed and end, several chapters later, with the gunny sacks of rice on board ship bound for distant harbors.⁵ But the development of the *export* industry of mainland Southeast Asia does not begin in the paddy fields. It begins with a world demand; it enters these countries through their port cities; it passes through the millers and brokers in a marketing net that finally reaches the cultivator in his field. The producers do not grow a surplus and look for markets; the markets search out potential producers. Indeed, the whole marketing pattern reflects this thrust: foreign vessels come to Saigon, Rangoon, Bangkok: these ports send agents to the market towns; local brokers often travel out to the very

3) "I think it is evident that the treaties and the abolition of the interdiction to export rice are subsidiary occurrences." *Ibid.*

4) Robert Gordon, "The Economic Development of Siam," *Journal of the Society of Arts*, XXXIX (1891), 292-3; Charles Robequain, *The Economic Development of French Indochina* (Oxford, 1944), 222; Ingram, *ECT*, 81-84, 196-8.

5) *E.g.* works cited by Cheng, Coquerel, Grist, Wickizer & Bennett (see Bibliography).

paddy fields. Transportation (and credit, sometimes) is throughout the responsibility of the purchaser, not the seller.

This paper, then, focusses initially on the export trade, markets and prices; then on the milling and marketing, and finally on the cultivator. (This structure also has the philosophical advantage of proceeding from the known to the unknown, as export figures are the most reliable statistics we have.) It is beyond the scope of this paper to examine the causes of the development of the external market, except to hypothesize here three reasons: the growth of world population, the development of modern transportation, and the growth of industrialization and primary product specialization, which lead to greater demands for imported foodstuffs.

It has been estimated that world population increased at the rate of 0.7% *per annum* between 1850 and 1900, from a total of 1,200,000,000 persons to 1,600,000,000, with Asia representing well over half the total.⁶ C. A. Fisher's "Population Growth in South-East Asia"⁷ cites figures indicating that during this period Java was growing at the phenomenal rate of 2.2% per year, the Philippines at 1.3% (from 3.86 million to 7.6 million), and that Malaya, augmented by considerable immigration, grew from 400,000 in 1830 to over 2,500,000 in 1911, a rate of 2.3% a year for over 80 years. At a conservative rice consumption estimate of 110 kilograms of clean rice per capita a year, the average total rice exports of Burma, Siam, and CochinChina 1902-1911 could feed a maximum of 35 million people, less than 10% of the world's population increase in the previous half-century.⁸

6) Carlo Cipolla, *The Economic History of World Population* (London, 1964), 99-101.

7) In Cowan, *op. cit.*, 48-71. The figure of 7.6 million for the Philippines is not from this article, but from the 1903 census.

8) The average combined export was c. 4,160,000 short tons per year. Rough estimates of Southeast Asian rice consumption, compiled from various sources, include the following (kilograms of clean rice per year): French Indochina (1930) 200+, CochinChina (1910) 180, Malaya (1936-40) 173, Thailand (1950) 144, Penang (1824) 124, Outer Islands (1935-39) 113, Java (1910) 110, Philippines (all areas, 1910-19) 80-112, Java (1935-39) 80. In areas where consumption falls below 110, it is supplemented extensively by maize or tubers.

The development of shipping, perhaps even more critical in the growth of the export trade, is less well analyzed. We know that the steamship was invented and improved during the nineteenth century;⁹ we know the Suez Canal was dug. But to the best of my knowledge no one has gauged the impact of these advances on trade;¹⁰ no one has analyzed shipping costs of bulk commodities in Asia during this period when junks still competed with steam. Similarly, we know that Europe and the United States led the way in industrialization in this period, and that much of the colonial world was specializing in the production of export commodities—rubber, tin, sugar, hemp, coffee, etc. But we do not know how many people thus left subsistence agriculture and consequently had to buy imported foodstuffs from surplus producers, nor how much purchasing power they had.

The world food demand, then, is assumed in this paper as a “given,” and is introduced only as it affects the rice trade of mainland Southeast Asia. It touches first at the major port cities—Rangoon, Bangkok, and Saigon—and these cities, with the rice basins that are their hinterlands, are the center of this study. When possible, I shall refer only to these rice basins—roughly the lower valleys and deltas of the Mekong, Chao Phraya, and Irawaddy—rather than to the entire countries of Vietnam, Thailand, and Burma as they appear on the map today. This distinction is not always possible, but such errors as may arise are far less confusing than those arising from attempts to compare whole countries (e.g. in total population or rice acreage) when one half the country or less produces 98% of the rice exports, as the Central Plain of Siam does.¹¹

9) There is no end of books merely listing and describing technological improvements in shipping; e.g., Emory R. Johnson and Grover G. Huebner, *Principles of Ocean Transportation* (N.Y. & London, 1918).

10) A start toward one aspect of such a study has been made by Francis E. Hyde, “British Shipping Companies and East and South-East Asia,” in Cowan, *op. cit.*, 27-47. Both Ingram, *ECT*, 42, and Cheng, 12-14, while acknowledging certain effects of the opening of the Suez Canal, claim that its impact on the rice trade has often been exaggerated. Thai rice rarely went to Europe in significant quantities, and Burmese rice often continued to go by sail around the Cape even after 1869. Transportation costs are important, however; John Crawfurd, *Journal of an Embassy to the Courts of Siam and Cochin China* (1828, reprint London 1967), 421, comments that in the 1820s maize was not exported from any Asian country “being a commodity of too little value to bear the heavy freights of Indian navigation.” Less than a century later, maize was being shipped from Indochina to France.

11) Van der Heide, 89-90. Cited by Ingram, *ECT*, 45.

Through most of this period, Cochinchina exports 80-100% of the total rice exports of French Indochina, so Tonkin and Annam can reasonably be omitted.¹² Rangoon's dominance of Burmese exports is not nearly so complete, as several other ports (Akyab, Moulmein, Bassein), some of them serving other rice areas than the Irrawaddy (Arakan, Tenasserim), also handled significant trade. In general this paper deals with all of Lower Burma unless otherwise noted; fortunately Cheng Siok-Hwa provides statistics for both the totality of the Burmese industry and its component geographical parts. Whatever the flaws of nineteenth century Asian statistics in general, those used in this paper probably account for well over 90% of the total rice exports of mainland Southeast Asia, and are useful, if not precise, for combination and comparison.

If there is any value in this paper, it will in fact lie primarily in the statistical comparisons. The tables represent almost as much work as the text. Every effort has been made to convert figures of volume and area into comparable units (short tons and acres); prices have been expressed, where possible, in commodities or gold as well as in silver (rupees, baht, piastres).¹³ The data on marketing, milling, landholding, population, credit, and cultivation, on the other hand, are more descriptive than analytical; comparisons in sections IV-VI are thus more suggestive than conclusive.

12) From 1899 to 1903, the average rice export from all French Indochina was 890,000 tons a year (Robequain, 308), of which only 715,000 were exported through Saigon. Yves Henry, *Economie Agricole de l'Indochine* (Hanoi, 1932), 364, provides total export value figures for 1918-20, of which Cochinchina's share is 85%. But in several years Tonkin was a net rice importer, so Saigon's exports often represent more than 100% of Indochina's total. Cambodian rice is included in the Saigon exports, but does not represent more than 2-3% of the total. Coquerel, 216-7.

13) No attempt has been made to convert prices into directly comparable figures because of the great varieties of data available: retail and wholesale prices; paddy, cargo rice, and clean rice; seasonal prices and annual averages. Trends may validly be derived, but not comparisons. Gordon, 291, gives the volume and value of rice exports for all three countries in 1888 and 1889; unfortunately the prices indicate no trend except confusion:

	Average Export Price (P per long ton)	
	1888	1889
Saigon	4.26	5.55
Bangkok	4.68	4.74
Burma, all ports	4.48	4.88

All sources agree that in general Cochinchina's rice was the poorest in quality (because of the high percentage of broken grains), and consequently commanded the lowest price, but I know of no series of figures reflecting this or any other comparative price trend.

II. TRADE BEFORE 1860

Mainland Southeast Asia was a traditional, if irregular, exporter of rice for centuries before 1850. Dutch, Portuguese and English merchants all record obtaining rice from the mainland in amounts substantial for the times, if small by the standards of the late nineteenth century.¹⁴ But as this sporadic trade advanced in to the nineteenth century, it continued to be characterized by frequent government interference, limited volume, and low prices.¹⁵ Bodawpaya and his successors absolutely prohibited the export of rice from their dominions. The king of Siam allowed the exportation of surpluses only by special permission, reserving the right to curtail it in years of shortage. Crawford records that the government "in opposition to the practice of other Asiatic states, generally permits the free exportation of rice, no doubt from a long habitual experience of the safety of this policy,"¹⁷ yet rice exporting was specifically forbidden the British by the Burney treaty. Similarly, the Vietnamese court placed a ban on exportation of rice without a special licence," but Crawford also notes that "except in times of apprehended scarcity, [it] is sent out of the country in abundance."¹⁸ It is essential to note that the governmental restrictions on trade in all three countries were based on a profound fear of famine, implying that the surpluses were not regular enough to ensure that internal demand

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- 14) The Dutch requested up to 2000 *koyang* (c. 3300 tons) of rice from Ayuthaya in the 17th century, but there is no record of over 1000 *koyang* being exported in any year. Vajiranana National Library, *Dutch Papers: Extracts from the "Dagh Register" 1624-42* (Bangkok, 1915).
- 15) To foreign observers, there appeared little change in mainland commerce or society during the first three centuries of European contact. Van der Heide, 75-76, remarks of Siam up to the mid-nineteenth century "it is particularly striking that in every direction the changes are very small and generally of no importance."
- 16) Cheng, 2-3; C.G.F. Simkin, *The Traditional Trade of Asia* (London, 1968), 328-30.
- 17) Crawford, 420.
- 18) Crawford, 513, 519. In 1819 John White described the rice warehouses of Saigon as the largest structures in the city, and rice as a royal monopoly; Robequain, 121. But note also Crawford's observation that a rumor that the kings of Siam and Vietnam were going to prohibit rice exports doubled the price of rice in Singapore briefly (1825), implying that a regular supply from these countries was expected; Crawford, 545.

would always be met.¹⁹ Even after export trade was officially open, governments reserved the right to restrict exports in any given year; N.D. Maingy, British commissioner of Tenasserim, and both Mongkut and Chulalongkorn, king of Siam, exercised this right.²⁰ The eventual growth of the huge rice trade of these states did not stem solely from a sudden and unprecedented introduction of free trade, but rather from the gradual production of increasing surpluses, in response to rising prices.

The data we have for the volume of rice trade in the first half of the nineteenth century are scattered and not wholly reliable, but adequate to show us how slight the traffic was. Crawford asserted that "with the exception of Bengal, Siam unquestionably exports more rice than any country in Asia,"²¹ and Malloch noted in 1852 that "it is stated that it [rice] may be had to meet any demand,"²² but in no year do we know of actual exports over 300,000 piculs (20,000 ton), and Ingram estimates that the absolute maximum surplus potentially exportable in any given year was million piculs, a figure Siam was to surpass in practice within five years of the Bowring treaty.²³ As for the other countries, Crawford observes that "foreign trade of the Cochin Chinese Empire is greatly inferior to that of Siam,"²⁴ while the Irrawaddy delta was still suffering from underpopulation, devastation, and Burman restrictions on trade. Only British-owned Arakan had an export volume approaching 100,000 tons a year prior to the explosive events of the 1850's that forced open the ports of mainland Southeast Asia to the growing world demand.²⁵

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- 19) "The king lived, to an extent hardly realisable today, in continual dread of famine in the capital, and famines are constantly mentioned in the chronicles." G.E. Harvey, *History of Burma* (1928, reprint London 1967), 351. Crawford, 524-5, describes "immense granaries . . . in all parts of the kingdom" of Vietnam, erected by the emperors for storing rice as a provision against scarcity. Ingram, *ECT*, 24, refers to a Thai regulation (which he believes often honored in the breach) that a three-year supply was required in storage before exports could be permitted.
- 20) van der Heide, 84, refers to Siamese export prohibitions during part of 1864, 1865, and 1877; cf. Ingram, *ECT*, 33. Simkin, 329, cites an embargo by Maingy (commissioner 1826-35), but gives no date. As recently as 1966 the Thai government stopped exports for a short period when domestic stocks fell to a dangerously low level.
- 21) Crawford, 420.
- 22) Quoted in van der Heide, 80n.
- 23) Ingram, *ECT*, 24.
- 24) Crawford, 510; cf p. 223.
- 25) Cheng, 5. "Akyab in 1852 was the foremost rice-exporting city in the world," John F. Cady, *A History of Modern Burma* (Ithaca, 1958), 86.

Such price figures as we have for rice trade before 1850 give us a hint as to the reason for the small or non-existent surpluses. In Rangoon 1845, rice sold for 8 rupees per 100 baskets of paddy; ten years later, the price was 45 rupees.²⁶ Crawford tells us that the "average price of rice at Siam, for good and bad years," was less than a baht per picul;²⁷ Pallegoix and Malloch (1850 and 1852) record it at 1.12-1.28 baht per picul;²⁸ but after 1864, the average price never fell below 2.70 baht per picul.²⁹ The price of rice when we were at Saigun [sic] was a dollar a picul. This was considered extravagantly high," said Crawford in 1822.³⁰ By 1865-69, cargo rice sold for an average price of 1.63 piastres per picul in Saigon.³¹ The comparatively low prices of the period before 1850 appear to provide sound economic reasons for low surplus production. There would have been little point in planting extra acreage in rice if the cash return one might receive (assuming exports were allowed at all that year) was perhaps barely equal to the cost of cultivation.

Shortly after 1850, however, came a series of events which were to drastically alter the commercial policies of mainland Southeast Asia; during the same few years, prices were rising world wide.³² In 1852 the second Anglo-Burmese War was fought, and the British annexed the fertile but underpopulated Irrawaddy delta, almost immediately opening Rangoon to trade. King Mongkut was crowned in 1851 and began at once to remove certain of the restrictions on the trade of Siam, adumbrating the concessions he was to make to Sir John Bowring in 1855, at which time the export of rice was formally permitted, at the fixed duty

26) Cheng, 73.

27) Crawford, 453, quoting a price of 16 *ticals* (baht) per *coyan* of 22 Chinese piculs. Ingram, "Rice," 115-6, cites the same reference as a source for a price of 1.10-1.50 baht per picul; perhaps two kinds of picul (or baht) are involved.

28) Ingram, "Rice," 115-6 (Pallegoix); van der Heide, 84n (Malloch).

29) Five-year averages. See Table III-B, p 32.

30) Crawford, 226.

31) See Table III-C. The piastre was the Franco-Vietnamese version of the Spanish silver dollar until 1902-04. At that time certain measures were introduced to stabilize it, but these measures were not successful, and it continued to follow the price of silver closely until 1930. Robequain, 137-43.

32) Sauerbeck's index (of 45 primary commodities) rose from 77 to 105, 1850-57. (Average 1867-77=100)

of 0.16 baht per picul.³³ In 1859 the French seized Saigon, and opened it to trade the following year. In 1862 they were officially ceded the three neighboring provinces, in 1863 they established a Protectorate over Cambodia, and in 1867 they conquered the rest of Cochinchina, bringing the whole of the lower Mekong basin under their direct or indirect control. Thus by the early 1860's we have records of a largely unrestricted rice trade in all three countries, coinciding with western-oriented policies of advancing and regulating commerce and a secular price rise. Within a decade, rice had become the principal export of all three countries; the great era of expansion had begun.

33) Ingram, ECT, 33.

III. THE EXPORT TRADE

The sheer increase in the volume of rice exported from mainland Southeast Asia is remarkable.³⁴ Burma exported 318,000 (short) tons in 1862/3; between 1901/2 and 1910/11 she averaged 2,411,000 tons of clean rice exported per year. During the same span, Siam's exports rose from 114,000 to 954,000 tons; Cochinchina from 12,000 (or 55,000 the average 1860-65) to 793,000. In forty years the average export for all three countries increased nearly 500% to over 4,150,000 tons a year. (Omitting Arakan, one might estimate a maximum export of 50,000 tons in any given year for the first half of the century.) Between 1863-72 and 1902-11 the growth rate of total exports was 4.6% per year for forty years, figures as remarkable for duration as dimension.

Indeed, the more we examine the statistics, the more notable the consistency of the increase becomes. Decade by decade averages (1863-1910/11) show growth rates ranging from 3.1% to 7.3%; country by country for the period the rates are 4.1% to 5.2%. There are some significant variations, of course—the growth rate in the 1870's is generally greater than in later years, especially for Burma; Siam gradually catches and surpasses Cochinchina, which slows down considerably after about 1883. But the overall pattern remains substantially the same: Burma's share of the total trade fluctuates between 57% and 64%; Siam rises from 18% to 23%; while Cochinchina falls from 22% to 19%. And year after year the total export increases. Although some authors suggest that the exports of all three countries tend to rise and fall together,³⁵ there is little evidence to support this view for the period 1863-1902. To the extent that there is any trend at all, it is for a fall in Burma's exports to be balanced by an increase in the exports of Siam and Cochinchina, and vice versa.³⁶ In only 13 of 39 years did the total

34) The data for this paragraph and the next are from Table I, pp 17-21.

35) *E.g.* Cheng, 206; C.J. Robertson, "The Rice Export from Burma, Siam, and French Indo-China," *Pacific Affairs*, IX (1936), 246-7.

36) Taking Burmese exports as one factor, and those of Siam and Cochinchina as the other, when one factor declined the other rose nearly two times out of three. This is a slightly higher percentage than that of either factor rising independently (Burma 22 of 39, Others 23 of 39). This does not imply a limited market, but possibly one very responsive to shifts of supply.

exports of mainland Southeast Asia decline from the previous year; in only six of them (1877, 1878, 1885, 1889, 1894, and 1900) did all three fall together. In general, the rice exports of mainland Southeast Asia grew, and grew, and grew.

But where did these expanding exports go? We do not have reliable statistics for the destination of exports year by year, but we do have some rough indicators. It must be recognized that a certain amount of rice was transshipped—from Hongkong to Japan and the Philippines, as well as to China; from Singapore to the Netherlands East Indies and Europe, as well as to Malaya; from Europe to Africa and America.³⁷ But there was a sufficient amount of direct shipping to all of these markets for us to assume that the trends indicated are useful, if not absolutely reliable for assessing the general distribution of the rice exported from mainland Southeast Asia.

A look at the annual exports of any one rice-producing country reveals an astounding year-by-year fluctuation in markets.³⁸ Japan's imports from Cochinchina fall from 137,000 tons to nothing in two years (1870-1872); a generation later they fall from 136,000 tons to nothing in one year (1898-99). Cochinchina's exports to the Netherlands East Indies average 54,000 tons a year for six years (1880-1885), fall to less than 2,000 a year for the next seven years, and rise abruptly to 48,000 tons in 1893. Between 1897 and 1902 the Philippines increases its imports steadily from 1,000 tons to 245,000. Hongkong and China together import 52,000 tons of Saigon rice in 1905; two years later they import 595,000 tons; two years after that, 160,000. These fluctuations contrast vividly with the comparative stability of Cochinchina's total exports, which fall over 40% in a year only three times (1889, 1903, 1905), and each time rebound sharply the next year.

What this reflects is a world market of increasing complexity, in which producers and consumers were no longer linked in either traditional or random pairings. Prior to 1850, Saigon had a semi-regular trade in rice with China, and otherwise might or might not sell rice to

37) Coquerel, 213; Crawford, 545; Cheng 202-16. Ingram, *ECT*, 42-3, suggests that large-scale transshipment from Singapore to Europe was unlikely.

38) See Table II-B, pp 28-30.

any passing ship, depending on the whim of the Emperor. By the late nineteenth century, cultivators could confidently produce a surplus, knowing that the millers and exporters would find markets somewhere—if not China, then Japan or Java or the Philippines or France. The telegraph and other communications helped connect this market, letting consumers know which producers were selling rice the cheapest, and exporters know which importers would pay the most. There was an intricate network of competing producers, multiple markets, alternate food crops (exports to Europe often depended on wheat and maize crops of Europe and America; Indians and Chinese substituted millet and other inferior grains for rice in bad years³⁹), secular and local price fluctuations, and all the other variables affecting a world market as we understand it today.

One result of this complexity is that we cannot make simple assumptions about any given fluctuation without specific evidence. A country suddenly increasing its imports is possibly just suffering from a bad crop, due perhaps to drought, flood, or the disruptions of war. But France suddenly increased her share of Saigon's rice from less than 4,000 tons a year (1885-90) to 54,000 tons a year (1891-95), largely as a result of tariff protection.⁴⁰ And a country reducing its imports may just be benefiting from improved weather conditions, or, like Java from 1886-1892, sugar prices may have fallen so far that cane fields are being plowed up to plant rice.⁴¹

Yet it is possible to make some generalizations about world markets for Southeast Asian rice if we look at averages for several years.⁴² A major trend is that away from non-Asian (mainly European) markets, which take a surprising 54% of the total exports 1872-81 and decline gradually to 35% by 1902-11. Among the Asian markets, India, Japan, the Philippines, and the Netherlands East Indies all increase at a rate more rapid than the "traditional markets" of Hongkong/China and

39) "Their capacity to restrict consumption is extraordinary." Robequain, 325-6

40) Coquerel, 205-8.

41) Coquerel, 210-1. 'A puzzling sidelight is that the Philippines, also a major producer of sugar cane, actually increased its imports of Saigon rice during this period, from 33,000 tons per year (1880-85) to 51,000 (1886-92).

42) See Table II-A, pp 22-7.

Singapore--which, however, continue to take a third or more of the total trade. Country by country, the trend is toward greater diversification of markets--Burma's European trade declines from 66% of her total exports to 37%,⁴³ while India's share rises from 14% to 28%, and East Asia (China and Japan) from less than 1% to 8½%. Meanwhile Saigon's exports to China drop from 63% to 27%, while her European share is up from 4% to 21%, and the Philippines rises from 3% to 20%. Only Siam's trade remains true to her traditional markets, Hongkong and Singapore, which never fall below 80% of her total exports. The net result of this diversification is that whereas one market (England) took 42% of the total exports of mainland Southeast Asia in the 1870's, by 1902-1911 four market areas (China, Singapore, India, and "Other Europe," i.e., not England or France) all account for between 16½% and 20% of the total. In absolute terms, however, *all* exports to all markets, except to Britain,⁴⁴ are increasing: India from 134,000 tons to 680,000; China from 297,000 to 732,000; Singapore from 173,000 to 690,000; even Europe from 608,000 to 1,053,000 plus. Fluctuations in local demand, like fluctuations in local supply, do not change the consistent pattern of growth of the world rice market.

Price trends are more difficult to interpret than volume or distribution of trade, both because of the variation in type of prices given (wholesale/retail; clean rice/paddy; seasonal/annual averages) and because of the world fluctuations of currency values caused by the coinage use of gold and silver. Only very gross tendencies can be deduced from the figures condensed in tables III-A through III-E. The depreciation of silver in relation to gold was universal during the last third of the nineteenth century. Prices of most commodities fell relative to gold, but rose relative to silver. Rice, in general, rose sharply relative to silver (the sole base for the rupee until 1893, the baht until 1902, and the piastre to 1902-4); fell in relation to gold until about 1900, then rose slightly; and held its own with other commodities. If the cultivator received a constant

43) The predominant European share of Burmese rice exports clearly antedates the opening of Suez and can be traced back as far as the annexation of Lower Burma. Cheng, 201; J. Russell Andrus, *Burmese Economic Life* (Stanford, 1948), 14.

44) Saigon's exports to China begin to decline after 1882-91; it is likely that exports from Tonkin to China tended to counterbalance this.

share of the profits (a dubious assumption, but one we are forced to make), he received for his rice crop a little more silver each year, which could be exchanged for at least the same amount of goods, textiles, foodstuffs, etc. Ingram's comparisons of rice prices with wages of rice-mill workers and with the price of textiles seem to suggest—better than any other calculation yet made in this very ill-documented field of enquiry—that through the second half of the nineteenth century the Siamese ricegrower was improving his lot both in terms of what he could buy, and in comparison with what he could make at alternative forms of employment.⁴⁵

Yet what seems most critical is not the question of whether rice did actually increase in price after 1860, but the fact that it never really fell. Unlike so many other primary commodities which were grown in the tropical world—sugar, coffee, tea, rubber—rice was not a “boom or bust” commodity. The market was never glutted, although the total exports of Southeast Asia grew, as we have seen, from a few hundred thousand tons to over four million. As long as land was available, the cultivator could plant a few more acres every year and know that he could always sell the surplus; the price might drop fractionally, but he would never be offered a third of what he had sold his crop for last year, nor be told that there was no market for it at all. And this stability of prices continued throughout the period of this paper until the Great Depression—over seventy years in which mainland Southeast Asia could expand its investment in rice.

(One may also speculate on the consequences of rice never having a sharp increase of prices, relative to gold or commodities. One such consequence would seem to be that rice never attracted the serious attention of large-scale investors, especially Western entrepreneurs. It did not pay to make rice a plantation crop, not while at any given time some other commodity was enjoying far more spectacular profits. As there were no particular economies of scale in rice cultivation, nor capital intensive improvements in technology, even those large estates that were

45) Ingram, “Rice,” 112-9. Cheng largely ignores the subject of price trends: Coquerel, 166-8, rather naively attributes the general price “rise” 1865-1910 (though in terms of the franc it was a decline) to a process of natural evolution toward prosperity; it is a sign of opulence and progress.

formed continued to be cultivated by tenants in the same manner as smallholders. Had rice prices ever surged the way rubber or coffee did, the whole shape of the industry might have altered).

By 1913, rice represented over two-thirds of the total export value of all three countries.⁴⁶ For Burma and Siam, where our records are more complete, we can see that rice had obtained this preponderance decades before. For 1852, Malloch's figures indicate that rice was only 2.7% of Siam's total export value; by 1867 it was 41.1%; by 1887/8, 78%.⁴⁷ Rice developed from a minor export of British Burma to 54% by 1866/7 and reached a peak of 85% twenty years later.⁴⁸ All but two of twenty available figures for rice exports as a percentage of total export value (1867-1914) fall in the range 60%-80%.⁴⁹ This is an impressive amount, but it must be emphasized that it does not represent *all* the exports of mainland Southeast Asia. Siam also exported tin, teak, hides, and sugar in substantial quantities during this period; Burma teak, oil, and cotton; Indochina dried fish, maize, hides, and sugar.⁵⁰ In combination with the comparative stability of rice prices, these products helped give mainland Southeast Asia a more uniform rate of economic expansion than many mono-cultural countries enjoyed. A closer look within Burma, Siam, and Cochinchina will show us more of how this growth was produced, and what impact it had on the society.

46) Simkin, 328.

47) Ingram, *ECT*, 21-2, 94; Gordon, 291.

48) J.S. Furnivall, *Colonial Policy and Practice* (Cambridge, 1948), 45-50, 551; Cheng 221.

49) See footnote 46-8 for sources. In 1888/9 Burmese rice fell to 57% of total export value, in 1886/7 it rose to 85%. Robequain, 310, gives Indochina's average as 65.3% for 1913-17; Henry, 369, cites 1918-20 figures in the same range.

50) Ingram, *ECT*, 21, 94, 123-5; Furnivall 551; Simkin, 346.

TABLE I-A
RICE EXPORTS OF MAINLAND SOUTHEAST ASIA

Figures are expressed in thousands of short tons (2000 lbs.). Piculs have been converted at 15/1, metric tons at 10/11, long tons (English) at 100/112. The figures include both paddy and clean rice, but the figures for Burma include paddy *as converted* to clean rice, and thus are lower than the total tonnage exported. Exports to Upper Burma are not included. (See Table I-D.)

Figures for Buddhist and fiscal years are computed as for the later Christian year, e.g. 1862/3 is listed as 1863. This affects all listings for Burma and listings of Siam from 1905/6 (apparently no statistics are given for the first months of 1905). As the major exports from Burma occur during the first part of the (Christian) year, there is some basis for comparison between the countries, but it is imprecise at best.

Year	Burma All ports	(Rangoon)	Siam Bangkok	Cochinchina Saigon/Cholon	Mainland Total
1860			106	64	
61			143	83	
62			104	44	
63	318	(122)	114	12	444
64	423	(190)	160	69	662
65	527	(290)	3	56	586
66	479	(226)	99	151	729
67	278	(233)	122	217	617
68	354	(183)	139	146	639
69	500	(274)	180	179	859
1870	370	(204)	172	253	795
71	493	(247)	124	330	947
72	546	(297)	135	259	940
73	806	(465)	58	308	1172
74	910	(540)	133	206	1249
75	751	(437)	261	375	1387
76	809	(437)	281	379	1469
77	795	(451)	207	340	1342
78	650	(396)	158	241	1049
79	725	(446)	269	402	1396

Year	Burma All ports	(Rangoon)	Siam Bangkok	Cochinchina Saigon/Cholon	Mainland Total
1880	816	(445)	230	315	1361
81	941	(506)	249	276	1466
82	1050	(620)	223	406	1679
83	1194	(759)	176	577	1947
84	951	(561)	316	573	1840
85	759	(486)	247	501	1507
86	1078	(644)	242	528	1848
87	1028	(626)	442	535	2005
88	1007	(609)	504	566	2077
89	796	(553)	339	318	1453
1890	1027	(692)	539	582	2037
91	1381	(940)	253	443	2077
92	1279	(809)	238	615	2132
93	1039	(749)	887	687	2613
94	886	(651)	588	605	2079
95	1282	(856)	548	624	2454
96	1382	(940)	536	553	2471
97	1085	(738)	667	587	2339
98	1118	(707)	618	678	2314
99	1451	(1014)	510	767	2730
1900	1215	(821)	465	688	2368
01	1201	(796)	767	710	2674
02	1360	(1008)	895	900	3155
03	*		656	528	
04			947	785	
05			—	451	
06			967	629	
07			963	1176	
08			891**	883	
09			1028	800	
1910			1067	996	
11			1173		
12			703**		
13			659	1415	
14			1315	1561	(Indochina totals)

* Burma's annual average export, 1902-11, is 2411. Siam's is 954 for the comparable period, Cochinchina's 793, giving a total average of 4158.

** Ingram also gives alternate figures for these years: 1907/8—964,000 tons; 1911/12—1,170,000 tons. ("Rice," 107)

SOURCES FOR TABLE:

Cheng, 237-8

Ingram, "Rice," 120-1

Coquerel, 204

Van der Heide, 82, for Siam figures 1860-63

Henry, 383, for Indochina 1913-14

TABLE I-B
RICE EXPORTS, 10-YEAR AVERAGES, & PER CENT OF TOTAL
(000 short tons)

Years	Burma	Siam	Cochinchina	Mainland Total
1863-71	417	124	157	698
% of total	60%	18%	22%	100%
1872-81	907	198	315	1420
% of total	64%	14%	22%	100%
1882-91	1095	329	496	1920
% of total	57%	17%	26%	100%
1892-1901	1645	572	646	2863
% of total	57%	20%	23%	100%
1902-11	2411	954	793*	4158
% of total	58%	23%	19%	100%

* Cochinchina average 1902-10 only, presumably understated by 1-2%.

TABLE I-C
PER CENT INCREASE, BY DECADES, & GROWTH
RATE PER ANNUM

	Burma	Siam	Cochinchina	Total
63/71-72/81	115%	60%	100%	103%
Rate p.a.	8.0	4.8	7.1	7.3
72/81-82/91	21%	50%	51%	35%
Rate p.a.	1.9	4.1	4.2	3.1
82/91-92/01	50%	74%	30%	49%
Rate p.a.	4.1	5.7	2.7	4.1
92/01-02/11	51%	67%	23%	45%
Rate p.a.	4.2	5.3	2.1	3.8
TOTAL PERIOD				
63/71-02/11	478%	669%	405%	498%
Rate p.a.,	4.5	5.2	4.1	4.6

SOURCES: TABLE I-A

TABLE I-D
RICE EXPORTS: LOWER BURMA TO UPPER BURMA

All figures in thousands of short tons. No data are recorded for 1897 and subsequent years. Although technically these are "exports" 1865-1885 and internal trade thereafter, they represent a consistent market (demand) throughout, one quite distinct from the overseas markets in the customary export tables.

1865	38	1881	6
66	19	82	45
67	104	83	42
68	83	84	98
69	74	85	107
		86	86
1870	112	87	140
71	72	88	169
72	32	89	66
73	29		
74	15	1890	60
75	75	91	87
76	82	92	171
77	74	93	131
78	60	94	42
79	47	95	28
		96	115
1880	6		

SOURCE: Cheng, 245

TABLE II-A
RICE EXPORTS, BY DESTINATION, 10-YEAR AVERAGES

Figures are expressed in thousands of short tons. Figures for Burma, Cochinchina are actual averages. For Siam, the average for the indicated years has been prorated for the average (total) exports for the decade. E.g. in 1875 and 1879, Siam exported an average of 128,000 tons to China out of a total 265,000 tons of rice exported. For the decade 1872-1881, Siam exported an average of 198,000 tons of rice per year to all destinations; the figure for China is reduced by a factor of 265/198, giving a prorated average export from Siam to China of 96,000 tons.

KEY:

- I. Hongkong and China. There is evidence of some transshipment from Hongkong to Japan and the Philippines, but most exports to Hongkong are assumed to be consumed locally or in China.
 - II. Burma: Straits Settlements and Federated Malay States.
Siam: Singapore only.
Cochinchina: Straits Settlements only.
 - III. Other major Asian importers (A-D)
 - A. India and Ceylon
 - B. Netherlands East Indies
 - C. Philippine Islands
 - D. Japan
 - IV. Other (E-G)
 - E. Colonial metropolitan country. Siam not applicable. (Burma: UK) (Cochinchina: France)
 - F. Other Europe (principally Germany, Holland, Italy)
 - G. All others. Predominantly Latin America and Africa (including some to Port Said for presumed transshipment to Europe). Small amounts to Australia, Russian Asia, Oceania, etc.
- : Negligible amount or percentage (less than $\frac{1}{2}\%$)
X: Unknown amount or percentage

	I	II	III	A	B	C	D	IV	E	F	G	Total
BURMA												
1872-81	1	75	128					703				907
% of total	—	8%	14%	128	0	0	0	78%	574	19	110	100%
				14%	—	—	—		64%	2%	12%	
SIAM												
1875, 79	(128)	(87)	(0)					(50)				(265)
1872-81	96	65	0					37				198
(prorated)				0	0	0	0		—	12	25	
% of total	48%	33%	0					19%		(6%)	(13%)	100%
				—	—	—	—					
COCHINCHINA												
1872-81	200	33	59					23				315
% of total	63%	10%	19%	6	43	10	0	7%	2	11	10	100%
				2%	14%	3%	—		1%	3%	3%	
TOTAL												
1872-81	297	173	187					763				1420
% of total	21%	12%	13%	134	43	10	0	54%	576	32	145	100%
				9%	3%	1%	—		42%	2%	10%	

	I	II	III	A	B	C	D	IV	E	F	G	Total
BURMA												
1882-91	1	179	101					814				1095
% of total	—	16½%	9%	101	0	0	0	74½%	364	430	20	100%
				9%	—	—	—		33%	39½%	2%	
SIAM												
1887, 90		(394)*	(5)					(91)				(490)
1882-91		265										
(prorated)	c159*	c106*	3					61*				329
% of total	81%		1%	x	x	x	x	18%	—	34	27*	100%
										(10%)	(8%)	
COCHINCHINA												
1882-91	343	39	77					37				496
% of total	69%	8%	16%	0	18	53	6	7%	6	20	11	100%
				—	4%	11%	1%		1%	4%	2%	
TOTAL												
1882-91	c503	c324	181					912				1920
% of total	26%	17%	9%	101	18	53	6	48%	370	484	58	100%
				5%	1%	3%	—		20%	25%	3%	

* Siam, 1887, 1890: values given for China & Singapore combined. For computing overall averages, the total has been divided at an arbitrary ratio of 3 : 2. The figure for non-Asian exports is known to be high, thus skewing the percentages somewhat.

	I	II	III	A	B	C	D	IV	E	F	G	Total
BURMA												
1892-1901	1	241	531					862				1645
% of total	—	15%	32%	484	3	0	44	53%	220	620	22	100%
				29%	—	—	3%		13½%	38%	1½%	
SIAM												
1900-04	(395)	(272)	(4)					(69)				(740)
1892-1901	306	210	3					53				572
(prorated)				x	x	x	x		—	x	x	
% of total*	53%	37%	½%					9½%				100%
										c(9%)		
COCHINCHINA												
1892-1901	288	58	136					164				646
% of total	45%	9%	21%	0	57	56	23	25%	81	33	50	100%
				—	9%	9%	3%		13%	5%	8%	
TOTAL												
1892-1901	595	509	670					1089				2863
% of total	21%	18%	23%	484	60	56	67	38%	301	653x	72x	100%
				17%	2%	2%	2%		10%	23x%	3x%	

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Norman G. Owen

* The same base period, 1900-04, has been used in computing both the 1892-1901 and 1902-1911 percentages; thus little change is reflected and no comparison is valid.

	I	II	III	A	B	C	D	IV	E	F	G	Total
BURMA												
1902-11	13	307	957					1134				2411
% of total	$\frac{1}{2}\%$	13%	$39\frac{1}{2}\%$	680	84	7	190	47%	170	716	248	100%
				28%	$3\frac{1}{2}\%$	—	8%		7%	30%	10%	
SIAM												
1900-04, 07	(410)	(283)	(4)					(81)				(778)
1902-11	503	347	5					99				954
(prorated)				x	x	x	x		—	x	x	
% of total*	53%	36%	$\frac{1}{2}\%$					$10\frac{1}{2}\%$				100%
										c(9%)		
COCHINCHINA												
1902-10**	216	36	320					221				793
% of total	27%	$4\frac{1}{2}\%$	$40\frac{1}{2}\%$	0	96	159	67	28%	140	27	54	100%
				—	12%	20%	$8\frac{1}{2}\%$		17%	4%	7%	
TOTAL												
1902-11	732	690	1282					1454				4158
% of total	$17\frac{1}{2}\%$	$16\frac{1}{2}\%$	31%	680	180	166	257	35%	310	743x	302x	100%
				$16\frac{1}{2}\%$	$4\frac{1}{2}\%$	4%	6%		$7\frac{1}{2}\%$	18x%	7x%	

* The same base period, 1900-04, has been used in computing both the 1892-1901 and 1902-1911 percentages; thus little change is reflected and no comparison is valid.

** Addition of the figures for 1911 would, in all likelihood, not alter the percentages but increase the raw number averages 1-2%. The decline in exports to China may be accounted for by an assumed increase in the exports of Tonkin in this period.

SOURCES:

Cheng, 201-217

Ingram, "Rice," 107

Coquerel, Appendix (Tables VI & VII)

Ingram, ECT, 42-3

TABLE II-B
COCHINCHINA: ANNUAL RICE EXPORTS, BY
DESTINATION, 1866-1910

Figures are expressed in thousands of short tons. Exports in small Chinese junks and "annamite barks" are omitted, as no statistics are available; Coquerel estimates their total metric tonnage at 10-25,000 (1860-80), 3-5000 (1880-90), falling to a few hundred tons (1890-1910). (Coquerel, 204n.) Tenths are given for values under 1.0, halves for values 1.0-10.0. Values under 100 tons are indicated by a dash (-).

KEY:

- I. Hongkong/China
- II. Japan
- III. Straits Settlement
- IV. Netherlands East Indies
- V. Philippine Islands
- VI. Tonkin & Annam
- VII. Other Asia (predominantly India 1873, 74, 77; otherwise Russian Asia or unspecified)
- VIII. France
- XI. Other Europe (including "Ports d'ordre français et étrangers")
- X. Other. Largest area specified by abbreviation: AFR—Africa, LAM—Latin America, AUS—Australia. Africa includes Port Said, shipments often intended for transshipment to Europe.

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
1866	124/3	0	14	0	0	0	7½	0	0	2	AFR 151
67	139/11	4½	24	0	0	0	10	2½	12	13	AFR 217
68	49/4	2½	20	0	0.8	0.3	4½	1	39	24	AFR 146
69	23/9	68	20	0.2	0	0.6	1	1	31	25	AFR 179
1870	82/2	137	11	0	0.4	0	1½	2	7½	9	AFR 253
71	263/3	33	14	0.3	0.3	0	5	0	2½	6	AFR 330
72	218/6	0	13	5½	7	0	6	0	0	3	LAM 259
1873	161/17	0	36	62	9	0	5	2½	3	11	LAM 308
74	72/-	1½	35	7½	9½	0	47	3	20	11	LAM 206
75	236/4	0	33	87	2	0	0	0.8	4½	7½	LAM 375
76	274/15	0	20	50	0	0	0	3	2½	8	AFR 379
77	235/23	0	24	22	17	0	5½	1½	0.7	13	LAM 340
78	202/1	0	20	6	7	0.9	0	1½	0	2½	LAM 241
79	187/8	-	53	42	34	6½	0.3	3½	55	11	LAM 402

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
1880	154/3	0	34	93	8½	0	0.2	1½	19	1½ LAM	315
81	167/2	0	37	59	3½	—	—	4½	0.9	0.7 LAM	276
82	328/9	0	27	27	12	0.6	—	0.3	0	0.7 AUS	406
83	362/12	0	66	79	49	3½	0.3	5½	0	0.1	577
84	218/9	0	68	42	107	0.6	—	13	111	4 AFR	573
85	378/4	1	27	25	23	1	—	0.3	27	9½ AFR	501
86	488/2	0	2	0	29	2	—	—	0	0	528
87	407/10	0	19	0	57	17	0.1	3	6½	16 LAM	535
88	346/11	0	53	0	49	28	0.1	8½	33	37 AFR	566
89	184/2	0	45	6	58	0.1	0.4	0.7	8	12 AFR	318
1890	376/7	53	29	0	70	7	0	7½	14	17 AFR	582
91	273/—	3½	51	1½	76	0.6	0	25	0	11 AFR	443
92	247/—	0.2	107	4½	57	0	0	48	86	65 AFR	615
93	339/36	2	82	48	36	7	0	66	22	44 AFR	687
94	313/9	18	64	68	41	0	0	69	8	15 AFR	605
95	457/3	13	35	18	16	0.1	0	64	0	17 AFR	624
96	372/8	0	47	38	18	10	0	42	0	17 AFR	553
97	116/—	52	123	55	1	1½	2	75	64	95 AFR	587
98	274/3	136	25	48	4	6½	0	129	20	32 AFR	678
99	358/16	0	40	50	97	4	1½	88	69	41 AFR	767
1900	226/9	11	38	57	125	0.1	0	127	41	54 AFR	688
01	85/10	0	18	189	162	0.5	0	101	24	120 AFR	710
1902	215/17	28	8½	130	245	4	0	161	17	73 AFR	900
03	123/—	83	5½	17	224	0.1	0	71	0	4 AFR	528
04	173/5	85	15	45	194	0.1	—	195	28	45 AFR	785
05	52/—	64	0.7	42	153	1½	2½	101	7½	15 AFR	451
06	164/—	60	15	77	110	5	4	139	24	29 AFR	629
07	474/121	96	52	75	110	0.5	4	128	40	73 AFR	1176
08	175/8	121	80	137	116	0	0	101	30	112 AFR	883
09	160/—	40	90	145	124	0	7½	160	61	87 AFR	800
1910	202/56	30	55	199	152	0.8	4	202	40	31 AFR	996

SOURCE:

Coquerel, Appendix (Tables VI, VII), and 204. The total listed here may not always be the sum of the parts, as two different conversions (from piculs and from metric tons) are involved, and fractions are rounded off for all amounts over 10,000 tons.

TABLE III-A
RANGOON RICE PRICES, 1855-1914

Wholesale price paddy, in rupees per 100 baskets (approximately 4600 lbs., 2091 kg.). 1855-1900 are selected years, 1900-1914 five year averages. The exchange rate is that obtained by the Secretary of State in Bills drawn on India. Index : 1870=100. All rates of exchange are five year averages.

Year	Price	Index	Exchange (Pence/rupee)	Sterling Price (Pence)	Sterling Index
1855	45	64	c.24	1080	67
60	45	64	c.24	1080	67
65	50	71	23.7	1235	76
70	70	100	23.1	1615	100
75	65	94	22.3	1450	90
80	85	121	20.1	1710	106
85	95	136	18.8	1795	111
90	95	136	16.9	1605	99
95*	95	136	14.1*	1335*	83*
1900*	95	136	15.9*	1510*	93*
1900-04	99	142	16.0	1585	98
1905-09	120	171	16.0	1920	119
1910-14	130	185	16.1	2085	130

* The mints of India were closed to the free coinage of silver in 1893, which was supposed to stabilize the rate of exchange at 16d./rupee. This semi-official rate *would* have made the sterling price of rice 1520 in 1895 and 1900, and the sterling index 94 for both years. From 1899 to 1914, the rate of exchange stayed in the range 15.97 to 16.08.

SOURCES :

Cheng, 73.

Statistical Abstract Relating to British India, LONDON, *passim*.

TABLE III-B
BANGKOK RICE PRICES, 1865-1914

Export prices, all rice, in baht per picul (60-60.7 kg.). Five year averages, except where indicated. "Commodity price" is the number of kilograms of "white shirting" that could be exchanged at market rates for a picul of rice (Ingram calculations). Index: 1870-74=100.

Years	Price	Index	Commodity Price (Kg shirting/picul rice)	Commodity Index
1865-67*	3.1	115	1.85*	63
1870-74	2.7	100	2.95	100
1875-79	2.9	107	3.47	118
1880-84	2.7	100	3.08	104
1885-86	2.8	104	3.04**	103
1890-94	3.3	112	**	—
1895-99	4.6	170	3.74	123
1900-04	5.5	204	3.18	108
1905-09***	5.5	204	3.29	118
1910-14	5.3	197	3.17	107

* 1865-1867 only.

** Commodity prices only for 1885 and 1889 (used here for five year average); no commodity prices 1890-94.

*** Ingram apparently counts Buddhist year statistics for the earlier year, e.g. 1907/8 as 1907. Thus comparisons cannot be made directly with the export volume figures in Table I-A.

SOURCE:

Ingram, "Rice," *passim*.

TABLE III-C
SAIGON RICE PRICES, 1865-1910

Export prices, cargo rice only, in piastres per picul (60.7 kg.). Seasonal prices, not annual averages; median price of period 15 March-30 April (normally peak export period). "Ordinary" cargo rice 1865-1878, "20%" cargo rice 1878-1910; thus there is a slight upward bias expected, from 1878. Index : 1870-74=100.

Years	Price	Index	Exchange Rate (Francs/piastre)	Franc Price	Franc Index
1865-69	1.63	107	5.54	9.03	110
1870-74	1.52	100	5.42	8.24	100
1875-79*	1.57	103	4.84	7.60	92
1880-84	1.31	86	4.60	6.03	73
1885-89	1.47	97	3.92	5.77	70
1890-94	1.76	116	3.51	6.18	75
1895-99	2.37	151	2.56	6.07	74
1900-04**	2.49	164	2.39	5.95	72
1905-09	3.00	198	2.54	7.63	93
1910	3.10	204	2.31	7.14	87

* Two prices are quoted for 1878, one for "ordinary cargo" rice (2.10 piastres/picul), the other for "20% cargo" rice (2.40). These figures are averaged in computing the 1875-79 average.

** No prices for cargo rice are quoted for 1903. As prices for clean rice were up 50% (over 1902) all year, and total export volume was down 40%, we may reasonably assume a sharp increase. This, however, has not been computed into this table.

SOURCE :

Coquerel, Appendix, Tables VIII & IX (?)

TABLE III-D
LONDON PRICES & INDEXES, 1867-1907, 10-YEAR AVERAGES

- I. Rice price, Rangoon cargo, shillings per cwt (112 lb. or 50.8 kg.)
- II. Index (1867-77 average = 100)
- III. Commodity Index (45 primary commodities) ("Sauerbeck's Index")
- IV. Ratio: rice index (#2) to commodity index (#3)
- V. Silver price, pence per oz.
- VI. Silver index
- VII. Ratio: rice index (#2) to silver index (#6)

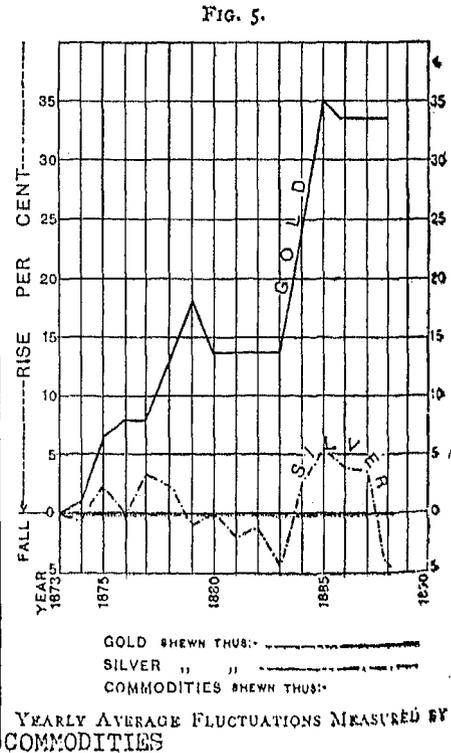
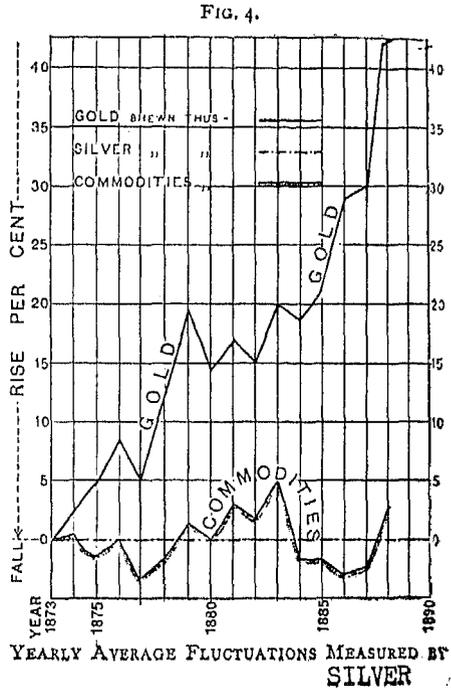
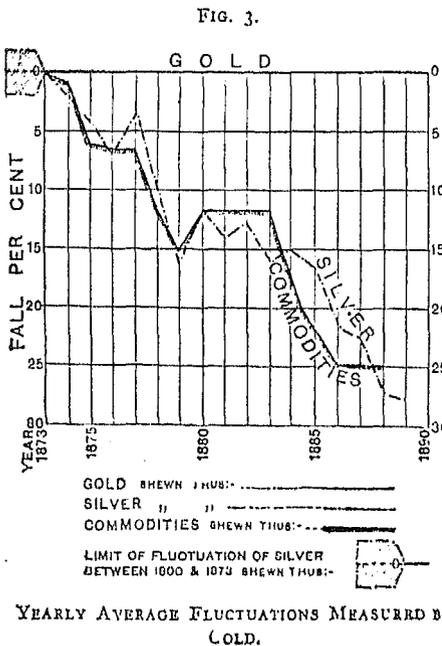
Years	I	II	III	IV	V	VI	VII
1867-77	10	100	100	1.00	58.5	100	1.00
1877-87	8	80	79	1.01	50	85.5	.94
1887-97	6.75	67.5	67	1.01	37	63.2	1.07
1897-1907	7	70	71	.99	27.4	46.7	1.50
1907	8.25	82.5	80	1.03	30.2	49.6	1.66

SOURCE:

Auguste Sauerbeck, *The Course of Average Prices of General Commodities in England*. London, 1908.

TABLE III
FIGURE 1

Nineteenth century (1873-88)
bi-metallic price trends.



IV. PORT CITIES AND MARKET TOWNS

The history of rice exports from mainland Southeast Asia, is, for the latter half of the nineteenth century, inextricably tied to the history of milling. Only in the earliest days of expanded trade was rice exported principally in the form of paddy.⁵¹ In this form it would keep well and could stand the rigors of long voyages, but it was bulky and heavy compared to milled or partially milled rice. It was rapidly apparent to Western and Chinese entrepreneurs that considerable savings could be effected by milling the rice at the port of departure, thus cutting freight costs by up to 50%. Cargo rice could still stand the journey to Europe or even America. Later, when sharp reductions were made in shipping time as a result of expanded steamship tonnage and the opening of Suez, it was possible to export clean rice directly even to non-Asian consumers; this became the practice, in spite of the fervent objections of millers in France and England whose livelihood depended on processing cargo rice.⁵² All cargo rice as well as clean rice already passed through the mills of Cholon, Bangkok, or the Burmese ports; what was more natural than the millers, as collection centers, should be at the heart of the export trade?

The first steam-powered rice mill (traditional milling was hand-powered) in mainland Southeast Asia was built by an American in Bangkok in 1858. During the 1860's several British-financed mills were built in Bangkok and Rangoon; 1869-70 saw the first modern mills in

- 51) Cheng, 9-10, gives the clearest short definition of the terms used in referring to rice. Cheng, 77-111, and D.H. Grist, *Rice* (London, 1953), 217-65, are the most comprehensive explanations of the various milling processes involved. Essentially "paddy" is unhusked rice, "cargo rice" is a mixture of husked rice, partially milled rice, and paddy, "clean rice" is milled, "white rice" is highly milled, and "polished rice" is white rice further processed to improve its appearance.
- 52) Cheng, 8-15; Coquerel, 193-7. This economy of processing could, of course, be pushed back one step further, to upcountry milling, thus reducing inland transportation costs; eventually it was, but not without opposition. In 1922 the British Railways Company, Limited (Burma) tried to thwart this trend by raising freight charges on clean rice to the equivalent of paddy freights (i.e. as much as the same amount of rice would have cost if shipped as paddy), not only protecting their own interests, but the interests of the European millers of Rangoon, against the predominantly Burman upcountry millers. Cheng, 94. This was the sort of protection that the millers in France and England had asked for in vain.

Saigon/Cholon, both European owned.⁵³ But the Chinese in Siam and Vietnam, who traditionally dominated the export trade,⁵⁴ were not to be left out long. Successful milling required good contacts with both producers and consumers, and the Chinese were far superior to their European rivals both in the extent of their pre-existing contacts and their capacity to extend them further. In 1877/8 the first Chinese-owned mill was built in Cholon; by 1910 Chinese owned 7 of the 9 mills with a capacity of over 500 tons of paddy a day; by 1914 they owned every rice factory with a capacity of over 300 tons in Cochinchina.⁵⁵ By 1889 the Chinese owned 18 of the 23 mills in Bangkok with a capacity of over 100 tons, including the original 1858 American-built pioneer; by 1919 they owned 56 out of 66.⁵⁶ Only in Burma, where the Chinese had no traditional role, where they were far from home (by sea), and where British capital could combine with British administration, did the Chinese fail to obtain a strong hold on rice-milling. There they increased their share only from 6% to 14% (1881-1921), while Europeans retained from 84% to 62% of the total number of mills (and an even higher percentage of mill capacity, as measured by the number of mill employees). Burmese and Indian millers shared what was left of the market.⁵⁷

As a comparison with export distribution will indicate, there was a strong general correlation between the nationality of millers and the principal destinations to which shipments were made (considering both Singapore and Hongkong as cities more Chinese than British). Detailed accounts of the trade frequently describe specific exporter preferences—Indians for Indian markets, Chinese for Chinese, European for European.⁵⁸ This correlation is not absolute or direct; millers of one nationality would

53) Ingram, *ECT*, 69; Cheng, 95; Coquerel, 88. Luong Nhi Ky, "The Chinese in Vietnam" (Unpublished PhD dissertation, University of Michigan, 1963), 87, asserts that the first "modern" rice-husking factory was not built in Cholon until 1878.

54) Ingram, *ECT*, 20n; Crawford, 289, 410; Luong Nhi Ky, 66-7, 75-80.

55) Coquerel, 88-90; Luong Nhi Ky, 87. The actual milling machinery was imported from Germany and the United States. Robequain, 276.

56) Ingram, *ECT*, 69-71.

57) Cheng, 83-5.

58) Cheng, 211-2, 218; Ingram, "Rice," 104-5. In Cochinchina there were, at times, preferential duties for exports in vessels carrying the French flag, so conclusions are more difficult. Coquerel, 187-93.

often sell to shippers of another (Chinese millers in Saigon to French, in Bangkok to British; British millers in Burma to Indian shippers, before Indian milling was well established), and no exporter would ever decline to sell where the price was highest. But in a traffic increasingly structured and defined by advances, rebates, contracts, and other efforts to establish continuing market relationships, ethnic preferences played an important part in shaping these relationships.

There is sufficient data for a whole chapter on what types of rice and what degrees of milling were preferred in which markets. A few generalities can be made. Europe imported both hard, translucent, high grade clean rice (not "white," as it was remilled and polished on arrival) for human consumption, and broken rice for distillation and animal feed. Japan and the Philippines would import white rice only. India imported whatever grain, from whatever source, was cheapest that year. China imported for her own consumption; she also imported paddy, milled it, and re-exported it to Japan (until French tariff barriers cut into the profits of this trade); she was also the principal importer of rice bran. From roughly 1880-90 onward, the diversification of milling and marketing was complete. Mills in all three exporting countries had been re-tooled for whitening, and Siam and Cochinchina had developed export grades to suit European tastes, so each exporter could ship to the specifications of the importer. By this same period, advances in technology and transportation had made it possible to utilize most rice byproducts (bran, broken rice, husks) and even to export some of them. The technological triumph of the miller was complete.⁵⁹

The miller, we have suggested, stood at the heart of the rice trade of mainland Southeast Asia. Usually he lived in a port city.⁶⁰ Some-

59) Cheng, Chapters IV, VIII; Coquerel, 118-221, *passim*, provide extensive commentaries on consumer preferences and the economics of trade. Profits for rice bran rose to such a point that at certain times millers could afford to mill rice without charge, retaining the bran as sole compensation. Coquerel, 161-2. Saigon rice was customarily inferior, due to the indiscriminate mixing of many varieties of rice before milling, which resulted in a high percentage of broken grains. Coquerel, 118-130; Robequain 309-10.

60) Small upcountry mills began to multiply in Burma after 1900, in Siam and Cochinchina only after World War I. Cheng, 93; Ingram, "Rice," 104-5; Robequain, 276. *cf.* footnote 52, above.

times he was an exporter himself; otherwise, he was customarily in close alliance with the exporting firms. In combination, millers and exporters were able to exercise powerful leverage on the economy.⁶¹ Often the miller was connected with the distilleries making rice alcohol. Most of the time he worked for himself, not for clients; he bought rice, milled it, and sold for a profit, rather than milling for a commission.⁶² And he had closer contacts with the interior of the country than exporters or government officials ever had, because he depended on his marketing net for his supplies of paddy.

The governments of this period, unlike those of an earlier age, were not active traders themselves. But their commercial policy set the framework within which the private traders had to operate. This period was generally one of *laissez-faire*, with minimal restrictions on trade, but as the century wore on this policy was sometimes shifted or bent. The French altered their export duties on rice eight times between 1879 and 1899, generally revising them upward (in piastres) to reflect the depreciation of the currency; the duties expressed in francs or *ad valorem* were more constant.⁶³ In so doing they were able to keep customs revenues expanding at the same rate as exports. This privilege was denied the Thais, whose export duty was unchangeable, fixed by the Bowring Treaty (1855) at 0.16 baht/picul. At the time of the treaty, this represented a rate of about 10-13% *ad valorem*, but by 1900-14 it had fallen below 3%. It is plausible, if hardly proven, that the growing differential between Siamese duties and those of Cochinchina helped produce both Siam's more rapid expansion of rice and Cochinchina's greater capacity for investment in public works. The British seem not

61) Furnivall, 94-8, shows how the mills *obtained* economic advantage in Burma. Cheng, 64-7, also describes how miller-exporters (British firms often combined both functions) combined to exert inordinate influence on prices. The Chinese millers of Saigon, on the other hand, had to deal not only with a French government but with a European-dominated Syndicate of Exporters (1909) and Saigon Chamber of Commerce (of which Coquerel was once Secretary). The resultant balance of economic forces was presumably less monopolistic, but there is no indication the peasant proprietor profited by it. Coquerel, 137n, 121. The Chinese millers of Bangkok exported directly to Asian markets, and sold rice to European exporters for shipments outside Asia. Ingram, *ECT*, 74.

62) Coquerel, 89-90.

63) Coquerel, 187-200. See Table IV-A, p 49.

to have placed export duties on Burmese rice, preferring to derive their revenues from import duties and land tax.

But the governments' commercial policies were not limited to obtaining revenues. In French Indochina, for example, the administration made conscious attempts to control and direct the rice trade. Efforts were made to encourage trade with France, not only by raising protective tariffs against foreign rice in the mother country (1893), but by reduced export duties in Cochinchina for rice going to France (1881). The milling industry was bolstered by raising the export duties on paddy above those on clean rice (1896), with the specific intent of restricting Chinese re-export competition. Various other manipulations of duties were performed to direct the flow of trade into approved channels.⁶⁴ The government also regulated the paddy percentage of cargo rice in 1878 (fixed at 20% unless otherwise specified in the contract), thus preventing continued depreciation of the reputation and price of Saigon rice.⁶⁵ The governments of all three countries also influenced the rice industry through their land policies and investment in public works (see section V, below): but they did not, prior to 1914, invest heavily in agricultural experimentation or credit.⁶⁶ Fiscal conservatism was practiced in all three countries, and railroads were seen as far more immediately profitable than attempts to assist or reform an agrarian sector so obviously flourishing.

64) *Ibid.* See also Table IV-B, p 50. Certain measures were designed to favor French shipping, others to encourage exports to non-Asjan markets. One abolished the tariff on importation of Siamese rice (presumably from Battambang and the Korat region) if it was re-exported within six months, intended as another benefit for the millers of Saigon.

65) Coquerel, 205-9.

66) "It is certainly true that the government did not give enough active and constructive attention to the problems of agriculture." Ingram, *ECT*, 86-7. From 1875 onward, the Saigon Chamber of Commerce requested government action directed toward improving rice quality; in 1910, Coquerel, 121-30, notes the lack of success of the few feeble programs but expresses hope for schemes scheduled to take effect in 1915. British Burma had a Department of Agriculture from 1880, but the first experimental farm was not opened until 1907. Cheng, 39.

To keep this economy flourishing a continued supply of paddy was required, and no one was more aware of this fact than the miller. A rice mill is a unit of high initial cost, high capacity, and high profits when it is running; it cannot be left standing idle.⁶⁷ The miller had to ensure a steady supply of paddy just to keep operating; the need became even more imperative if he had previously contracted to make export deliveries. This need for a constant flow of rice to the mills of the port cities evoked a complex network of rice brokers, agents, market towns, credit, and internal transportation, all combining to move paddy from the cultivator to the miller-exporter. This aspect of the rice industry is among the most critical; it is certainly the one we know least about. The brokers, like the millers, were largely alien; unlike the millers they did not operate western-made machines and sign standard western-model contracts. We have superficial descriptions of their overt operations, but the actual mechanics, economics, and sociology of the trade are an enigma to us, a field for speculation.

In the early days of expanded trade, the paddy intended for export came to the ports through traditional channels. Lower Burma was very deficient in the infrastructure of trade prior to the arrival of the British; the cultivators themselves had to bring their paddy to the rice mills in the first few years.⁶⁸ In Siam, on the other hand, the Chinese operated an extensive internal retail trade (as well as exporting) by 1850.⁶⁹ In Cochinchina the Chinese played similar roles, though their dominance was not so clear cut. But all these traditional systems of marketing rapidly became inadequate for an insatiably expanding export demand. As larger mills were built, the paddy had to be drawn from a wider area. A peasant in Pegu, Nonthaburi or Go Cong might well make a journey to the port to sell his harvest. But the cultivator in Henzada, Lopburi, or Rach Gia could never afford to take the time to market his rice that way, even if the necessary transportation was available. Similarly the existing chain of shopkeepers did not have, in 1850, the supply of credit or the means of transportation necessary to bring in surpluses from

67) Coquerel, 90.

68) Cheng, 228.

69) Ingram, *ECT*, 19.

outlying areas. The port cities began to send out brokers; some were actual agents of the mills, some worked for "commission houses" or kinship groups in retail and banking, a few borrowed funds and struck out as independent merchants. In Siam, Cochinchina, and Cambodia these brokers were almost entirely Chinese,⁷⁰ ethnically linked to the principal millers and retailer (though a few wealthy Thais and Vietnamese managed to get slices of the action, by cooperation rather than by competition). In Burma, on the other hand, Burmese, Indians and Chinese all were middlemen in various places at various times; unfortunately, the sociology of their economic interaction has never been explored.

Whatever their nationality, the rice brokers soon came to play essential roles not just in the rice trade, but in the whole economy. Many of them were already retailers; others learned to augment their brokerage profits by selling goods to the cultivator while he was enjoying the prosperity of harvest. The transportation of rice became more of an expense as distances increased, and it was the mills and brokers who financed the large junks that could carry rice over a hundred miles across or down the network of waterways. As time went by, provincial centers began to develop into larger market towns, until by 1932 Henry could assert that there were more rice-merchants in the interior, at the "points of concentration of paddy," than in Cholon itself.⁷¹ And each of these merchants had his own agents even farther out in the countryside. Rice storage was another essential function of merchants and brokers. Peasants had to sell their rice soon after harvest not only because of debts, but because they had nowhere to store it during the monsoon, whereas the brokers had the capital to build "godowns." And the paddy-brokers

70) Ingram, *ECT*, 71-4; Coquerel, 111-3; Robequain, 38-9; Henry 345-6, 357. Luong Nhi Ky, 75-80, suggests that in Vietnam one group of Chinese, the Teochiu (Vietnamese "Trieu-chau") from the Swatow area in Kwangtung, specialized in the rice trade in all its aspects—paddy brokerage, mill-owning, mill-laboring, and exporting—to the virtual exclusion of the other Chinese (Cantonese, Fukinese, Hakkas, etc.).

71) Henry, 345-6. There were 70-100 paddy merchants then in the Cholon "Syndicate" who bought from the interior and sold to millers and exporters. Henry lists four provincial centers with at least ten "big merchants" each: Sadec, Traon, Baclicu, and Rachgia.

were also an essential source of market information (and misinformation) to the peasant; they were the visible link to the world of markets and money.⁷²

But the most important function played by rice-brokers in the economies of mainland Southeast Asia, perhaps equal to that of actually procuring rice, was the furnishing of rural credit. Mills and city merchants, increasingly anxious to guarantee a supply of paddy, began to make cash advances to their agents in the interior. These agents, and the independent brokers, in turn ensured their supply by making advances to the cultivator against the purchase of his next crop. The advances might be made to feed the peasant after a bad harvest; or to allow him to invest in more land, tools, draft animals, or hired labor; or for purely personal or ritual purposes. The interest rates varied from merely high to astronomical; no source quotes figures below 20% per year, and estimates for some areas run as high as 200%.⁷³ There had been traditional forms of credit, of course, but the brokers (and a few pure moneylenders, such as the Chettyars) vastly expanded the availability and total amount of rural credit.

The whole subject of agrarian credit (and debt) in these societies is an immensely complex one, whose subtleties are often clouded by the emotional response to the fact that most creditors ("usurers" to those that dislike them) were alien.⁷⁴ Seen in terms of the rice trade, however,

72) The storage function of rice merchants and brokers was sometimes challenged by native landlords, who speculated in "godowns" hoping to regain their investment when prices rose. Coquerel, 114-5; Cheng, 50-4. Coquerel, 112-3, describes brokers who played on cultivator credulity by telling them that the world was coming to an end, or that the Japanese were invading, in order to convince them to sell cheap; he also mentions brokers gambling with cultivators for the money they had just paid them.

73) Ingram, *ECT*, 15; Coquerel, 110; Cheng, 172-4. Rates below 50% usually applied only to loans where solid collateral (jewelry, land titles) was offered; crop loans are always higher.

74) The Chettyars in Burma play an atypical role in this period, and seem to deserve a better press than they have had. They never became personally involved either in cultivation or in trade and brokerage; they consistently made low-risk loans, usually at lower rates than their native competitors. Chettyar moneylenders fit into the economy midway between the European city bankers and the village usurers. But by accepting land too readily as collateral they found themselves vulnerable to eventual declining profits and falling prices; they were forced to foreclose and become absentee landlords, always a role of opprobrium. Cheng, 69, 171-7, 187-190.

the broker-lenders provided two economic services in the exporting society which developed. The first is obvious: they provided new capital. This made it possible for new lands to be opened, improvements to be made, bad years to be survived. It may be argued that traditional forms of credit (family, landlords, etc.), government credit programs, or commercial banks could have supplied this capital more cheaply. But the response is simple: they did not. No one knows the extent of kinship borrowing, but where indigenous moneylenders were compared with aliens, the latter customarily proved to ask *lower* rates of interest.⁷⁵ Government-sponsored agrarian credit simply did not exist in this period. And commercial banks consciously avoided entanglement in direct cultivator loans.

(It may be only a reflection of *lacunae* in the sources, but it seems that alien credit played a more active role in Burma and Cochinchina than Siam. One can hypothesize two possible causes. Siam, of course, was not a European colony with western laws; she retained her traditional social structures intact; her government did not deliberately encourage alien immigration. But she was also the only country of the three in which most of the expansion of paddy acreage occurred within an area already populated and cultivated, in which no major population shifts are known to have occurred. The Thai pioneer farmer was probably still close to home when he set about clearing new land; kinship and other local relationships of credit and assistance were probably more available to him than to his Burmese or Vietnamese counterpart.)

The second service involved in broker moneylending was perhaps more critical, if less obvious. This was to regularize and structure the marketing relationships within the society, where written contracts for delivery were all but unknown. Mills had to have rice and depended on agents to provide it.⁷⁶ Merchants, having accepted advances from the

75) *Ibid.* Ingram, *ECT*, 67. It has been suggested that much of the money circulating in rural credit networks came originally through European banks, through loans to mills and alien "commission houses" or moneylenders. Coquerel, 111.

76) When the Syndicate of Exporters (Saigon) tried to force the Cholon millers to cease giving advances, they were refused, the millers claiming that they were too far committed already. Coquerel, 137n. Heavy losses eventually forced Burmese mills to restrict their advances (1920's), but only after several decades of very active lending. Cheng, 68-9. In Siam, however, the traditional Chinese middlemen were so dominant from the beginning that the mills rarely sent out their own brokers. Ingram, *ECT*, 71-2.

mills, needed to ensure that they would have paddy to deliver. Cultivators not only got their immediate loan, but a guaranteed market for their next harvest at an established price. That this price was low is incontestable, but at least it removed one element of risk from peasant to the broker. Finally, credit tied the agent and the cultivator into a continuing debt relationship; the cultivator might never pay off the original loan, but so long as he delivered his crop to the broker, it was assumed that more credit would always be available.⁷⁷ The network of brokerage, transportation, storage and credit that operated in mainland Southeast Asia was far from perfect, but it worked for over sixty years, and might have worked longer had not world prices crashed in the 1930's.

The social network of marketing, of course, depended on the physical network of internal transportation. For rice, in this period, that meant waterways—rivers and canals. Late in this period railroads were built, but only in a few parts of midland Burma did they carry significant amounts of rice.⁷⁸ Roads provided only local transportation in areas not served by waterways.⁷⁹

Digging canals to improve internal transportation was not new in the late nineteenth century. Rama III of Siam and Gia Long of Vietnam had both undertaken major projects of this nature earlier in the century, expanding existing canal systems centuries old.⁸⁰ But the continued expansion of rice acreage, particularly into largely undeveloped areas, depended in part upon the continued expansion of this network, a process which occurred at differing rates in the three countries. Despite the succession of traditional canal projects under Mongkut and Chulalong-

77) "The Oriental method of lending money has certain advantages for improvident borrowers." M. Ganay, quoted in Robequain, 41n.

78) Cheng, 62-4, 225; Robequain, 90-6; Ingram, *ECT*, 47; van der Heide, 88-92. In Indochina railroad efforts before 1913 were largely concentrated in Tonkin, except for a short (40 mile) spur line from Saigon to My Tho. By 1905/6, railroads carried about 320,000 piculs of paddy to Bangkok from Korat and Pitsanulok, about 2% of Siam's total exports. (The North and Northeast traditionally produced mostly glutinous rice, which was not an export commodity).

79) Ingram, *ECT*, 12; Robequain, 98-9; Simkin 331.

80) Walter F. Vella, *Siam Under Rama III* (Locust Valley, N.Y.), 24; Crawford, 457-8.

korn, van der Heide could remark in 1906 that "for the main part of the country, as regards the most important articles of trade, inland transportation is still in the same condition as it was half a century ago and before."⁸¹ The French in Indochina, on the other hand, were strongly committed to hydraulic engineering and proudly computed the number of cubic meters of earth they moved each year (rising from 140,000 in 1893 to 6,000,000 in 1913). After using manual labor from 1866—to 1895, they introduced machine dredges in 1893, and by the 1930's had dug 1300 kilometers of rectilinear primary canals, 22 meters wide and 2 meters deep at low tide.⁸² The rapid growth of Transbassac population and paddy acreage was made possible by the canals dug there; most of the settlers moved to their new lands in sampans and built their houses in long rows along the embankments.⁸³ The flatness of the Transbassac and delta area and the height of tides in the South China Sea (2 meters) made the tides the most important source of motive power for the boat traffic of Cochin China; a rice broker could travel from the market town to the village on one tide and return on the next.⁸⁴ Cholon's export capacity was also increased by the digging of two new canals after 1906 to facilitate lighter traffic.⁸⁵

But it was in Burma that the greatest investments were made in internal transportation, with probably the greatest impact. The development of railroads has already been mentioned; these opened up the areas around Prome, around Henzada, and along the Sittang to export production.⁸⁶ The Irrawaddy Flotilla Company carried on a profitable steamship trade (although rice was an infrequent article of freight). Canals were added to the existing network of waterways. Gordon has estimated that £ 6-9,000,000 was spent on public works between 1860 and 1890 by the central administration, plus whatever was spent by districts and

81) van der Heide, 88. He admits, however, that waterways in the Central Plain were already reasonably adequate by 1850. *cf.* Ingram, *ECT*, 79-80.

82) Robequain, 110-1. This figure does not include old canals or natural waterways, some of which were improved.

83) Robequain, 53-7. This linear village pattern forms a sharp contrast to the nuclear pattern common to the rest of Vietnam.

84) Robequain, 112, 221; Coquerel, 115.

85) The "Derivation" and the "Doublement." Robequain, 112.

86) Cheng, 63-4, 225.

municipalities; to this input alone he ascribes the superiority of Rangoon to Bangkok.⁸⁷

Yet it is not clear, in the end, just how much inland transportation contributed to the growth of rice exports. Gordon was an advocate of railroads, and tended to assume a straightforward correlation between iron tracks and progress. Van der Heide, an irrigation specialist, claimed that transportation of itself would not inspire an increase in production, citing Korat as an area where railroads had made signally little impact.⁸⁸ There are reasons other than superior transportation one could cite for Burma's larger rice export, not least the cultivable acreage and size of population in the areas readily accessible to the sea. Before a final judgment is passed, we would need more case studies such as M. Pouyanne, *Etude sur les voies d'eau de la Cochinchine*. He compares, for several provinces of Cochinchina, the cost of transporting rice to Cholon with the distance by waterway, combines these figures with those in Thevenet's 1880 work on *Les Travaux publics et les Voies de communication en Cochinchine*, and shows some clear correlations. It cost 0.157 piastres to move a picul of rice the 142 kilometers from Vinhlong to Cholon; 0.245 piastres for the 263 kilometers from Rach Gia; market towns at intermediate distances bore intermediate costs. From 1880 to 1908 the cost was up 50% across the board (as the piastre fell), yet the correlation of price to distance remained unchanged.⁸⁹

But even this computation does not give us the final answer on the significance of internal transportation. We would need to know more than we do about the complete cost structure of producing and marketing rice to be able to assess the difference made by internal transport costs. We cannot measure the quantitative importance of canals in encouraging settlement; too often it is unclear whether the canal precedes migration or is built in response to it. The web of waterways in mainland Southeast Asia was essential to the operation of the marketing network through which rice surpluses reached the export market; beyond that we cannot go.

87) Gordon, 292-3.

88) Gordon, 293; van der Heide, 92. *cf.* footnote 81, above.

89) Coquerel, 116-7.

TABLE IV-A
COCHINCHINA : EXPORT DUTIES, 1879-1911

Values expressed in piastres per 100 kg., exported to Asian markets (other than the Philippines). Rates 1899-1911 are combination of basic export taxes and tariff, expressed in francs, converted at 2.5/1.

Year	Duties		Exchange Francs/ Piastre	Franc Duties		Price* Piastres/ 100 kg	Duty ad valorem
	Rice	Paddy		Rice	Paddy		
1879	0.165	0.165	4.605	0.76	0.76	2.56	6.5%
1881	0.25	0.185	4.655	1.16	0.86	2.06	12.1%
1882	0.25	0.25	4.67	1.17	1.17	2.14	11.7%
1887	0.31	0.31	3.95	1.22	1.22	2.48	12.5%
1888	0.25	0.25	3.82	0.96	0.96	2.06	12.1%
1893	0.26	0.26	3.25	0.85	0.85	2.72	9.5%
1895	0.31	0.31	2.67	0.83	0.83	3.11	10%
1896	0.31	0.40	2.73	0.85	1.09	3.62	8.6%
1899-1911** (average)	0.342	0.438	2.45	0.84	1.07	4.50	7.6%

* Seasonal average 15 March—30 April for 20% cargo rice. (See Table III-C). As this is the cheapest form of rice exported under the duty for clean rice, the ad valorem percentages will be biased upward.

** See Table IV-B.

SOURCE :

Coquerel, 187-200.

TABLE IV-B
COCHINCHINA: SCHEDULE OF DUTIES, 1899

In 1899, all previous laws regarding export duties were repealed, and a new schedule of taxes on the rice trade was established. This consisted of a basic tax on export and a "plant" tax on milling, both expressed in piastres/100 kilograms, plus a tariff on all rice not exported to France or its colonies, expressed in francs. (There was also a nominal "statistics tax" of 0.01 francs/100 kg. on all exports.) The schedule was designed to restrict exports of paddy, especially to non-French importers, and thus favor the millers of Saigon. In this table, the tariffs (and statistics tax) have been converted to piastres at the rate of 2.5/1, a rough average for the period 1900-14. All duties are for 100 kilograms.

Type of Rice	Basic Tax & Plant Tax (Piastres)	Tariff & Stat. Tax (Francs)	Total Duties (to non-French importers)
PADDY	0.13	0.77	0.434
CARGO (under 33%)	0.17	0.42	0.338
CLEAN RICE	0.21	0.32	0.338
BROKEN RICE	0.09	0.03	0.102
BRAN	0.06	0.03	0.072

SOURCE :

Coquerel, 197, 200.

V. PADDY FIELDS AND POPULATION

The growth of the rice trade of Southeast Asia depended upon the enormous expansion of area devoted to paddy cultivation. No statistics exist for the beginning of the rice boom, but a reasonable estimate of the total paddy acreage of the peninsula (excluding Tonkin and Malaya) in 1850 would be under the 6 million acres. By 1911-14 in this same area over 21 million acres of paddy were under cultivation each year, of which 15 million were in the principal exporting regions: Lower Burma, the Chao Phraya basin, and Chochinchina.⁹⁰ Some of this expansion occurred within areas already well-populated and cultivated; some, especially in the Irrawaddy delta and the Transbassac area of Chochinchina, was pioneering settlement of underpopulated frontiers.⁹¹ The development of the Transbassac and Irrawaddy "frontiers" was characterized by extension of internal transportation and by some variations in traditional landholding patterns but the technology of cultivation and marketing was largely unchanged.

Within the regions already populated, there appear to have been substantial areas uncultivated throughout this period. By 1906 van der Heide estimates that in the six central *monthons* of Siam there were 6,000,000 *rai* still available for cultivation, an area as great as that already planted to paddy.⁹² There may have been some slight increases in the percentage of agricultural land devoted to paddy, particularly when Siam's sugar industry began to decline,⁹³ but this may have been somewhat counterbalanced by the growth of gardens and orchards near the port cities. The availability of land in 1914 is most clearly indicated by the continued expansion of acreage after that date; by 1930-35 Lower Burma rose to 9.7 million acres (6.9 Pegu and Irrawaddy divisions), Chochinchina to 5.5 million (1937), and Siam to 8.5 million (1935-6).⁹⁴

90) See Table V-A, pp 62-3. The non-export regions would be Upper Burma; Thailand's Northern Northeastern, and Malay provinces; and Cambodia, Laos, and Annam.

91) See Tables V-A and V-B, pp 62-4, for data on the faster rates of expansion in these areas.

92) van der Heide, 95. He acknowledges that the areas already cultivated were probably more fertile than the uncultivated land still available.

93) Ingram, *ECT*, 10-1.

94) Cheng, 27; Robequain, 220; Ingram, "Rice," 109. *cf.* Fisher, 61-2.

Despite the remarkable growth of rice acreage 1850-1914, pressure on the land had not developed to any considerable extent before World War I.

Such scattered evidence as we have on the technology of rice cultivation in this period all points to one conclusion; there were virtually no significant changes in the way rice was farmed.⁹⁵ A scattered handful of farmers migrated from Tonkin to the Transbassac and found new techniques to be learned—drainage and desalinization are the characteristic problems of the south.⁹⁶ Well into the twentieth century individual villages were still adopting and adapting new variations on traditional agriculture—in the 1930's Khanh Hau village, founded in the Mekong delta in the eighteenth century, finally adopted a Khmer-style plow in place of the one they had used for a century and a half.⁹⁷ There were several variations on basic paddy agriculture a cultivator could go through migrating south from Upper Burma to the delta—changes in type of rice, growing season, and availability of draft animals—but none of these seem to have been sufficiently novel to deter internal migration, nor to alter the traditional pattern of agriculture. Yields (per acre) rather than increasing seem to have fallen slightly between 1880-1900 and 1930-50, apparently reflecting the application of traditional technology to new land somewhat less suitable for agriculture.⁹⁸

95) Ingram, *ECT*, 8-11, 48; Cheng, 16-36. Crawford and other nineteenth century travellers describe rice cultivation techniques which persist well into the twentieth century, some to the present. Grist, *Rice*, gives the most comprehensive description of the techniques of cultivation in all stages.

96) Robequain, 72. But these techniques were not new to Vietnam; cf. Crawford, 259-60.

97) Gerald C. Hickey, *Village in Vietnam* (New Haven, 1964), 136. He also describes changes in threshing techniques, and the later (1940's) adoption of new seed types and chemical fertilizer.

98) Cheng, 28-9, 198; Ingram, *ECT*, 48-50. The countries of mainland Southeast Asia have always produced low rice yields compared to the rest of the world, reflecting a lack of modern technology (compared with Europe, the USA, and Japan) and a lack of population pressure (compared with China) which might have forced them to develop intensive irrigation. Cheng, 28; Henry, 250ff.; Wickizer & Bennett, *The Rice Economy of Monsoon Asia* (Stanford, 1941). Average paddy yields for the region are on the order of 12-15 quintals/hectare (= 0.5-0.7 tons/acre, = 3-4 piculs/rai).

Hydraulic engineering, although not a true innovation, would seem to have been the most obvious form of technological improvement available in this period. Its employment in digging transportation canals we have already noted. But it could also have been used to irrigate areas receiving inadequate or irregular rainfall, to prevent crop loss through flooding, and to drain or empolder areas suffering from a surplus of water. This was not new knowledge to mainland Southeast Asia; the water control schemes in Tonkin were as elaborate as any in China itself. But the major emphases and expenditures of the three governments throughout this period seemed always to go elsewhere. The production of paddy expanded enormously from 1850 to 1914; it did so in large part unassisted by any extension of irrigation or drainage.⁹⁹

Fiscal priorities appear to have been the main obstacle to extension of hydraulic works. In 1889 a private company undertook the Rangsit irrigation scheme, transforming an uninhabited swamp near Bangkok into a rice surplus area that could support a population of 100,000 by 1910. The company, however, had floundered over problems involving maintenance and high rents; the Siamese government saw that this type of development had clear potential and decided to undertake further projects itself. They hired the Dutch irrigation expert J. Homan van der Heide to draw up a national plan for irrigation. His 1903 scheme, "a brilliant statement of the irrigation needs of Thailand and the solution for them,"¹⁰⁰ would have cost 47 million baht, spread over 12 years. But it was vetoed by Chulalongkorn's (British) Financial Advisor; other reduced schemes in the following years, costing 28 million baht and a mere 6 million bath, were also rejected, on the remarkable grounds that "it has not yet been satisfactorily shown that new irrigation works are required in Siam." Instead the Advisor advocated building railroads, "which are essential if the outlying Provinces are to be properly

99) "Most of the rice plantations in Cochín China are not really irrigated." (1939) Robequain, 222. "For the most part . . . the expansion of the rice trade in the lower Menam valley was undertaken . . . without any major hydro-technological works." Fisher, 63. *cf.* Grist, 34.

100) Ingram, *ECT*, 84.

governed," and to accumulating large cash reserves.¹⁰¹ Between 1908 and 1912, Siam suffered two severe floods and two droughts.¹⁰²

French and British authorities were willing to commit more effort and money to hydraulic works, although in fiscal priorities they too succumbed to the lure of the railroad. France, however, concentrated her water control schemes in Tonkin (where a traditional irrigation network was beginning to feel the strain of population pressure), and built only transportation canals in Cochinchina. These were theoretically capable of forming the basis for an irrigation system, but the construction of secondary canals, left to local initiative and private landholders for the sake of fiscal economy, lagged far behind.¹⁰³ The development of Transbassac rice cultivation owes much to French-built canals, but for transportation, not for water control.

Britain's hydro-technological efforts in Burma seem to have been the most successful, agriculturally, but their value is hard to assess, largely because of the difficulty most writers on the subject have in distinguishing the various functions of earthmoving. The principal efforts appear to have been in flood control, and various sources count up to 1.5 (or 0.8) million acres as "reclaimed" (or "protected") by embankments built before 1890. "Drainage" canals dug between 1890 and 1911 are supposed to have made available another 200,000 acres. But in neither of these sources is it made clear whether the acreage referred to was (a) previously totally uncultivated, or cultivated but vulnerable to flooding (b) now cultivated, or merely "available" for cultivation. In any case, the area thus affected would be at most 20% of the total paddy acreage of Lower Burma by 1914.¹⁰⁴

101) Ingram, *ECT*, 196-8.

102) Ingram, *ECT*, 84. Robertson, 246, notes that over 99 years (1831-1930) Siam had 30 years of low water, 9 of floods, and another 38 of mediocre crops that could have been increased by a water control system.

103) Robequain, 111, 221-2, 225-7. Even in Tonkin, less than a third of the paddy area was irrigated by the 1930's.

104) Grist, 31; Gordon, 293. Cheng's otherwise comprehensive book on the Burmese rice industry has almost nothing to say on this subject; neither do Furnivall nor Andrus. Some sources suggest that Burma was far less susceptible to extremes of water supply than Cochinchina or Siam. Robertson, 246, estimates an annual crop loss of less than 3%, as opposed to 10% or more for the other two. Wilbur Zelinsky, "The Indochinese Peninsula: a demographic anomaly," *Far Eastern Quarterly*, IX (1950), 130, quotes John Christian as saying, "Lower Burma . . . has never known crop failure or famine." If this is true, it would tend to reduce the significance of flood-control embankments.

In the absence of any technological innovations, one would expect expanded acreage to coincide with population increase, a correlation well supported in fact. All pre-census estimates of population are conjectural, and the early censuses are not much better, but the best guess is that the total population of Burma, Siam, and Indochina rose from 12 million or so in 1830 to over 36 million by 1910; this would be an annual growth rate of over $1\frac{1}{2}\%$, remarkable in a pre-twentieth century agricultural society.¹⁰⁵ The principal rice-exporting areas account for just over a third of the later total, with Lower Burma's population roughly equal to that of the Chao Phraya basin and Cochinchina combined. In Burma, where the censuses were early and regular, we can document a massive migration of population from Upper to Lower Burma, with a far higher growth rate in the "Deltaic Plains" of the Irrawaddy than the littorals of Arakan and Tenasserim.¹⁰⁶ No such statistics are available for Indochina, but accounts of the Transbassac before 1860 describe it as inaccessible and populated only by "semi-nomadic" hunters and fishermen,¹⁰⁷ whereas fifty years later it had more paddy acreage than any comparable region in Cochinchina. The great migration in this case was not from Tonkin, but seems to have been from the less fertile, more crowded areas of central and eastern Cochinchina.¹⁰⁸ Only in Siam is there no evidence of a major population movement concurrent with the expansion of the rice trade.¹⁰⁹

Nearly all this indigenous growth of population, however, remained in agriculture,¹¹⁰ although this was a period of explosive growth in

105) See Table VI-A, pp 65-6. Fisher, *op. cit.*, is the best single essay on Southeast Asian population growth, which he describes succinctly and analytically. He attributes the nineteenth-century acceleration principally to the "great improvement in security," brought about by Western colonial law and order.

106) *Ibid.* Burmese census reports indicate that by 1881 over 300,000 persons born in Upper Burma were living in Lower Burma; within the next decade another 170,000 made the migration. Cheng, 113-7; Zelinsky, 127. Between 1891 and 1931 the population of Rangoon grew from 175,000 to 400,000, while Mandalay fell from 170,000 to 135,000. Fisher, 61.

107) Robequain, 53-6.

108) Robequain, 57, 73; Fisher, 61-2; Zelinsky, 127.

109) Ingram, *ECT*, 55; Zelinsky, 127.

110) Ingram, *ECT*, 54, suggests "... it is likely that there was a long-run shift of labor into rice cultivation. . . the relative importance of this increment could not have been great." The abolition of slavery and corvee during this period would tend to free more labor for cultivation.

occupations related to an increasingly complex infrastructure—marketing, milling, tax-farming, moneylending, retailing, railroad and canal building, etc. Yet the new opportunities afforded by these expanded service industries were almost exclusively taken up by immigrants, especially by the enormous influx of Chinese and Indians that arrived during this period. This ethnic division of labor, though not absolute, was characteristic of the entire economy.¹¹¹ The total number of aliens is extremely difficult to estimate. In all Burma, there were nearly 1,000,000 foreigners resident in 1911 (of whom 750,000 were Indians);¹¹² Cochinchina had 150,000 Chinese in 1910 (plus 150,000 stranded Cambodians—they had not migrated, but the border had).¹¹³ For Siam, Gordon's estimate of 300,000 in "Siam Proper" (1891) is as reasonable as any,¹¹⁴ though the figure would be much higher if intermarriage and assimilation had not so often turned Chinese into Thai. We can guess that perhaps somewhere from 1½ to 2 million aliens, predominantly Indians and Chinese, were included in the population of the rice basins of mainland Southeast Asia by World War I, some 12-15% of the total population of these areas.¹¹⁵ Most of these had been attracted by the expanding economy centered on the rice trade, but none of them came to plant rice.

111) Ingram, *ECT*, 43-4; Robequain, 34-8; Cheng, 112-3. Among the exceptions to this rule were the natives engaged in rice-brokerage and moneylending in all three countries, Burmese milling (and mill-laboring) late in the period, and some abortive Indian agricultural colonies in Burma (Cheng, 117-10). But in general the tension arising from conflicting interests was not present in this period; "... till the first World War, Indian and Burmese labour could be described as complementary rather than competitive." Cheng, 134.

112) Furnivall, 117.

113) Coquerel, Appendix, Table I. The Cambodians were heavily concentrated in the Transbassac provinces. Charles Lemire, *Cochinchine Française et Royaume de Cambodge* (Paris, 1869), 345, states that there were fewer than 20,000 Chinese in Cochinchina in 1867; Luong Nhi Ky, 41, gives a figure of 56,000 for 1889.

114) Gordon, 289.

115) Zelinsky, 127-8, points out a curious fact—in spite of geographical proximity there is "a conspicuous lack of population movement from any of the three countries of Indochina [*i.e.* the Peninsula] into the others."

Some of the reasons for this ethnic division of labor are easy to see. Europeans held administrative and technological posts because they had the training (and the power). As we have seen, Chinese exporters, retailers, and tax-farmers were dominant in Siam and Cochinchina well before the rice boom; they had the experience and the capital. Chettyars from India were professional moneylenders in any country.¹¹⁶ Thais, Burmese, and Vietnamese, on the other hand, were long on experience in rice farming, relatively short on both mercantile experience and capital. One does not need to assume, with certain imperialist scholars, that the indigenous population was not "industrious and ingenious"¹¹⁷ to see why they were so rarely millers, brokers, or retailers.

But why were they not wage laborers? Both the rice mills and the construction works (canals and railroads) depended heavily on manpower as well as machinery, yet the records show that Chinese and Indian laborers were imported for even these unskilled jobs. Ingram, in his article on "Thailand's Rice Trade and the Allocation of Resources," comes as close as anyone to answering the question. He assumes, along with most writers, that all other things equal, rice cultivation was a preferred form of work among Thais. A man worked at what he knew, worked when he wanted (not when he was told), worked in his own village, among family and friends.¹¹⁸ He compares prices and wages to conclude that not only were rice prices rising relative to silver and holding their own (or better) with textiles, but that they were rising throughout the period relative to wage rates for unskilled labor. So long as the Thai peasant continued to grow as much rice and get the same share of the profits, reasonable assumptions for this period, there was less motivation for him to work in a rice mill in 1914 than there had been in 1860. The Thais who invested in new rice fields, concludes Ingram, "responded to what was essentially a money incentive," they were genuine "entrepreneurs."¹¹⁹

116) *cf.* Robequain, 38-9, Simkin 335-6 for mention of the Chettyars in Vietnam and Malaya.

117) Robequain, 36.

118) As early as the reign of Rama III, it had proved more efficient to pay Chinese coolies to dig canals than to depend on reluctant Thai corvée labor. Vella, 19. The Burmans were also initially reluctant to work for wages. Gordon, 297-8.

119) Ingram, *ECT*, 44, 58. The assumption that the individual peasant retained a constant share of the profits is undocumentable and dangerous, though necessary. It can be justified only by the negative argument that if the cultivator's income was actually declining, it would have been reflected in migration to the cities and agrarian unrest, as in Burma after World War I.

Yet to a Chinese or Indian immigrant, usually interested in making his fortune as fast as possible, then returning to his homeland or investing in commerce, wage labor presented a more attractive alternative. Although its relative profitability was declining, it may still have offered higher cash returns, which an agriculturalist might compensate for by home improvements and other immovable investments. Labor on docks and in mills, moreover, had the advantage of being concentrated in port cities, which meant a speedier return home for the wanderer and more commercial opportunity for the would-be entrepreneur. Finally, there were negative inducements—Ingram suggests that there may have been *de facto* (if not *de jure*) proscriptions on Chinese entering rice cultivation; in any case a single male (which most migrants were) in an alien environment would always have difficulty obtaining the sort of collective help a rice farmer needs at transplanting and harvest time.¹²⁰

By World War I, then, these three countries had collectively developed a classic dual economy. The Indochinese Peninsula had long been underpopulated,¹²¹ now it was growing at a rate more than double the world average. A handful of Europeans, perhaps 20,000 at most, made most of the important political and economic decisions.¹²² A significant alien (Asian) minority controlled most of the occupations (commercial and nascent industrial) newly opened by the impact of trade and the West. And in the rice-basins 11 million indigenous Thais, Burmese, and Vietnamese farmed 15 million acres of paddy fields as their grandfathers had sixty years before.

120) Ingram, *ECT*, 54-58; "Rice," 112-4; Luong Nhi Ky, 103-5; Cheng 117-34. Any actual comparison of agricultural and proletarian income is nearly impossible to make, as there is no way of computing the non-cash income of the farmer; this is a problem even for contemporary Asian economists.

121) Zelinsky, *op. cit.* He attributes (pp 137-45) the sparseness of population, as contrasted with China and India, to political instability, agricultural inefficiency, and lack of incentive for large families (comparing Theravada monasticism with Chinese family worship).

122) Coquerel, Appendix, Table I, counts less than 10,000 Europeans in Cochinchina in 1910. Furnivall, 190, states that there were only 10,000 Europeans in all Burma by the 1930's; the number for Lower Burma alone in 1914 must be smaller. Siam's European colony was small but disproportionately strong; we have seen how the Financial Advisor vetoed van der Heide's irrigation scheme, a decision affecting the entire country.

The ratio of peasants to land was not, of course, as constant or simple as implied in the sentence above.¹²³ There were considerable varieties of landholding practices, variations in degree of alienation, tenantry, fragmentation, amount of rent and land-taxes. For this period, however, meaningful statistics are largely non-existent. Descriptive accounts indicate that in Lower Burma and Cochinchina there were areas where latifundia and tenantry had appeared during this period, whereas Siam, except for a few estates near Bangkok, was comparatively free of such problems.¹²⁴ To the extent that we have data over a period of time, it appears that conditions were worsening; certainly in the postwar period, especially in the depression, things became very bad indeed. Yet one must beware of projecting the legitimate agrarian discontent of the 1930's back into this earlier period.

The greater extent of latifundia and tenantry in Burma and Cochinchina appears to derive from two factors. One we have mentioned earlier in connection with alien credit—the Irrawaddy delta and the Transbassac were essentially pioneer areas, underpopulated and ripe for speculation and foreclosure. The other is a conscious and serious attempt by the kings of Siam to encourage Thai peasant proprietors, in contrast with the French and British obsession with rapid development, which often resulted in the favoring of aliens and large estates. The Thai government offered a tax holiday on all newly cleared land, but limited the size of initial claims to what a man could turn to profit (roughly 25 *rai*, or 6 acres), insisted on reversion of uncultivated land, and apparently discouraged alien agriculture.¹²⁵ The French, after a period of offering

123) In 1910-14, the approximate paddy acreage per person was 1.35 for Cochinchina, 1.25 for Lower Burma, and 0.85 for the Chao Phraya basin. Without further evidence on family size, percentage of population in other occupations, or quality of soil, this is not much of an index to anything.

124) In the 13 principal rice-growing districts of Lower Burma, over one-third of the occupied area was let at full fixed rent by 1910-15. Cheng, 157. Descriptions of landholding patterns and problems are found in Cheng, 137-70; Ingram, *ECT*, 12-15, 58-71; Robequain, 84-85. Henry, *Economie Agricole de l'Indochine*, has exhaustive district by district statistics on holdings in the late 1920s, but unfortunately nothing at all for the pre-war period.

125) Ingram, *ECT*, 76-9; "Rice," 109-14.

similar general tax holidays, gave special concessions to Europeans with holdings of over ten hectares;¹²⁶ Robequain admits that the administration, in immediate need of cash and under "pressures from private interests and speculators," encouraged large estates in the Transbassac with no regard for the eventual social problems that might ensue.¹²⁷ The British in Burma also began by hoping development would be rapid and spontaneous; when it developed more slowly than they wanted, they offered special large grants under easy terms to capitalists, and attempted to set up Indian agricultural colonies.¹²⁸ Both European powers, of course, also introduced European land law, including the rights to mortgage and alienate land. This enormously increased the potential leverage of large landlords, brokers, and other moneylenders. By 1901-02 official reports in Burma could state that:

The official policy of Government had always been to discourage the growth of a landlord class and to make Burma a country of small landowners. It would appear however that Government has not in the past regarded its declared policy as imposing on it any obligation to action, since very little has been done to make the policy effective.¹²⁹

Whereas certain crops may be more efficiently grown under capital-intensive plantation agriculture, rice is not one of them. The large estates which were allowed to develop in the Transbassac and the Irrawaddy delta were operated primarily by tenants, whose mode of cultivation was identical with that of smallholders, occasionally supplemented by gangs of day laborers.¹³⁰ There is nothing in the population, acreage, or export volume figures to evidence a marked economic superiority produced by these large estates; indeed, this study is more one of comparisons than of contrasts. The development of tenantry was all too natural, but it was not inevitable. Siam was ruled for the benefit of the Siamese—even though some estates grew near Bangkok, their owners

126) Coquerel, 174-6. *cf.* Robequain 190-2.

127) Robequain, 70-1, 84-5.

128) Cheng, 141, 118-20.

129) Furnivall, 110-1, quoting *Annual Report of the Revenue Administration of Burma*, 1901/2.

130) Robequain, 57. Cheng, 156-65.

were Thai. But Burma and CochinChina were ruled instead in the interests of empire, or abstract justice, or profits. And that appears to be the difference.

Land taxes, finally, had little visible impact on the rice industries of the three countries. Siam's land tax, like her export duty, was fixed by the Bowring treaty, remaining the same for over fifty years. As the baht declined, it reduced the *ad valorem* rate on paddy land from 8-13% to 2-3%.¹³¹ France and Britain, on the other hand, were free to raise or lower the land tax as they saw fit—the French exercised this right 15 times in 48 years. There does not, however, seem to be any consistent policy behind their practice (taxes were lowered sharply between 1878 and 1880, but raised slightly thereafter). We have not even rough estimates of the *ad valorem* duties, though we can compile an index by comparing land taxes with export prices.¹³² Because of its underpopulation relative to the rest of Asia, the Indochinese Peninsula in general enjoyed lower land taxes. But like the landholding patterns, land taxes seem uncorrelated to production or acreage, and they do not even have any obvious connection with social patterns or problems. Their significance lies more in the realm of fiscal policy than of economic development.

131) Ingram, "Rice," 110. Actually the Bowring Treaty only fixed the taxes on British-owned land, but the Siamese government felt that it could not, in justice, raise taxes on its own citizens without increasing them for aliens. (Presumably if the issue had been critical, they could have waived this scruple). In 1905 the British allowed the taxes on their Siamese properties to be raised to a level comparable with that in Lower Burma; Chulalongkorn used this occasion to revise the entire government land tax program. The *ad valorem* rate was still less than 10%. Crawford's estimate of the rates in the 1820's. Ingram, *ECT*, 76-8; Vella, 25.

132) See Tables VII-A, VII-B, pp 68-70.

TABLE V-A
AREA PLANTED IN PADDY, 1850-1914

Expressed in millions of acres (hectares converted at 10/25, rai at 10/4). Where there are discrepancies in the sources, Cheng, Coquerel, and Ingram have been preferred.

KEY:

- A. Pegu and Irrawaddy Divisions
- B. Arakan and Tenasserim
- C. Central Plain (Chao Phraya)

Year	Lower Burma*			Siam		Cochinchina Total
	Total	A	B	Total	C	
c.1850				(2.4)		
55	0.9					
60	1.3					
65	1.4					
68-70	1.7	1.0	0.7			0.5
71-75	2.0	1.2	0.8			
76-80	2.6	1.7	0.9			0.8
81-85	3.4	2.4	1.0			1.7
86-90	4.0	2.8	1.2			2.1
91-95	4.9	3.4	1.5			2.5
1896-1900	5.8	4.1	1.7			2.8
1901-05	6.8	4.7	2.1			3.2
06-10	7.5	5.1	2.4	(3.7)	2.7	3.7
11-14	8.0	5.5	2.5	(4.6)	2.9	4.1

* Statistics for Upper Burma were only kept after British annexation, 1886. Between 1890-94 and 1910-14 total paddy acreage grew from 1.2 million acres to 2.1 million.

SOURCES:

- Cheng, 25-27
- Andrus, 33
- Ingram, ECT, 43-45
- Ingram, "Rice," 109-111
- van der Heide, 92-95
- Coquerel, 219-221
- Henry, 272A
- Robequain, 220-222
- Fisher, 60-63

TABLE V-B
 AREA PLANTED IN PADDY, BY REGIONS
 COCHINCHINA, 1872-1908

All figures expressed in thousands of hectares.

KEY :

- A. TRANSBASSAC : Bac Lieu, Can Tho, Rach Gia, Soc Trang, and Ha Tien
 B. UPPER DELTA : Chau Doc, Long Xuyen, Sa Dec, Tan An
 C. LOWER DELTA : Ben Tre, My Tho, Tra Vinh, Vinh Long
 D. SAIGON AREA : Cho Lon, Gia Dinh, Go Cong, Saigon
 E. NORTH & EAST : Ba Ria, Bien Hoa, Tay Ninh, Thu Dau Mot

Year	A	B*	C	D	E
1872	20	51	99	73	8
% of total	8%	21%	39%	29%	3%
1878/9	47	60	129	78	15
% of total	14%	18%	39%	24%	5%
1888	204	135	275	133	53
% of total	25%	17%	34%	17%	7%
1898	382	160	363	141	55
% of total	35%	14%	33%	13%	5%
1908	571	242	455	183	75
% of total	37%	16%	30%	12%	5%

* The Transbassac provinces of the Upper Delta (Chau Doc and Long Xuyen) increase their share of the regional total from 22% to 43% during this period.

SOURCE :

Coquerel, Appendix, Tables III & IV

TABLE VI-A
POPULATION, 1830-1911

All figures in millions. Figures before 1872 (Burma), 1900 (Cochinchina), and 1911 (Siam) are based on observation and guesswork rather than censuses; early census figures are also somewhat hypothetical.

KEY:

- A. Lower Burma
- B. Pegu and Irrawaddy
- C. Arakan and Tenasserim
- D. Central Plain (Chao Phraya)
- E. Cochinchina

Years	Burma			Siam		Indochina		
	Total	A	B	C	Total	D	Total	E
1826-30	4			0.3	2.8		5.2	
1850-5	5	1.4	0.8	0.6	5-6			
1862		2.0	1.2	0.8				1.2 (1867)
1872		2.7	1.6	1.1				
1881		3.7						1.7
1891	7.7*	4.7*	3.0*	1.7*	**	(3.0)		
1900	10.5	5.6	3.7	1.9	7.3			2.9
1910	12.1	6.4	4.3	2.1	8.3	3.3	16.0	3.0

* Due to alterations of definitions, there are severe discrepancies in the census breakdown, 1891-1910, for "Upper Burma," "Deltaic Plains" (Pegu and Irrawaddy). The figures cited here are computed from the Census of 1911, as being seemingly self-consistent. Shan and Karen areas are not included in the totals for 1891 but are included after 1901.

** Gordon's estimate for all Siam of 9-10,000,000 (including 2,000,000 in the Lao States plus 600,000 for Chiangmai) is clearly too high, but this estimate of 3,000,000 for "Siam Proper" seems reasonable.

SOURCES:

- Census of India, 1911*
- Andrus, 22-3
- Cheng, 226
- Ingram, ECT, 7, 46, 54
- Gordon 289
- Crawford, 452
- Robequain, 21, 47, 220
- Coquerel, Appendix I
- Fisher. 51-53
- Lemire, 345

TABLE VI-B
POPULATION GROWTH, BURMA, BY REGION, 1871-1911

According to the source these are growth rates as "corrected" for population gain (i.e. annexation of new territory, redefinition of areas).

Years	All Burma		"Deltaic Plains"		"Coast Ranges"	
	Total	Per Annum	Total	Per Annum	Total	Per Annum
1871-1881	36%	3.1	48%	4.0	28%	2.5
1881-1891	25%	2.3	28%	2.5	18%	1.7
1891-1901	17.5%	1.6	28%	2.5	17%	1.6
1901-1911	14.4%	1.4	16%	1.5	16%	1.5

SOURCE :

Census of India, 1911, Volume IX (Burma)

TABLE VII-A
LAND TAX-COCHINCHINA, 1860-1908

The rate quoted for 1860 was originally in kind or in Vietnamese "cash." The rates from 1864 through 1880 were established in francs; the rates from 1881-1908 were established in piastres again. All rates have been expressed in both francs and piastres, using the contemporary rate of exchange. The number of grades of land proliferated from two (1860-1878) to five; I have limited myself to the basic 1st, 2nd, and 3rd grade where appropriate. In certain years (e.g. 1897) it is recorded that the rates were raised without indication if it was a permanent change or a one-year surtax. From 1904 on all rates were augmented by provincial surtaxes of from 10-35 centimes/hectare.

Year	Piastres/Hectare			Exchange Francs/Piastre	Francs/Hectare		
	1st	2nd	3rd		1st	2nd	3rd
1860	2.12	1.90	NA	5.40	11.45	10.25	NA
64	1.97	1.79	NA	c.5.60	11.00	10.00	NA
65	2.08	1.89	NA	5.60	11.60	10.60	NA
70	1.43	1.24	NA	5.405	7.75	6.75	NA
74	2.14	1.92	NA	5.22	11.00	9.80	NA
78	1.68	0.84	NA	4.76	8.00	4.00	NA
80	0.64	0.425	0.21	4.705	3.00	2.00	1.00
81	0.60	0.40	0.20	4.655	2.80	1.87	0.93
94	0.66	0.44	0.22	2.67	1.76	1.17	0.59
95	0.72	0.48	0.24	2.67	1.92	1.28	0.64
97	0.74	0.49	0.24	2.475	1.78	1.22	0.59
98	1.50	1.00	0.50	2.44	3.66	2.44	1.22
1904	1.725	1.15	0.575	2.38	4.11	2.74	1.37
05-6	1.56	1.04	0.52	2.55	3.98	2.65	1.33
08	1.50	1.00	0.50	2.45	3.67	2.45	1.23

SOURCE :

Coquerel, 170-186

TABLE VII-B
 LAND TAX AD VALOREM: COCHINCHINA, 1860-1908

As we do not know local paddy prices at all (only seasonal prices on board ship, Saigon/Cholon), this can only be used as an indicator (e.g. if the price received by the farmer is exactly one half the price quoted here, the real *ad valorem* tax would be double that here). The assumption is that the "2nd class" lands produce 12 quintals (20 piculs) paddy per hectare. Index 1870=100.

Year	Tax 2nd Class Land Piastres/Hectare	Price Seasonal Piastres/Picul	% Ad Valorem	Index
1865	1.89	1.63	(5.8%)	141
1870	1.24	1.52	(4.1%)	100
1874	1.92	1.52	(6.3%)	153
1878	0.84	1.57	(2.6%)	63
1880	0.425	1.31	(1.6%)	39
1881	0.40	1.31	(1.5%)	37
1894	0.44	1.76	(1.25%)	30
1895	0.48	2.37	(1.0%)	24
1898	1.00	2.37	(2.1%)	51
1904	1.15	2.49	(2.3%)	56
1908	1.00	3.00	(1.7%)	41

SOURCE :

Table III-C, Table VII-A

VI. CONCLUSION

There is a sense in which the entire economy and society of the states of mainland Southeast Asia can be seen as deriving from the rice trade; from this it is only a short step to assuming that every event in the twentieth century is a consequence of these formative years of commercial agriculture. There is obviously an element of truth in this assumption; just as obviously it is far from the whole truth. It is beyond the scope of this paper to explore in detail the total impact of the rice trade on the individual societies, but some tentative suggestions can be made.

The rice industry directly involved more than two-thirds of the population of mainland Southeast Asia, possibly as much as 80-90% of the major exporting areas.¹³³ Inasmuch as most of the mainland population was previously involved in rice cultivation (before 1850), this of itself did not imply a great impact; the original export trade grew from the marginal surpluses of subsistence farmers.¹³⁴ But specialization soon developed with expanding production, and rice was grown for the express purpose of exporting it. From exports representing a maximum of 5% of the total crop, by the early twentieth century over 50% of the crop was sold abroad.¹³⁵ Already the situation of the 1930's was foreshadowed, when "extreme specialization in the exporting districts may force the rice grower to buy all other necessities, even including foodstuffs, so that he is obliged to maintain the area planted with rice in order to keep up his purchasing power."¹³⁶ "From a subsistence farmer who might sell a surplus if he had one, the peasant had become a commercial cultivator who depended on the world market for his very livelihood.

The extent to which the cultivator profited from this commercialization in the period before World War I is hard to define. That he did profit is incontestable; no one had compelled him to abandon subsistence farming, he was drawn on by the lure of a better way of life. Some crude efforts have been made to measure imports per capital as a rough

133) Cheng, 220-1; Ingram, *ECT*, 37.

134) Furnivall, 95.

135) Ingram, *ECT*, 38-41; Coquerel, 216-7; van der Heid, 92-5.

136) Robertson, 246.

index of the peasant's purchasing power; although the absolute values are small by our standards, they seem to have been increasing.¹³⁷ In one amazing sequence of calculations van der Heide, assuming that the cultivators of the Chao Phraya would receive 90% of total import value, calculates their per capita income at 300 baht per year, of which no less than 100 baht was spent on imports;¹³⁸ This figure seems at first glance absurdly high, yet by acknowledging the fact that only a segment of the population was commercialized, it may be more valid than those straight "imports per capita" estimates which assume that the hill tribes share the profits equally with delta paddy farmers. The decline of home industries, especially textiles, in all three countries is evidence corroborating the impact of imported goods on peasant life.¹³⁹ It is difficult to accept Furnivall's judgment that "It was not so much that the people were better clad, as that they were differently clad,¹⁴⁰ "when obviously the judgment belongs properly to the consumers themselves, who made their preference clear. If we can push from our minds the miseries of the 1930's, we may conclude that the peasant-cultivators of 1914 were on the whole more prosperous, as well as more numerous, than their grandfathers.¹⁴¹

We have already commented on the influx of immigrants and the growth of the economic infrastructure which accompanied the expansion of the rice export trade. These developments, along with the growth of

137) Furnivall, 100, 191; Robequain, 307. Typical figures per capita are 10 rupees (Burma, 1898) or 180 francs (Indochina, Siam 1930's).

138) van der Heide, 92-9. He assumes a population for the Central Plain of only 2,000,000; he also assumes that the cultivator gets c. 90% of the export price of rice. These seeming errors may tend to cancel each other out; 3,000,000 peasants (Ingram's figure) splitting up a small slice of the whole pie might average close to van der Heide's estimate of per capita income. But errors of more than 50% either way are easily possible in this type of computation.

139) Furnivall, 101; van der Heide, 84-5; Coquerel, 166-8; Robequain, 306-7.

140) Furnivall, 100.

141) Rice consumption statistics for this period unfortunately do not have enough precision to make any trend indications valid. Lê Thành Khôi, *Le Vietnam: Histoire et Civilisation* (Paris, 1955), cites a calculation that in all Indochina consumption fell from 262 kilograms per capita in 1900 to 226 in 1913, but there is nothing in the general quality of statistics for French Indochina at this time to give this computation more than mere plausibility.

large estates and tenantry, clearly lie at the root of many problems of the 1920's and 1930's, but except for a few cases in Burma the specific economic tensions which later were to cause so much violence and bitterness were scarcely visible before World War I. Similarly, the emergence of a new indigenous elite from among those profiting from moneylending and landowning is adumbrated in this period,¹⁴² but this elite does not seriously contest for national leadership until later.

If one is finally to attempt any generalization as to the total effect of the rice industry on mainland society, he would have to establish a clear distinction between a period of initial expansion and a period of ripening unrest. There would be no clear dividing line, but the transition appears to fall in the early years of the twentieth century, at the end of the period studied in this paper. The period of expansion, studied here, is characterized by a steady cash demand, at constant or rising prices, for a seemingly infinite amount of rice, to be grown on seemingly unlimited land. This demand produces a growing industry in a growing society, specialized, ethnically diversified, generally prosperous for all involved. But when the expansion is allowed to go unregulated and unrestrained, and the demand is shown to be finite, the lands to be limited, then all the specialization, diversity, and increased population could prove to be handicaps rather than blessings. The rice industry of mainland Southeast Asia, 1850-1914, planted the seeds for the agrarian crisis of mainland Southeast Asia, 1914-??

142) Robequain, 86-7,

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For Siam, James C. Ingram's *Economic Change in Thailand since 1850*, Stanford, 1955, is indispensable. His article on "Thailand's Rice Trade and the Allocation of Resources," in C.D. Cowan, ed., *The Economic Development of South-East Asia*, London, 1964, is for its length probably the finest article ever written on rice in Southeast Asia. Ingram is an economist, and his analysis of statistics is far more perceptive than any other writer in the field. He does not, unfortunately, include in these publications all of the statistical tables one would hope for. Critical aspects of Ingram's interpretation of the Thai economy are drawn from J. Homan van der Heide, "The Economical Development of Siam During the Last Half Century," *Journal of the Siam Society*, III (1906), 74-109, and his *General Report on Irrigation and Drainage in the Lower Menam Valley*, Bangkok, 1903.

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