2 Initial Conditions, Institutional Changes, Policy, and their Consequences: Siam and Japan, 1850-1914

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Siam (Thailand) and Japan shared striking similarities when they entered the modern period. In the preceding period, both had closed themselves to most western contact, and then were more or less forced open to trade, Siam in 1855 and Japan in 1859; yet both remained independent. Both started to modernize (westernize) in contemporary reigns. In Siam, this took place under Chulalongkorn (1868–1910), in Japan, during Meiji (1868–1912). For most of the period, both had to trade under procedures prescribed by the western powers. In the late 19th century, trade expanded rapidly and the terms of trade improved considerably. Initial trade patterns were similar; both exported mostly primary commodities in exchange for manufactured goods.

Yet development was widely divergent. Siam gradually gave up most of its early industries and became more and more specialized in the production of a few primary commodities, particularly rice. Commercialization proceeded, but neither economic development nor industrialization occurred to any significant degree. In Japan, domestic producers soon offered substitutes for imports and eventually some of these industries became exporters.

Economic development and industrialization were the main trends in Japan, whereas de-industrialization and specialization in primary commodities were the major tendencies in Siam. What caused these divergent courses? This chapter compares initial conditions, institutional changes in the late 19th century, and socioeconomic policies after the institutional changes, in an effort to shed light on this question.

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Initial Conditions

The center-periphery thesis does not apply, as both countries worked under basically the same external conditions, and started with similar trade patterns.[1] The commercial treaties of the 1850s prevented the use of tariffs and quotas to protect industries. Siam had a lower maximum, 3 percent, compared to 5 percent for Japan, and Japan precluded foreign investment by prohibiting ownership of land and free movement of foreigners, something Siam did not. Not much foreign direct investment, however, was made in Siam in the 19th century.

One version of the center-periphery thesis asserts the center exploited the periphery by exercising monopolistic or monopsonistic powers (Prebisch 1959). This cry was raised by the Japanese in the 19th century, but the thesis is dubious in view of relative price movements at the time. The price differential on raw silk between Yokohama and London was 113 percent in 1861, which probably did indicate monopsonistic forces. However, the margin shrank rapidly, even while foreigners dominated trade, reaching 43 percent by 1867, a figure comparable to the 34 percent differential between Suwa, the supply center, and Yokohama (Miyamoto et al. 1965: 554). The terms of trade improved by about 120 percent between the 1860s and 1920 for both Japan and Siam (Miyamoto et al. 1965: 553; Yamazawa 1975: 539; Feeny 1979: 115). These findings contradict several versions of the center-periphery thesis.

Comparison of income is hazardous, but what evidence there is suggests initial per-capita income in Japan was not much higher than that of Siam. It has been estimated at $239 for Japan in 1876 (1965 prices) (Ohkawa 1976: 6). Per-capita gross national product (GNP) for Siam in 1950 is estimated at $216 (1970 dollars) (data from World Bank 1981: 194, adjusted for price differentials from Kravis et al. 1978: 233). No estimate is available for Siam in the late 19th century, but from descriptive evidence there is little reason to believe real per-capita GNP increased much between the 1850s and 1950.[2]

Daily wages were much lower in Japan than in Siam. In the 1880s, the average wage of male day laborers in Japan was less than one-third that in Bangkok. Even Japanese carpenters received only two-thirds of the unskilled wage in Bangkok (Naikaku Tokeikyoku 1890: 175–76; Feeny 1979: 116 – local currency is converted to sterling for comparison). Given the notorious hesitation of Siamese peasants to work for others, their income may have been much lower than the Bangkok wage. What we can say is that wages of the

[1] The center-periphery thesis contends that some regions (nations, classes) are central to the system (economically dominant), whereas others are peripheral, and the condition of being peripheral is caused by the relationship between the center and periphery. See Wallerstein (1979) for a more complete discussion of the concept.

[2] Technology in agriculture is said to have been the same, and the yield of rice, at least in the 20th century, declined as population moved to less fertile land (Ingram 1971: 216).

Chinese in Bangkok were quite high, and it was difficult to employ Siamese even at these wages (Ingram 1971: 212–13).

Japan had some initial advantages, both absolute and relative to Siam. Siam had 5 or 6 million people, compared to 35 million in Japan in the late 19th century. The abundant supply of cheap labor may be a factor explaining the resilience of domestic industries and the thrust to industrialize Japan. Thailand had sufficient arable land not to be subject to much population pressure. This should not be overemphasized, however, as China and India had an elastic supply of cheap labor, yet experienced a collapse of domestic industries and did not develop new factory-type industries as fast as Japan. Japan's large population was a potentially lucrative domestic market, with its own tastes. One consequence of this is the fact that traditional Japanese manufacturing suffered little displacement by imports.

A major socioeconomic factor is an apparently progressive outlook of middle-class Japanese and a fatalistic one in Siam. Samurai scholars were eager to engage in western studies in the first half of the 19th century: some experimented with western science and technology; engineers and farmers overcame traditional fatalistic attitudes toward nature, and introduced new methods (see Ichii 1980: chs 15–18). Such an attitude was largely lacking in Siam (Chittiwatanapong 1976: 18). While such socioeconomic differences are intangible, and thus difficult to measure, we can identify several others.

Monetary instruments, including paper money and promissory notes, were widely used in Tokugawa Japan, whereas in Siam silver lumps, cowrie shells and later, Mexican dollars, circulated until the mid-19th century only around Bangkok. The first bank in Siam was not established until 1888, and then it was a foreign one. In Japan, the tradition of money exchanges made the transition to commercial banks easier.

In premodern industry, inventions and technological transfers were limited to scattered cases such as Egawa Tarozaemon's iron furnace, Tanaka Giemon's machines, and Hiraga Gennai's electrical devices. But the speed and breadth of the adoption and adaptation of technology during Meiji indicates the ability was widely dispersed among Tokugawa artisans.

Japan's paddy land was nearly all irrigated by the mid-19th century, which facilitated the spread of new varieties and, later, of commercial fertilizer. Even during Tokugawa, treatises on agriculture were written and peasants improved techniques. Many progressive peasants became landlords or ventured into commerce, local industry, or moneylending. By contrast, the general male population in Siam was subject to the corvee system, which limited the opportunity to develop rural elites that could bring about technological development and economic change in the rural community (Dhiravegin 1981b).

At the back of these premodern developments in Japan lay the diffusion of mass culture and practical education. Mass culture appeared in the early 19th century, when low-brow novels by Ryutei Tanehiko, satirical stories by Juppensha Ikku, and above all, how-to books by Ohkura Nagatsune and others attracted

interest. Best-sellers, including books on agriculture, sold over 10,000 copies (Konta 1977: 53 et passim). Because wood-block-printed books were expensive, book-lenders prospered in large cities - there were over 500 in Edo and about 300 in Osaka at the beginning of the 19th century (Kinugasa 1963: 115). People went to school to learn to read and write, and this increase in education in turn furthered the spread of mass culture.

The tradition of having many schools of thought facilitated the adaptation of western materials to the Japanese context. While *gogaku* (which primarily trained future bureaucrats and scholars) taught mostly Chinese classics and calligraphy in the 18th century, such practical subjects as medicine, arithmetic, astronomy, and western studies became popular in the early 19th century (Ishikawa 1953: 256). The number of *terakoya* (temple schools), which gave commoners practical education, increased from some 600 in 1751–88 to over 3,000 in 1789–1829, and doubled by 1867 (Passin 1965: 14). Dore puts the school-attendance ratio in the early 1860s at more than 40 percent for males (1965: 254).

No such developments took place in premodern Siam, and most people were illiterate. The Siamese counterpart of Japanese mass culture was Buddhism, which was taken very seriously. The *wat* (temple) schools gave religious training to small children, and virtually all males spent some time in temples as monks. In short, premodern Japanese culture was conducive to modern economic growth, whereas premodern Siamese culture was not.

Another possible cause of divergence was the family system. The bilateral family system in Siam lacked a sense of lineage and was unfavorable for the accumulation of capital.[3] The Chinese population in Siam maintained a unilineal system and did accumulate wealth. However, most intended to stay only a short time and then return to China with their savings. This meant that the Chinese tended to invest in commerce and moneylending, rather than industry. The importance of the Chinese in the economy may have had deleterious effects on Siam's development (see Ingram 1971: 204–5; Skinner 1975: 113 and 224).

Japan's unilineal *iye* system, almost corporate in nature, was presumably very conducive to capital accumulation, even in industry. Typically, the *iye* consisted of a main family maintained by the ideology of continuity and primogeniture. Although inheritance by the eldest son was the norm, adoption was not unknown, particularly in commercial families where the original heir did not look promising. (See Nakano 1964; Yui 1973; Hori 1965).

The emerging Japanese leadership, lower-level samurai mainly from four outlying domains, did not represent substantial vested interests, and hence tended to favor drastic institutional changes. They also had an advantage in

[3] Bilateral families do not distinguish between male and female children, or birth order, in distributing inheritances. This does not, however, mean all children share equally. It is commonly asserted this leads to splitting up of property among many heirs, and thus works against accumulation of capital, and also diffuses a sense of lineage. Bilateral families are general throughout Southeast Asia.

evaluating the foreign threat, as they occupied strategic positions in both the political and military fields. (This is believed to have been important in the Sino-Japanese comparison; see Eto 1968: 242; Sakata 1970: 2.) The Siamese leadership also had a political-military background, and used it skillfully in diplomacy. Reform leadership, however, came from above, from the king, a few of his half-brothers, and other members of the traditional ruling class. The king had to modernize in the face of a colonial threat, and he could not go too fast or too far, as that might undermine his power.

These differences in initial conditions go a long way toward explaining the difference in what happened in the two countries in later years. What follows shows how these differences affected institutional changes and policy.

Institutional Changes

The late 19th century saw the end of feudalism in Japan and the end of serfdom and slavery in Siam. A centralized political system replaced a decentralized one, and legal reforms were introduced. However, modernization occurred earlier and went further in Japan. Institutional changes in Siam took place 20 to 30 years later than in Japan. External and internal forces induced the Meiji Restoration in 1868. No comparable internal pressure was at work in Siam, and the Bowring Treaty, willingly accepted by King Mongkut, reduced foreign pressure. King Chulalongkorn was the major force in the Chakkri Reformation. He and his followers, known as the Young Siam, encountered formidable conservative elements, the Old Siam and the Conservative Siam cliques, ready to obstruct reform.

Initial attempts, including abolition of slavery, judicial and financial reforms, and formation of a Council of State and Privy Council, ran into immediate difficulties. This was reflected in the Front Palace Crisis (1874–75) and the Fanny Affair Crisis (1879) (Wyatt 1969: 50–59). The domestic power struggle led to intervention by western powers, threatening independence. It also warned the king against further reforms. As a result, Chulalongkorn had to make do with a less controversial policy, road construction and canal digging. Only after the death of the ex-Regent in 1883, and of the Prince of the Front Palace in 1885, was the king in full control, and able to introduce more far-reaching reforms (Wyatt 1969: 84–89; Adams 1977).

Institutional changes were more far-reaching in Japan. Much of the pressure for change came from below or, at any rate, from the new leadership. The old rulers were deprived of most of their privileges and simply became part of a new nobility. The Emperor Meiji became a constitutional monarch; authority was exercised primarily by previously lower-ranking samurai. To be sure, the members of the new elite could rule only because they were allied with rising businessmen and powerful landlords, but it is clear that much of the initiative for institutional changes and policy came from them.

Because Tokugawa Japan was a loosely-united entity consisting of some 280 *han*, an integrated nation-state had to be formed. This meant a series of semi-revolutionary changes, including replacement of feudal dues with a land tax, pensioning off the old aristocracy (*daimyo* and samurai), creation of a national army and navy, and establishing a political system based on a constitution. The pensioning-off amounted to confiscation of the old stipend at progressive rates. Though this was less hard on the lower-level samurai, those not employed by the new government faced a difficult situation. In vain, some rebelled against the central government. The government offered them land in northern Japan, and extended loans and subsidies for starting businesses (Kikkawa 1935).

Such reforms were pushed only halfway or not at all in Siam. The centralization of localized authority was implemented. Fiscal and legal reforms were undertaken. Slavery was ultimately abolished (in 1905) and the corvee system was replaced by a head tax. Military organization along western lines was developed. (See Vongkomolshet 1958: 145–79.) Although the king was successful in turning Siam into a centralized state, there was no political participation by the masses. Chulalongkorn ruled as he saw fit. Petition by a number of members of the ruling elite in 1885 for adoption of a constitution, creation of an appointed cabinet, and use of a merit system in the bureaucracy was turned down by the king as untimely. The leaders thought in terms of modernizing only as much as necessary to survive in power and maintain the status quo. Changes were allowed as necessary, but were kept as limited as possible (Dhiravegin 1981b). A constitution was not adopted until the coup of 1932. Reform of economic institutions also came later. In fact, even today political scientists and institutional economists speak of the patrimonialism of Siamese society (Dhiravegin 1970; Jacobs 1971; Yano 1980).[4]

Policy

The Japanese government was very heavily involved in developmental policy, whereas relative inaction characterized the Siamese government. Both invested in infrastructure, but Japan went much further. The Meiji government financed railroads, bridges, harbors, water-supply systems, electric utilities, and the postal and telegraph systems. In 1885–89, government investment in fixed capital was over 15 percent of total expenditure, 1.7 percent of GNP. These are less than the comparable figures after World War II, but in an era of small government, they were substantial. By the 1910–14 period, the shares were 27.7 percent and 4.5 per cent respectively. (Data from Ohkawa and Shinohara 1979: 251–53, 348–52, and 370–71.)

[4] Patrimonialism is a system of power and property relations preceding capitalism, in which the goods and services available to the society are allocated by noneconomic means. In particular, a priest or bureaucratic class is able to pre-empt resources for itself. The term originated with Weber; for a contemporary discussion of the concept, see Jacobs (1971: ch. 2).

We do not have comparable statistics for Siam for the early years, but government expenditure seems to have been concentrated on defense, internal security, and the court, leaving little for economic development (Nartsupha and Prasartset 1979: 22). From 1892, we have rough statistics on revenues and expenditures. According to Ingram's estimates, the average ratio of capital expenditure to "ordinary" revenue was 10 percent for 1892–1900 and 9 percent for 1901–10 (1971: 328).

Siam emphasized investment in roads, railways, canals, and postal stations as a means of strengthening political centralization. Special emphasis was placed on railroads, which were considered particularly important for such a purpose. But even here backwardness was evident. In 1900, when Japan had 6,200 km of railroad, Siam had only 264 km. Siam did little to develop its most important infrastructure, canals. Foreign advisers, particularly van der Heide, repeatedly recommended construction of a large system in central Siam. The idea was rejected on the grounds there were insufficient funds.

During the 19th century, Siam kept a very conservative monetary and fiscal policy, restricting borrowing abroad and raising revenue from new taxes (Ingram 1971: 194–99). In contrast, Japan did not hesitate to borrow abroad, in order to pension off the former ruling class and build its first railway. Particularly in the 20 years between the Sino-Japanese War and World War I, foreign capital played a significant role. Gross liabilities to foreigners, mostly bonds, formed 41 percent of GNP in 1913. More important, Japan imposed a series of new taxes and increased old ones, so revenue as a proportion of GNP increased, rising from 10 percent in 1885 to 13 percent in 1914, despite the rapid increase in GNP.

We feel the most important difference between the two countries was the keenness of interest in importing foreign knowledge, whether technical, cultural, or institutional. Such interest was avid in Japan, but weak in Siam.

In the last years of the Tokugawa and in the early Meiji period, government factories were established in a number of industries, including silk-reeling, silk and cotton spinning, woolen weaving, various types of mining, iron and other metals, munitions, shipbuilding, tools, machinery, boilers, cement, bricks, and glass. They were established and operated, usually at a loss, largely with a view of transferring western technology. When they were sold to private interests during the 1880s, cries of corruption were raised, as many factories were priced far below the original investment. The factories played significant roles in transferring technology (Kobayashi 1965: 304–44). No factories were established by the Siamese government in this period. The one significant private factory was Siam Cement, founded in 1913. Only after revision of the trade treaties in 1926 were many private and government factories established.

Both governments, and the Japanese model factories, employed foreign advisers, but there was a fundamental difference in attitudes. Whereas Japan employed foreigners as teachers, who were to transfer technology and other

knowledge, Siam kept them as more or less permanent advisers. As late as 1909, the Siamese government employed 319 foreigners. The number of foreigners employed by the Japanese government declined from a peak of 527 in 1875, to 155 in 1886, to 79 in 1895. At the height of the era of *oyatoi gaijin* (employed foreigners) in the mid-1870s, nearly 40 percent of them were at the Ministry of Industry, and their wages accounted for over one-third of the ministry's budget (see Umetani 1968: 52–71). Most foreign advisers in Siam were in the public sector, whereas in Japan they were employed in the private sector – over 90 percent of them in 1879–81 (Ogata 1961: 119).

The Japanese government also used study missions to import technology and knowledge. The most important was the Iwakura Mission, which visited the United States and Europe for nearly two years in 1871–73. Many of the 51 high-ranking officials of the new government who comprised the mission played important roles in modernization. Early in his reign, Siam's King Chulalongkorn wanted to make a trip to Europe, but his request was rejected by the Regent, who was the real power in the 1870s. In 1871, the king did visit the Dutch East Indies, India, Burma, and the Straits Settlements (Singapore) and though the trips made a strong impression on the king, they could not serve as substitutes for a trip to the West.

Japan had nearly 6,000 students abroad by 1881. They represented a fairly wide segment of the society, including former lower-ranking samurai (Ogata 1961: 68; Umetani 1968: 201). Until the late 1890s, Siam sent abroad only members of the royal family. The early groups of middle-class students later provided the leaders of the constitutional coup in 1932 (Akagi 1977; Ammarinrat 1979).

Education is the major means of disseminating new knowledge, particularly technical knowledge. Japan introduced compulsory education in the 1880s, which proved vastly successful, partly because of the foundation laid during the Tokugawa period. School enrollment for the required six years was almost 100 percent in 1915. Emphasis then shifted to expanding secondary, and then college and university education. Table 2.1 shows enrollment trends.

In contrast, Siamese children went to school simply in the hope of one day entering government service. As a result, enrollment fluctuated with the king's political fortunes, increasing when Chulalongkorn's power was on the rise, and falling when his power declined. There was also a fear that enrollment meant recruitment for military service. Thus only those of Chinese origin enrolled in great number. Compulsory education was not introduced until 1921.

The difference in emphasis was most distinct in higher education. In Japan, science and engineering have been emphasized from the start. When the first national university was established in Tokyo in 1877, the faculties were humanities, law, natural sciences, and medicine, and there was a separate college of engineering (which became part of the Imperial University in 1886). Until 1887, the proportion of the two schools' graduates in natural sciences, medicine, engineering, and agriculture exceeded 80 percent (Nakayama 1967: 375–80).

Table 2.1: Percentage of children in school in Japan, 1873–1915

	School level		
Year	*Primary*[a]	*Secondary*[b]	*Tertiary*[c]
1873	28.1	nd	nd
1880	41.1	nd	nd
1895	61.2	4.3	0.3
1905	95.6	8.8	0.9
1915	98.5	8.1	1.0

[a] Grades 1–6
[b] Grades 7–11
[c] College and university
nd No data

Source: Mombusho 1962: 39, 50, 180

The forerunner of Chulalongkorn University, Siam's oldest university, was the Royal Pages School, established in 1902. The aim was to provide a general education, with emphasis on training in government administration. It was not until 1913 that an engineering school was established at Hor Wang.

The Japanese government sponsored and participated in many domestic and international trade and industrial fairs. It collected economic data and made them available to the public; it promoted, set standards, and inspected exports; it established technological institutes and agricultural extension services, including teaching tours. In a later period, Siam showed interest in improving agricultural productivity. The government began sponsoring fairs in 1907, and established an experimental rice farm in 1916, a Bureau of Agricultural Science in 1923. These appear to have "achieved little immediate success," although they laid a foundation for more active and scientific efforts after World War II (Feeny 1979: 126).

Thus, although the involvement of the government was unusually heavy, Japanese economic development and industrialization were promoted largely through the construction of infrastructure and the transfer and dissemination of knowledge from the West. The government did subsidize the establishment of first-generation factories, and helped former samurai go into business. But, in general, the government did little to underwrite private-sector industrialization on an ongoing basis. After the 1880s, subsidies were limited. They went to agriculture, railroads (until they were nationalized in 1906), and, mostly, to shipping and (after 1896) shipbuilding, which were considered quasi-military (LTES vol. 7; Inoue 1973; Blumenthal 1976). As for tariffs, the only thing the government could do before revision of the treaties was to abolish import duties on raw cotton and export duties on cotton textiles. After 1899, it could and did raise import duties, but they remained moderate until World War I.

Military expenditure increased rapidly in the period before the Sino-Japanese War, and then remained high. The heavy burden may have retarded growth, by wasting resources which could have been used for capital formation or other development purposes. On the other hand, the weaponry increasingly was procured domestically, from both government and private factories. Because military factories served as training and research and development centers, the emphasis on domestic procurement of weaponry may have had a significant bearing on development (Yamamura 1977).

Technology Transfer

Technology can be imported in three ways. The first approach is to adapt, taking only ideas and parts of machines appropriate to domestic factor proportions. The second method is to take the most advanced western technology in labor-intensive industries, with or without modification for local conditions. The third is to use the advanced technology, irrespective of its capital intensity, in an effort to produce the most advanced products (for a discussion of this in connection with the steel industry, see chapter 11).

Silk-reeling is the most important example of the first type of imported technology for Japan. French and Italian machinery was introduced in government factories in Tomioka and Maebashi. Some factories using similar technology were built by private interests, but the tendency was to adopt a modified technology. Moreover, a still more traditional technology, which adopted only gears and the method of multiple-yarn reeling, proved to be a strong competitor until wages became too high in the 20th century. Most of these factories and workshops were located in the countryside. A lack of foreign direct investment, freedom from regulation during the Tokugawa period, and the existence of local innovators and mechanics presumably explain the occurrence of such development.

Agriculture and forestry still had by far the largest employment at the end of the period, employing about one-third of the labor force in 1910. The sector grew at 1.5 percent per annum between 1880 and 1910 (Ohkawa and Shinohara 1979: 78 and 372). Much of the growth can be attributed to technical progress, primarily the spread of higher-yielding rice varieties, more extensive use of commercial fertilizer, and improvements in non-rice production (Yamada and Hayami 1979: 89–93; and also chapter 4 below).

The second type of technology transfer is exemplified by cotton spinning, which was an urban industry. The most advanced large-scale factories were transplanted by a private consortium organized by Shibusawa Eiichi. Several capital-saving modifications were made, including operating two shifts (Ranis 1957: 594–607; and chapter 10 below). In most of the capital-intensive industries, modifications were more difficult, and they did not expand rapidly until later in the development process.

The third transfer method was adopted by military-related industries, particularly those owned by the government. Here the government factories played an overwhelmingly important role. In 1903, government factories employed 63 percent of the factory workers and 78 percent of the horsepower used in the machinery and equipment industries. After the cruiser *Kongo* was delivered by a British shipbuilder in 1912, all naval vessels were built in domestic yards.

Consequences

In the course of industrialization, rapid structural changes take place. Particularly striking was what occurred in Japan's trade structure. Just as with contemporary less developed countries (LDCs), Japan's initial exports were mostly primary or quasi-primary commodities, such as raw silk, tea, and marine products, in exchange for manufactured goods. But domestic manufacturers soon started substituting for imports, particularly in light industries, and eventually some of these became export industries. By 1914, Japan's major exports included such former imports as cotton yarn and cloth, in addition to traditional items such as raw silk and copper. And primary commodities, such as cotton, sugar, soybeans, and petroleum, had already become major imports. Table 2.2 shows the change in composition of Japanese trade between 1880 and 1910.

Siam's trade structure changed significantly in the 19th century, but the changes were mainly among types of primary products (see table 2.3). Rice as a percentage of total exports rose from a very small figure in the 1850s to 41 percent in 1867, and to about 70 percent after 1890. The four major exports – rubber, tin, and teak, in addition to rice – constituted some 90 percent of exports in the 1890s. More than 80 percent of the labor force was engaged in agriculture and forestry.

In Siam, technical progress was scattered and limited (Nartsupha and Prasartset 1979: 16). In rice production, even though total output and exports increased greatly, average yield probably declined as cultivation moved onto marginal land. This was certainly the case in the first half of the 20th century, for which we do have data (Ingram 1971: 214–16). The development of manufacturing was confined to areas such as rice milling, wood sawing, and machine repairing. Even though we do not have figures, there is little ground to believe per-capita output increased substantially during the period. Male real wages in Bangkok, while fluctuating widely, were stagnant or declined as a trend between 1865 and 1925 (Feeny 1979: 116).

In Japan, between 1885 and 1914, real per-capita output increased more than 50 percent (LTES vol. 1: 237). Real wages in manufacturing industries also rose substantially, by 45 percent in the period 1880–1914 (LTES vol. 8: 134 and 246). There is little doubt the engine of economic development was running in Japan. Japanese economic development and industrialization undoubtedly were

Table 2.2: Percentage distribution of Japanese trade by major commodities, 1880 and 1910

Exports			
1880		*1910*	
Percentage exported	*Commodity*	*Percentage exported*	*Commodity*
31.0	raw silk	26.7	raw silk
27.0	tea	9.2	cotton yarn
4.7	waste silk	6.6	silk cloth
2.5	tangles[a]	5.7	cotton cloth
2.3	sardines	4.2	copper
Imports			
1880		*1910*	
Percentage imported	*Commodity*	*Percentage imported*	*Commodity*
21.1	cotton yarn	33.4	raw cotton
15.8	wool cloth	10.1	sugar
15.1	cotton cloth	3.0	petroleum[b]
3.8	petroleum[b]	3.0	soybeans
2.9	wrought iron[c]	2.8	wood

[a] Tangles are a kind of seaweed
[b] Petroleum and petroleum products
[c] T- and angle-bars, and other wrought-iron material used in construction

Sources: Computed from various primary sources; underlying data also available in LTES vol. 14

greatly facilitated by institutional changes and policy. The Meiji Restoration and related changes drastically redistributed income and opportunity, laying the foundation on which the private sector grew. Development was enhanced by such measures as model factories, subsidies of early private factories, and provision of extension and exposition services in an effort to close the gap in knowledge, as well as a strong emphasis on infrastructure and education.

The private sector in Japan responded vigorously to the initiatives taken by the government, and ultimately (rather soon in most cases), activities in fields other than military-related industries shifted to the private sector. Despite the basically oligarchic character of the government, the economy in the latter half of the Meiji period appears to have behaved more or less as neoclassical economists like to see.

Table 2.3: Percentage of Siam's total exports accounted for by three major commodities, 1867–1916

Year	*Rice*	*Tin*	*Teak*	*Total*
1867	41.1	15.6	nd	56.7
1890	69.7	11.1	5.5	86.4
1906	69.1	11.0	11.2	91.3
1915–16	70.1	15.9	3.9	89.9

The values are only for exports from Bangkok, which is believed to have handled 80 percent of total exports. However, rubber, the fourth major commodity in Siamese trade, was always shipped from other ports during this period. In 1925–39, rubber was 2.3 percent of total exports

nd No data

Source: Ingram 1971: 94

In contrast, a base for economic development appears to have been lacking in Siam. The abundant supply of land may have retarded industrialization, but the problem does not seem to have been industrialization as such; rather, the lack of technical progress in both industry and agriculture. The government did not actively create a base for development. The infrastructure was far from adequate and serious efforts to learn from abroad or to propagate knowledge domestically were lacking. Moreover, patrimonial institutions reduced initiative.

Lack of interest in technical progress was decisive in Siam's failure to develop in the 19th century. Institutional changes did not remove inhibiting forces as thoroughly, or as soon, as in Japan, and the policy of relative inaction, motivated by the ruling elite's desire to continue to hold power, did not help either. Given such a contrast in initial conditions, institutional changes, and policy, the divergence in economic development between Siam and Japan is probably what we should expect. Siam followed the path most colonies pursued, and found itself at the lower end of the vertical international division of labor by the end of the 19th century.

References

Adams, David (1977), "Monarchy and Political Change: Thailand under Chulalongkorn (1868–1885)," Ph.D. dissertation, University of Chicago.

Akagi, Osamu (1977), "The Impact of Western Educated Thai Students on the Thai Monarchy," paper presented at the Seventh Conference of the International Association of Historians of Asia, Bangkok.

Ammarinrat, La-oongtong (1979), "Karn song nukrian pai suksatoh tangprates tangtae Poh Soh 2411–2475," M.A. thesis, Faculty of Arts, Chulalongkorn University, Bangkok.

Blumenthal, Tuvia (1976), "The Japanese Shipbuilding Industry," in Hugh Patrick with Larry Meissner, eds, *Japanese Industrialization and its Social Consequences*, Berkeley, CA: University of California Press.

Chittiwatanapong, Prasert (1976), "The Modernization Base in Japan and Thailand: Education and Science," in *The Emergence of Modern States: Thailand and Japan*, Thailand-Japan Studies Program.

Dhiravegin, Likhit (1970), "Contrasting Modernization in Chulalongkorn's Siam (1868–1910) and Meiji's Japan (1867–1912)," *Journal of Social Sciences*, 7(1) (January).

Dhiravegin, Likhit (1981), "The Role of Political Leadership in the Modernization of Chulalongkorn's Siam (1868–1910) and Meiji's Japan (1867–1912)," presented at a seminar on the Centennial Celebration of Ataturk, in August 1981, sponsored by the Turkish government and the History Association of Thailand.

Dore, Ronald P. (1965), *Education in Tokugawa Japan*, Berkeley, CA: University of California Press.

Eto, Shinkichi (1968), "Kinsei Chugoku seijishi kenkyu," *Todai shakaikagaku kenky sosho 26*, Tokyo: Daigaku Shuppankai.

Feeny, David (1979), "Competing Hypotheses of Underdevelopment: A Thai Case Study," *Journal of Economic History*, 39(1) (March).

Horie Yasuzo (1965), "Nihon no keizai to 'iye'," *Keizai Kenkyu*, 16(2) (April).

Ichii, Saburo (1980), *Kinsei kakushin shiso no keifu*, Nihon Hoso Shuppan Kyokai.

Ingram, James (1971), *Economic Change in Thailand 1850–1970*, Stanford, CA: Stanford University Press.

Inoue, Yoichiro (1973), "Meiji koki no kaiji seisaku," in Yoshio Ando, ed., *Nihon keizai seisakushiron*, Tokyo: Daigaku Shuppankai.

Ishikawa, Ken (1953), *Gakko no hattatsu*, Iwasaki Shoten.

Jacobs, Norman (1971), *Modernization without Development: Thailand as an Asian Case Study*, New York: Praeger.

Kikkawa, Shuzo (1935), *Shizoku jusan no kenkyu*, Tokyo: Yuhikaku.

Kinugasa, Yasuki (1963), "Minshu bunka no hakyu," in *Koza Nihon bunkashi*, vol. 6, Sanichishobo for Nihonshi Kenkyukai.

Kobayashi, Masaaki (1965), "Kindai sangyo no keisei to kangyo haraisage," in Mitsuhaya Kajinishi, ed., *Nihon keizaishi taikei 5*, Tokyo: Daigaku Shuppankai.

Konta, Yozo (1977), *Edo no honyasan – kinsei bunkashi no sokumen*, Nihon Hoso Shuppan Kyokai.

Kravis, Irving B., Alan W. Heston, and Robert Summers (1978), "Real GDP Per Capita for More Than One Hundred Countries," *Economic Journal*, 88(350) (June).

LTES (*Estimates of Long-Term Economic Statistics of Japan*), series edited by Kazushi Ohkawa, Miyohei Shinohara, and Mataji Umemura, Tokyo: Toyo Keizai Shimposha.

vol. 1, *National Income* (1974), Kazushi Ohkawa, Nobukiyo Takamatsu, and Yuzo Yamamoto.

vol. 7, *Government Expenditure* (1966), Koichi Emi and Yuichi Shionoya.

vol. 8, *Prices* (1967), Kazushi Ohkawa, Osama Noda, Nobukiyo Takamatsu, Saburo Yamada, Minoru Kumasaki, Yuichi Shionoya, and Ryoshin Minami.

vol. 14, *Foreign Trade* (1979), Ippei Yamazawa and Yuzo Yamamoto.

Miyamoto, Mataji, Yotaro Sakudo, and Yasukichi Yasuba (1965), "Economic Development in Preindustrial Japan, 1859–1895," *Journal of Economic History*, 25(4) (December).

Mombusho (Government of Japan, Ministry of Education) (1962), *Nihon no seicho to kyoiku*, Teikoku Chiho Gyosei Gakkai.

Naikaku Tokeikyoku (Government of Japan, Cabinet Statistics Bureau), *Nihon teikoku tokei nenkan*, published annually from 1881, Tokyo; the 1980 (10th) issue was used.

Nakano, Takashi (1964), *Shoka dozokudan no kenkyu*, Miraisha.

Nakayama, Shigeru (1967), "Kokuei kagaku," in Isao Sugimoto, ed., *Kagaku-shi*, Tokyo: Yamakawa Shuppansha.

Nartsupha, Chatthip, and Suthy Prasartset (1979), *The Political Economy of Siam 1851–1910*, Social Science Association of Thailand.

Ogata, Hiroyasu (1961), *Seiyo kyoiku inyu no hoto*, Kodansha.

Ohkawa, Kazushi (1976), "Initial Conditions – Rough Notes," prepared for the Research Planning Conference on ... Comparative Analysis, April 2–4, Tokyo, International Development Center of Japan.

Ohkawa, Kazushi, and Miyohei Shinohara, with Larry Meissner (1979), *Patterns of Japanese Economic Development*, New Haven, CT: Yale University Press.

Passin, Herbert (1965), *Society and Education in Japan*, New York: Columbia University Press.

Prebisch, Raúl (1959), "Commercial Policy in the Underdeveloped Countries," *American Economic Review*, 49 (suppl.): 251–73 (May).

Ranis, Gustav (1957), "Factor Proportions in Japanese Economic Development," *American Economic Review*, 47: 594–607 (September).

Sakata, Yoshio (1970), "Nihon kindaika no shuppatsu to tenkai," *Jimbun Gakuho*, Jimbun Kagaku Kenkyusho, Kyoto University.

Siffin, William J. (1966), *The Thai Bureaucracy: Institutional Change and Development*, Honolulu: East-West Center Press.

Skinner, G. William (1975), *Chinese Society in Thailand, an Analytical History*, Ithaca, NY: Cornell University Press.

Smith, Thomas (1970), *The Agrarian Origins of Modern Japan*, Stanford, CA: Stanford University Press.

Umetani, Noboru (1968), *Oyatoi gaikokujin*, vol. 1, Kashima Shuppankai.

Vongkomolshet, Detchard (1958), "The Administrative, Judicial and Financial Reforms of King Chulalongkorn," M.A. thesis, Cornell University.

Wallerstein, Immanuel (1979), *The Capitalist World Economy*, Cambridge: Cambridge University Press.

World Bank (1981 edn), *World Tables*, Washington, DC: World Bank.

Wyatt, David (1969), *The Politics of Reform in Thailand*, New Haven, CT: Yale University Press.

Yamada, Saburo, and Yujiro Hayami (1979), "Agriculture," in Kazushi Ohkawa and Miyohei Shinohara, with Larry Meissner, eds, *Patterns of Japanese Economic Development*, New Haven, CT: Yale University Press.

Yamamura, Kozo (1977), "Success Illgotten? The Role of Meiji Militarism in Japan's Technological Progress," *Journal of Economic History*, 37(1) (March).

Yamazawa, Ippei (1975), "Yushutsunyu Kakaku Shisu," in Kazushi Ohkawa and Ryoshin Minami, eds, *Kindai Nihon no keizai hatten*, Tokyo: Toyo Keizai Shimposha.

Yano, Toru (1980), *Tonan Asia sekai no ronri*, Chuo Koronsha.

Yui, Tsunehiko (1973), "Nihon no kindaika to Tokugawa shonin," in Jiro Kamishima, Ed., *Nihon kindaika no takushitsu*, Tokyo: Azia Keizai Kenkyusho.

3 Economic Development in Historical Perspective: Japan, Korea, and Taiwan

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The economic development of Japan between 1870 and 1970, and of Taiwan and Korea over the period 1950–75 are examples of attempted transition into the epoch of modern growth in the style of Kuznets (1966). This paper looks at the period of transition growth in these three countries, in terms of both country typology and the identification of phases.

From a long-run perspective, the dominant feature of the epoch of modern growth is the routinized contribution of science and technology. This characteristic is shared by virtually all types of mature economies, even though countries may undergo different sequences or phases, due to differences in initial conditions and in their behavior over time. We believe that the detailed examination of the transition from the long epoch of agrarianism to one of modern growth benefits from the identification of phases.

Analysis of comparative growth suggests that sets of countries can be grouped around basic family affinities, a certain uniqueness not necessarily shared by other types of developing countries. However, even within a family of less developed countries (LDCs), there may exist important, and instructive, differences. Recognition of such differences as well as similarities in behavior among developing economies permits the generation of a more flexible evolutionary view of development, based on the notion that each phase in the transition is

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