
Ecology, History, and Development: A Perspective from Rural Southeast Asia

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The process by which different ecological conditions and historical trajectories interacted to create different social and cultural systems resulted in major differences in economic development performance within Southeast Asia. In the late 19th century, Indonesia, the Philippines, and Thailand commonly experienced vent-for-surplus development through exploitation of unused lands. Nevertheless, different agrarian structures were created. Indonesia's development was mainly based on the exploitation of tropical rain forest under Dutch colonialism. It resulted in the bifurcation of the rural sector between rice-farming peasant proprietors and large plantations for tropical export crops based on hired labor. In the Philippines, exploitation of the same resource base under Spanish rule resulted in pervasive landlessness among the rural population. Relatively homogeneous landowning peasants continued to dominate in Thailand, where delta plains that were suitable only for rice production formed the resource base for development. These different agrarian structures associated with different social value systems have accounted for differential development performance across the three economies in the recent three decades.

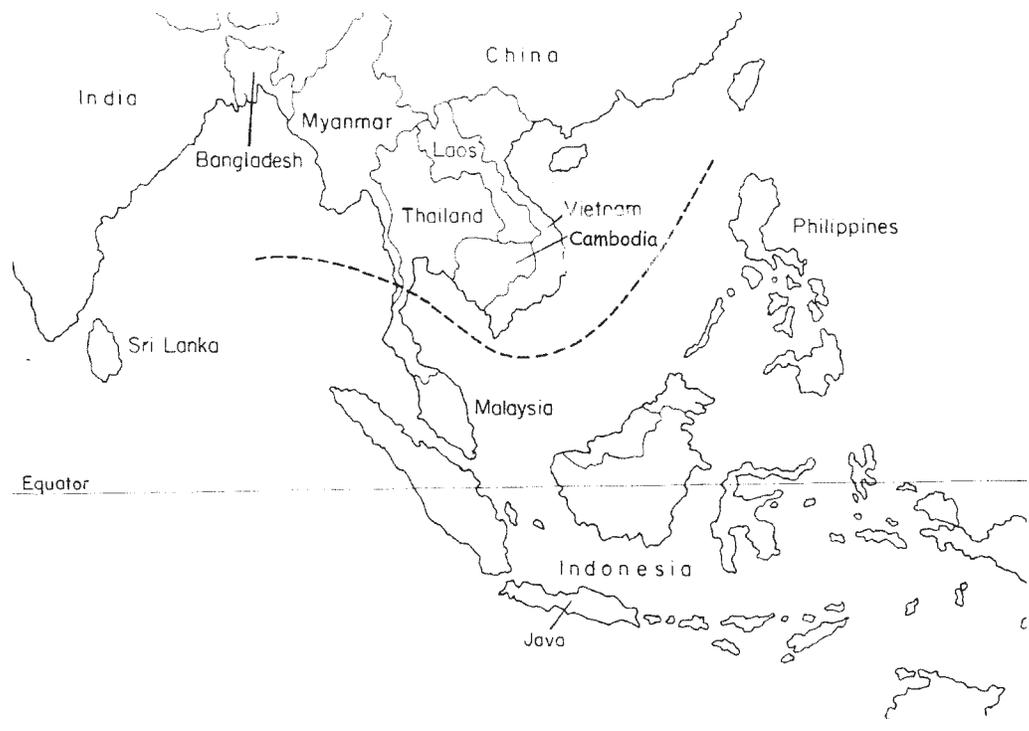
Ecology and history have a fundamental impact on the course of economic development. Nevertheless, few studies have investigated how different ecological conditions and historical trajectories have interacted to forge different social and cultural systems, resulting in major differences in development performance across economies. This article aims to shed light on this process, drawing on agricultural development experiences in Southeast Asia. Relatively high growth performance in agriculture in the past three or four decades has been counted as one of the factors underlying the “economic miracle” of this region (World Bank 1993). Yet economic performance has varied within the region. Variations in the recent agricultural growth performance reflect differences in the agrarian structure, which were created through distinct colonial regimes under diverse ecological environments. As such, this study does not aim to conduct research for predicting the future course of rural development in

Southeast Asia; rather, I intend to provide a broad telescopic guide to such research for this region as well as other regions.

Southeast Asia can be classified into two major ecological zones: the continental zone, including Thailand, Vietnam, and Myanmar, and the insular and peninsular zone (henceforth called the insular zone), including Indonesia, Malaysia, and the Philippines (see figure 1). Major river deltas characterize the continental zone, and tropical rain forests characterize the insular zone. Before the 1860s, when new transportation technology integrated this region with the rapidly industrializing West, people in Southeast Asia lived on wet rice production in small valleys or shifting cultivation in upland forests. Many of the major deltas and thick rain forests were unused for agricultural production. When the region was faced with growing demand from the West for tropical products, this unused land became the basis of vent-for-surplus growth. Deltas were converted into paddy fields for commercial rice production, and rain forests were converted into plantations for export cash crops.

Corresponding to the different crops produced, peasants or small family farms continued to dominate the deltas, whereas the insular areas were bifurcated between peasants cultivating rice in small valleys and coastal plains, and large plantations based on hired labor. The different agrarian organizations were rooted in different

Figure 1. Map of Southeast Asia



ecological conditions and in land policies across different political regimes. For example, the distribution of land ownership became far more skewed in the Philippines under Spanish colonialism than in Indonesia under Dutch colonialism, although both countries were in the insular zone. Differences in agrarian structure formed along different historical trajectories under different ecological conditions and have had far-reaching influences on the performance of agricultural development across Southeast Asia. Several important variables other than the agrarian structure, including government policies, influence rural development. However, the agrarian structure is a major determinant of the political economy of the countries in the region, which exerts critical influences on their policy choices.

This article first outlines the characteristics of resource endowments, agrarian structures, growth in aggregate agricultural output, and changes in the shares of major export commodities in world markets in Indonesia, the Philippines, and Thailand in the past three decades. Second, it reviews the process of vent-for-surplus development in Southeast Asia in the late 19th to the early 20th century, emphasizing the critical roles of major river deltas in the continental zone of Southeast Asia and tropical rain forests in the insular zone. Different agrarian structures evolved in the three economies in the vent-for-surplus development process under different ecological conditions and political regimes. The preemption of uncultivated but cultivable land by the power elite was the major force to have resulted in skewed land distributions. Finally, the article tries to explain differential agricultural growth performance across Indonesia, the Philippines, and Thailand in terms of different agrarian structures. It discusses how governments forged policy choices in terms of the structure of political economy, under unique ecological conditions and unique historical trajectories. Although this study is limited to comparisons within Southeast Asia, its approach may be applicable to comparisons across regions, such as Africa versus Asia, to draw insights on broader development issues.

Recent Developments

Table 1 compares the endowments of land for agricultural production relative to the population and the labor force in Indonesia, the Philippines, and Thailand in 1965 and 1996.¹ Land is measured by area of cropland, which is the sum of areas of arable land (used for annual cropping) and land under permanent cropping, using data from the Food and Agriculture Organization. Arable land is classified into lowland paddy fields and upland annual cropland. Data for these subcategories of arable land have not been enumerated in the Food and Agriculture Organization statistics, which are mainly based on the census of farm households. It was only recently that the data for lowland paddy fields, based mainly on aerial photography, began to be available in the official reports of national statistical agencies for some specific years, which

Table 1. Land Endowments for Agricultural Production in Indonesia, the Philippines, and Thailand, 1965–96

Indicator	Indonesia			Philippines			Thailand		
	1965	1996	1996/65 ratio	1965	1996	1996/65 ratio	1965	1996	1996/65 ratio
Number of farm workers (1,000) ^a	29,006	47,713	1.64	7,363	12,128	1.65	12,450	20,824	1.67
Cropland ^b									
Total (000ha)	26,000	30,987	1.19	6,660	9,520	1.42	12,600	20,445	1.62
Per capita (ha)	0.24	0.15	0.63	0.21	0.14	0.67	0.41	0.35	0.85
Per farm worker (ha)	0.90	0.65	0.72	0.90	0.78	0.87	1.01	0.98	0.97
Percentage of cropland (%)									
Lowland paddy field ^c	—	27	—	—	32	—	—	53	—
Upland annual crop land ^d	—	31	—	—	22	—	—	31	—
Land under permanent crop	31	42	1.35	38	46	1.21	11	16	1.45

—, Not available.

a. Economically active population.

b. Arable land area plus area under permanent crop.

c. Lowland paddy field areas pertain to 1995 in Indonesia, 1991 in the Philippines and 1993 in Thailand.

d. Arable land area minus lowland paddy field area.

Sources: FAOSTAT database (FAO 1999) except for lowland paddy field areas, which are taken from 1996 *Statistical Yearbook of Indonesia* (Indonesia Biro Pusat Statistik 1996) for Indonesia (8,484,000 ha in 1995), *Philippine Statistical Yearbook 1998* (Republic of the Philippines 1991) for the Philippines (3,001,000 ha in 1991), and *Agricultural Statistics 1995/96* (Thailand Ministry of Agriculture 1996) for Thailand (10,934,000 ha in 1993).

are used for calculations in table 1.² The areas of upland annual cropland are measured as differences between arable land and lowland paddy field areas.

The data in table 1 show that in per capita terms, cropland area in Thailand is more than twice as large as in Indonesia and the Philippines, but only marginally larger in per-farmworker terms (in 1996). Between 1965 and 1996, cropland areas increased by about 20 percent in Indonesia, 40 percent in the Philippines, and 60 percent in Thailand. However, in all three economies, the rate of expansion in cropland area was lower than the rate of growth in population and in agricultural labor force. The cropland endowment relative to population decreased by 15 percent in Thailand and by more than 30 percent in Indonesia and the Philippines. Cropland relative to the agricultural labor force remained about the same in Thailand, decreased by 28 percent in Indonesia, and decreased by 13 percent in the Philippines. These data suggest that Thailand has been endowed with relatively favorable conditions for expanding land cultivation, compared with Indonesia and the Philippines.

For the analysis here, the important characteristic that distinguishes Thailand from Indonesia and the Philippines is the high share of paddy field area in total cropland. Relative paddy field area is greater than 50 percent in Thailand, compared with only about 30 percent in Indonesia and the Philippines (in 1996). Indonesia and the Philippines are characterized by high shares of area under permanent crops, amounting to more than 40 percent in contrast to less than 20 percent in Thailand. Permanent crops in these economies consist mainly of tropical trees for cash crop production, such as coffee, coconuts, and rubber. Although data are not available for lowland paddy field area in 1965, the share of tree cropland was as much higher in Indonesia and the Philippines than in Thailand 30 years ago that it is today. The data reflect the ecological difference between the continental zone of Southeast Asia, as represented by Thailand, and the insular zone, as represented by Indonesia and the Philippines. The continental zone has major river deltas almost exclusively used for wet rice production. The insular zone was originally covered mainly by tropical rain forests that could be converted into profitable plantations of tropical cash crops.

The different types of agricultural production corresponding to different environmental conditions gave rise to different agrarian structures in the continental and insular zones. As is common in cereal-producing areas throughout the world, peasants or small family farms make up the organization of production. Thai agriculture, which has been traditionally dependent on rice, has been characterized by the dominance of peasants or small family farms as the organization of production. By contrast, a significant portion of tropical cash crop production has been carried out by plantations or large estate farms dependent on hired labor, although many peasants have also grown cash crops. Table 2 compares the distribution of farm size and the incidence of tenancy across Indonesia, the Philippines, and Thailand for the period before the influence of Philippine land reform became significant.

Table 2. The Distribution of Operational Farm Size and the Incidence of Agricultural Tenancy in Indonesia, the Philippines, and Thailand, 1970s

<i>Indicator</i>	<i>Indonesia 1973</i>	<i>Philippines 1971</i>	<i>Thailand 1978</i>
Average operational farm size (ha)	1.1	3.6	3.7
Percentage of farms and farmland			
Below 5 ha			
Farms	98	85	72
Land area	69	48	39
Above 50 ha			
Farms	0 ^a	0.2	0 ^a
Land area	14	14	0.9
Gini coefficient of land concentration	0.56	0.51	0.45
Percentage of tenanted area in total farmland			
Pure tenancy	2	21	6
Total ^b	24	33	16
Percentage of share tenancy in tenanted land	60	79	29

a. Less than 0.05 percent.

b. Area in pure tenancy farms plus area in owner-cum-tenant farms.

Sources: Hayami and Otsuka (1993) and U.N.-FAO (1971).

In all the three economies in the 1970s, small farms operating below 5 hectares were the majority, comprising 70–100 percent of farms and cultivating 40–70 percent of farmland. Large farms above 50 hectares, which were considered agribusiness plantations, were negligible in number; those estate farms operated on 14 percent of the land area in Indonesia and the Philippines and less than 1 percent in Thailand. Thus the agricultural sector in the insular zone was bifurcated between peasants subsisting on small parcels of land and large plantations with hired labor under the hierarchy of management. The continental zone was characterized by the unimodal distribution of self-employed family farms. These plantations were privately owned and managed in the case of the Philippines; those in Indonesia were mostly state enterprises expropriated from Dutch planters after independence. The incidence of tenancy also varied widely. Tenancy was distinctively higher in the Philippines than in the other two countries, especially in terms of percentage of area under pure tenancy. In fact, the central focus of this article is on the ecological factors and historical processes that resulted in such differences in agrarian structures in Southeast Asia.

Table 3 compares agricultural growth performances in Indonesia, the Philippines, and Thailand between 1965 and 1995. In terms of total agricultural output, the growth rate was about the same in Indonesia and Thailand, but in per capita and per-farmworker terms, Indonesia's growth rates were somewhat higher. The Philippines had the lowest growth rates for those three measures. In terms of output per hectare of cropland, growth in the Philippines and Thailand was comparable and much slower than in Indonesia. The slow growth of land productivity in Thailand

Table 3. Growth of Agricultural Production in Indonesia, the Philippines, and Thailand, 1961–95

Country, indicator	Index			Growth rate (annual percent)		
	1961–65	1976–80	1991–95	1961–65 to 1976–80	1976–80 to 1991–95	1961–65 to 1991–95
Indonesia						
Total	100	157	309	3.0	4.5	3.8
Per capita	100	111	165	0.7	2.6	1.7
Per farm worker	100	138	232	2.1	3.5	2.8
Per ha ^a	100	157	263	3.0	3.4	3.2
Philippines						
Total	100	177	239	3.8	2.0	2.9
Per capita	100	116	111	1.0	–0.3	0.3
Per farm worker	100	134	156	2.0	1.0	1.5
Per ha ^a	100	137	165	2.1	1.2	1.7
Thailand						
Total	100	190	277	4.3	2.5	3.4
Per capita	100	123	140	1.4	0.9	1.1
Per farm worker	100	145	199	2.5	2.1	2.3
Per ha ^a	100	129	163	1.7	1.6	1.6

a. Per hectare of cropland (arable land plus land under permanent crop).

Source: FAO (1999).

resulted partly because of a major expansion of the cultivation frontier in the Northeast, which was characterized by poor soil and unstable rainfall, and partly because of the relatively low rate in the diffusion of modern, high-yielding rice varieties. It was difficult to grow short-stature modern varieties in the flood-prone areas of the Chao Phraya Delta as well as in the drought-prone areas of the Northeast. In addition, farmers were slow to adopt modern varieties because of their low value in Thailand's export markets.

In terms of both environmental conditions and relative resource endowments, traditional comparative advantage in agricultural production in Thailand lay in rice and that of Indonesia and the Philippines lay in tropical cash crops. Table 4 shows that Thailand is a major rice exporter (the world's largest), and its world market share continued to rise between 1961–65 and 1991–95. Indonesia and the Philippines remained net importers of rice, although their import margins were significantly reduced owing to the success of the Green Revolution. This success was especially great in Indonesia, accounting for the high rate of growth in aggregate agricultural output despite the relatively slow growth in cropland area (tables 1 and 3).

Surprisingly, Thailand has become an exporter of several tropical cash crops that have declined in importance for Indonesia and, more conspicuously, for the Philippines. Sugar represents a typical example. Thailand was a net importer of sugar before

Table 4. Shares of Net Exports in World Total Export Value of Selected Agricultural Commodities in Indonesia, the Philippines, and Thailand, 1961–95

Commodity, country	Share in world market (percent)		
	1961–65	1976–80	1991–95
Rice			
Indonesia	-11.0	-17.6	-3.5
Philippines	-3.1	0.5	-0.3
Thailand	19.4	18.7	26.1
Maize			
Indonesia	-0.1	-0.1	-0.8
Philippines	0	-0.2	-0.1
Thailand	3.6	2.9	0.3
Sugar^a			
Indonesia	0.3	-1.4	-1.1
Philippines	7.3	4.0	0.6
Thailand	0.2	2.7	6.9
Coffee^b			
Indonesia	1.0	4.5	4.9
Philippines	0	0.3	0
Thailand	-0.1	0	0.8
Coconut oil			
Indonesia	0	-1.0	15.8
Philippines	39.8	69.4	60.4
Thailand	-0.1	-0.2	0
Palm oil			
Indonesia	17.8	14.5	13.9
Philippines	-0.9	-0.1	-0.1
Thailand	0	-0.6	0
Rubber			
Indonesia	23.3	23.7	27.9
Philippines	-0.3	0.1	0.3
Thailand	8.8	12.9	32.6
Pineapple^c			
Indonesia	0	0	7.8
Philippines	12.9	20.7	15.0
Thailand	0	16.9	45.9
Banana			
Indonesia	0	0	0.1
Philippines	0	8.0	5.4
Thailand	0.1	0.1	0

a. Sugar, raw equivalent.

b. Coffee, green and roast.

c. Canned pineapple.

Source: FAO (1991) database.

World War II and was barely self-sufficient in the early 1960s. Nevertheless, Thailand rose to the third-largest exporter in the world (next to Brazil and Australia) in the 1990s. By contrast, Indonesia and the Philippines, two traditional exporters of sugar in Asia, have nearly completely lost significance in the international market. By the 1990s, Thailand exceeded Indonesia in the export of rubber and exceeded the Philippines in the export of pineapple products. Indonesia was able to achieve a major increase in its world market share of coffee and also to maintain high shares of palm oil and rubber. After the 1970s, the Philippines lost out in world competition in most of the tropical cash crops in which it had a traditional comparative advantage. The market share data reveal the strengthened competitive position of Thai agriculture and the dwindled position of Philippine agriculture, although comparative cost data are not available.

Indonesia and Thailand belonged to high-performing economies in the East Asian economic miracle throughout the three decades ending in the outbreak of the financial crisis in 1997 (World Bank 1993). The Philippine economy staggered, especially during the so-called lost decade of the 1980s. Gross national product (GNP) per capita in Thailand, which was about the same as that of the Philippines in the 1970s, became twice as large by the early 1990s. During the same period, Indonesia's GNP per capita increased from only about one-half that of the Philippines to about the same level. It should be reasonable to expect that the different performance of agriculture in the three countries was a significant factor underlying the different GNP growth rates.

The Basis of Vent-for-Surplus Development

A basic framework of my perspective is the classification of Southeast Asia into continental and insular zones, characterizing the former by major river deltas and the latter by tropical rain forests. Of course, such a characterization is subject to the hazard of oversimplification, disregarding wide ecological variations within each region.³ In Thailand, for example, the major delta of Chao Phraya River encompasses only a part of the Central Plain, one of four regions in Thailand. The North is characterized by small river valleys amid hills and mountains rising toward the China–Laos–Myanmar border, where irrigated rice farming can be practiced by tapping the small streams on which early Thai dynasties were built. The Northeast bordering on the Lao People's Democratic Republic is characterized by an undulated plateau with sporadic rainfall and poor soil, which had remained as the last frontier until Lao migrants settled recently by means of risky rainfed farming. The South toward the border of Malaysia has an environment similar to the insular zone, which was originally covered by rain forest.

Ecological variations within the insular zone are equally large. Especially pronounced is the difference between Java (and Bali) and the Outer Islands, such as

Kalimantan and Sumatra, in Indonesia. Though much of the latter area is typically covered by tropical rain forest, the environment of Java is categorically different, as it is characterized by volcanic slopes with fertile soil and steady water supply, which make much of this area uniquely suited for irrigated rice farming. The environment of the Philippines is largely similar to that of the Outer Islands in Indonesia but mixed with volcanic terrain similar to that of Java.

Despite the large variations within each region, in general major river deltas characterize the environment of the continental zone, and tropical rain forests characterize the insular zone. These two land types formed the basis of economic development in Southeast Asia from the late 19th century to the early 20th century. Myint's (1965, 1971) so-called vent-for-surplus theory focuses on the process of development of "empty land" with low population density, large tracts of unused land, and abundant natural resources, typically found in Southeast Asia and East Africa at the outset of Western colonization. When these economies were integrated into international trade, unused natural resources (hitherto having had no value to indigenous people) began to command market value. Those resources could produce primary commodities to meet the high export demand of Western economies. In this way, previously unused resources became a source of economic development. The deltas of major rivers, such as Chao Phraya in Thailand, Irrawaddy in Myanmar, and Mekong in Vietnam, became the basis of vent-for-surplus development in the continental zone of Southeast Asia. The rain forest provided the basis for the development of the insular zone.

Major river deltas in the continental zone are flat and low relative to sea level, so that the surface is almost completely submerged by floods in the rainy season, although it dries up in the dry season with no reservoir to store water. As such, floodplains in the major deltas had defied human settlement until the mid-19th century, literally remaining empty land. Major civil engineering work made it possible to control flooding so that the deltas were transformed into habitable and agriculturally productive land. In Thailand the water control work took the form of developing the network of canals connected with the Chao Phraya River. The canals guide floodwater more evenly over wider areas for rice production. The canal banks provide flood-proof spaces on which farmers can settle.

The government of enlightened King Mongkut (Rama IV of the Chakri dynasty) initiated canal construction in the Chao Phraya delta. Construction began shortly after the government and Great Britain signed the so-called Bowring Treaty in 1855, which opened the kingdom to trade with the West. Soon rapid increases in foreign demand for Thai rice, which significantly raised both the price of rice and the value of rice land, induced the mobilization of private investment. A group of influential courtiers and wealthy Chinese traders established the Siam Canals Land and Irrigation Company, a major builder of private canals. The company secured concession in 1889 to dig canals in a vast tract of swampy land northeast of Bangkok, under

the clause that the company was allowed to hold ownership over reclaimed land along the canals. Its operation was managed by the Chinese business elite and construction work was heavily based on Chinese migrant laborers hired for wages, unlike the *corvée* labor that was used in the king's prior projects.⁴ However, the farmers who settled in reclaimed land as tenants were Thai who had migrated from other regions.

There is little doubt that the opening of the Chao Phraya Delta for rice production was the basis of vent-for-surplus growth, which moved Thailand's economy toward specialization in rice production in the late 19th century. Although comparable data are not available for earlier years, the area planted in rice in the Central Plain was as large as 6.8 million rai (1 rai = 0.16 hectare) or 85 percent of total rice area in the kingdom in the 1905–09 period. That was larger than the national total of 5.8 million rai in 1850 (Ingram 1971). The opening for cultivation of the Irrawaddy Delta in Myanmar and the Mekong Delta in Vietnam were similarly important for those economies during the comparable period.

The tropical rain forests in Southeast Asia's insular zone played a comparable role in vent-for-surplus development. Since long before the mid-19th century, rain forests had been the source of supply of valuable products for trade, such as cinnamon, cloves, bird nests, deer horns, and hides. However, the high incidence of malaria and other tropical diseases defied human settlement inside thick tropical forests at low elevation. Typically, native people lived on sea coasts and occasionally entered the forests for collection and extraction of natural products for sale to foreign traders or their agents who sailed to their coasts. In the late 19th century, Western capital and entrepreneurship began to convert the forests into plantations of tropical export crops, heavily relying on migrant labor from China. Before this period, Western colonial powers had attempted to collect tropical products from the natives by taxation and other coercive means.

The concurrent exploitation of continental deltas and insular forests occurred with the greater integration of Southeast Asia into the world economy in the late nineteenth century. Much greater integration than before resulted from the establishment of the free trade regime under the hegemony of Britain and the revolution in ocean transportation. The free trade system was imposed on native economies by force, either directly by Britain in its colonies or indirectly by forcing liberalization on local sovereign and other colonial powers. In the Bowring Treaty, Thailand not only conceded extraterritoriality to Britain but also lost financial autonomy. Export and import duties were fixed at the flat rate of 3 percent *ad valorem*, and internal taxes, such as exercise taxes, transportation tolls, and even land taxes, were not allowed to change by the will of the kingdom alone. Advisers from Britain carefully monitored public finance (Ingram 1971). As such, the kingdom of Siam for several decades after signing the Bowring Treaty was almost a protectorate of Great Britain. Great Britain imposed the free trade system on Thailand, both internationally and internally, in a way similar to Great Britain's other colonies, such as Burma and Malay.

Furthermore, Great Britain pressed the other Western colonies to adopt the free trade system. For example, the British occupation of Manila in 1762–64 during the Seven Years' War broke Spain's monopoly of the reexport trade in Manila of Chinese goods to Mexico by galleon ships, opening up the port of Manila to shipments and commerce by traders in other nations. Great Britain's continued pressure underlay the successive opening of other ports in the Philippines until the mid-19th century (Larkin 1972).

The reason behind Great Britain's strong drive for free trade was its high manufacturing production capacity, which established the country as the "Workshop of the World" after the Industrial Revolution. British industries sought markets for their products and sources of raw material supplies. Having established the modern factory system that could produce industrial products at lower cost than local cottage industries in the tropics, Great Britain found it advantageous to trade its manufactured commodities for tropical agricultural products and minerals. Thus trade replaced the forced collection of tropical commodities through tax and other means, which were commonly practiced by earlier colonialists, such as the Spanish conquistadors in the Philippines and the Dutch East India Company in Indonesia. Soon other Western nations followed Great Britain in industrialization and in trade.

Corresponding to its expanded industrial production capacity, the West's demand for raw materials for processing—such as cotton, rubber, and tin—became very large. Moreover, as the level of income and wages rose, tropical delicacies—such as pepper, coffee, and tea, hitherto limited to the high-income elite—became common items on the tables of ordinary working people.

This tendency was further strengthened by major innovations in ocean transportation, consisting of the introduction of the steamship and the opening of the Suez Canal in 1869. These two innovations combined reduced the transportation cost of commodities from Bangkok to major ports in Europe, such as London, below that from Bangkok to Thailand's old capital, Chiang Mai (Ingram 1971). Without such innovations, it would have been impossible for bulky commodities like rice produced in Southeast Asia to find markets as far as Europe (Furnivall 1948).

Although the innovations in ocean transportation reduced the prices of commodities from Southeast Asia in the West, they also reduced the prices of Western commodities in Southeast Asia to a large extent. Thus under the liberal trade regime in the late 19th century, industrial commodities flowed into Southeast Asia, out-competing local handicraft industries. Deindustrialization became a common feature in Southeast Asia (Resnick 1970). Thailand, which had been an exporter of cotton products before the 1850s, quickly became a major importer (Ingram 1971). Indigenous labor shifted from manufacturing to primary production for export. This shift, together with the migration of labor from China and India, provided the basis for exploiting unused natural resources, such as major river deltas and tropical rain forests, for vent-for-surplus development.

An example that clearly illustrates the impact of opening to international trade and specialization in primary production can be seen in the development of sugar production in Negros, Philippines. Prior to the opening of nearby Iloilo City as an international port in 1855, Negros Island was sparsely populated, and much of its area was uncultivated. When the port opened, the island was rapidly transformed into sugar plantations. Concurrently, local weaving industries surrounding Iloilo, which had hitherto made textiles a major export item from this region, were brought into havoc by the inflow of cheap British cloth (McCoy 1982).

In the global trade system created in the late 19th to the early 20th centuries, the exchange was not simply between industrial commodities in the West and primary commodities in Southeast Asia. Rice produced in the continental zone was originally brought to Europe as cheap food for industrial laborers (some was reexported to Latin America). Later, as plantations developed in the insular zone, demand for rice as the basic subsistence need for plantation laborers expanded at a speed that could not be met by local supply. Correspondingly, the share of rice exported from the continental zone to the insular zone within Southeast Asia increased. Thus triangular trade flows emerged in this period—rice produced from the continental zone was brought to the insular zone, and tropical cash crops produced in the insular zone by laborers fed on the imported rice were exported to Europe in exchange for industrial products. In this triangular trade flow, comparative advantage dictated regional specialization. For example, the sugar industry, which appeared to be a promising industry for export in Thailand at the onset of trade opening, was soon destroyed by imports from Indonesia and the Philippines (Ingram 1971).

In this way, vent-for-surplus development in Southeast Asia based on the exploitation of hitherto unused land resources was reinforced by comparative advantage within the region, which was largely determined by ecological conditions. Comparative advantage based on natural resource endowments was also reinforced by colonial policies on farmland as well as public investments in physical and institutional infrastructure. For example, the strong sugarcane research program organized by the Dutch colonial government significantly contributed to strengthening the international competitiveness of the sugar industry in Indonesia (Evenson 1976).

Evolution of Agrarian Systems

This process of vent-for-surplus development would have influenced the formation of agrarian structures in Indonesia, the Philippines, and Thailand (table 2). Thailand is characterized by the unimodal distribution of peasants or family farms, with an insignificant number of large estate farms or plantations and a relatively low incidence of tenancy. Indonesia and the Philippines are characterized by bifurcation between the peasant sector, which grows mainly subsistence crops, and the planta-

tion sector, which grows tropical cash crops. Relative to the other two countries, the incidence of tenancy is high in the Philippines and, combined with the bifurcation of agricultural production, implies that the share of landless population in the rural sector is highest in the Philippines.

It is common to explain the persistence of the peasant mode in contrast to the emergence of the plantation system in terms of different technological requirements for production between subsistence food crops and export cash crops. However, in my perspective, the bifurcated farm-size distribution and the problem of landlessness in Southeast Asia (as well as in other parts in the world) stemmed essentially from “preemption of land” by colonial and domestic elite rather than technological factors for agricultural production.

Conditions of the Plantation System⁵

A conventional explanation for the establishment of the plantation system is based on the scale economies inherent in the production of tropical export crops (Baldwin 1956). However, few crops are subject to sufficiently strong scale economies at the farm level to make the use of plantation organization necessary (Pim 1946; Wickizer 1951, 1960; Lim 1968; Hayami and others 1990).⁶ In fact, there are examples of every so-called plantation crop being grown successfully by peasants somewhere in the world.

Significant increasing returns emerge only at the levels of processing and marketing activities. The vertical integration of a large estate farm with a large-scale central processing and/or marketing system is called for because of the need to supply farm-produced raw materials on a timely schedule. A typical example is fermented black tea. The manufacturing of black tea at a standardized quality for export requires a modern machine plant into which fresh leaves must be fed within a few hours after plucking (Wickizer 1951, 1960). The need for close coordination between farm production and processing underlies the traditional use of the plantation system for black tea manufacture. By contrast mainly peasants in China and Japan produce unfermented green tea. Even for the manufacture of black tea, it is not imperative to use the plantation system. This is evident in the case of Taiwan, where smallholders produce both black and green tea with small-scale equipment. The large fermentation plant has been used in plantations as a device enforcing the work schedule and standardizing product quality for the export market. In fact, farm production by smallholders based on the system of contract farming has developed relatively recently in Kenya (Lamb and Muller 1982).

In the case of bananas for export, harvested fruit must be packed, sent to the wharf, and loaded on a refrigerated boat within a day. A boatful of bananas that can meet the quality standards of foreign buyers must be collected within a few days. Therefore, the whole production process from planting to harvesting must be precisely

controlled so as to meet the shipment schedule. Although the plantation system has a decisive advantage for this export product, bananas for domestic consumption are usually produced by peasants.

Plantations have no significant advantage over peasants for the crops for which centralized processing and marketing are not necessary. Typical examples are cocoa and coconuts. The fermentation of cocoa and the drying and smoking of coconuts to make copra can be handled in small lots with no large capital requirement beyond small indigenous tools and facilities. These crops are grown predominantly by peasants.

Sugar is frequently cited as a classic case of scale economies stemming from the need for coordination between farm production and large-scale central processing (Binswanger and Rosenzweig 1986). Efficient operation of a centrifugal sugar mill requires the steady supply of a large amount of cane over time. It requires coordination of production from planting to harvesting and processing. However, this coordination need not be as stringent as it is for tea and bananas. The rate of sugar extraction decreases as the processing of cane is delayed, but this loss is in no way comparable to the devastating damage to the quality of tea and bananas for export that may result from delayed processing. Sugarcane can be hauled from relatively long distances and stored for several days. Therefore, the need for vertical integration is not as large, and the sugar mill can achieve the necessary coordination through contracts with cane growers on the time and the quota of cane delivery. In fact, Australia, Taiwan, and more recently Thailand have developed an efficient sugar industry with smallholders.

Another explanation for the use of the plantation system is the advantage of large estate farms in accessing capital. Binswanger and Rosenzweig (1986) argue that this gives plantations an advantage with regard to tree crops characterized by long gestation periods from planting to maturity. However, the opportunity costs of labor and capital applied to formation of the tree capital are not necessarily high for peasants. Typically, they plant the trees in previously unused land. If such land is located near their residence, they open new land for planting by means of family labor at low opportunity cost during the idle season for the production of food crops on farm land already in use. Often, when peasants migrate to frontier areas, they slash and burn jungles and plant subsistence crops such as maize, potatoes, and upland rice, together with tree seedlings. Such complex intercropping is difficult to manage with hired labor in the plantation system because of the inherent difficulty in monitoring the work of hired wage laborers over spatially dispersed and ecologically variable farm operations (Brewster 1950; Binswanger and Rosenzweig 1986; Hayami and Otsuka 1993).

Therefore, even in the export boom of tropical cash crops under colonialism from the nineteenth century to the early 20th century, the plantation system failed to make inroads in regions where the indigenous population had established family farms (Lewis 1970). Western traders found it more profitable to purchase tropical agricul-

tural commodities from peasant producers in exchange for imported manufactured commodities, than to produce the tropical crops themselves by means of the plantation system.

The establishment of plantations in less developed economies increased as the demand for tropical products by the industrialized nations continued to rise and the regions physically suited for the production of these products had no significant peasant population that could produce and trade their commodities. Opening frontier land for the production of new crops entailed high capital outlays. Virgin land had to be cleared and developed and physical infrastructure, such as roads, irrigation systems, bridges, and docking facilities, had to be constructed. Capital, in the form of machinery and equipment, had to be imported and redesigned to adapt to local situations. Laborers were imported from the more populous regions and trained in the production of these crops.

The establishment of plantations thus requires huge initial capital investment. For the investors to internalize gains from investment in infrastructure, farm size must be large. Viewed from this perspective, it follows that the plantation system evolved not because it was generally a more efficient mode of productive organization than the peasant mode. Instead, the system was adopted because it was the most effective type of agricultural organization for extracting the economic benefit accruing from the exploitation of sparsely populated virgin areas, typically in the process of vent-for-surplus development.

From this perspective, it is easy to understand why the same crop is grown mainly by peasants in one place and mainly by plantations in another. For example, for sugarcane production, the peasant mode is more common in the old settled areas of Luzon, and the plantation system predominates in the newly opened Negros, both in the Philippines (Hayami and others 1990). Usually the share of peasants in the production of export cash crops rises when the initial land-opening stage is over and infrastructure is decently established with increased population density (Booth 1988).

Although the plantation system had an economic advantage in the vent-for-surplus stage, plantations could not have been established if governments had not granted concessions to hold large tracts of virgin land for the exclusive use of plantations. Typically colonial governments granted concessions to Western planters. For example, the Dutch colonial government had traditionally tried to prevent alienation of farmland from indigenous peasants by regulating against land purchase by foreigners, including the ethnic Chinese. However, in the late 19th century, demand for tropical cash crops rose sharply. The colonial government passed the Agricultural Land Law of 1870, which granted Dutch planters long-term contracts to lease wild land. The land was *de jure* owned by the government (although it was *de facto* used by native tribes). Although this new institutional arrangement should have accelerated the development of “empty land” for cash crop production, it served as an instrument to preempt land for the elite, closing smallholders’ access to land. Similar

public land-leasing arrangements were also practiced under the American colonial administration with frontier land in the Philippines, especially in Mindanao, which became the basis of large plantations under the management of multinational corporations (Hayami and others 1990).

Land Preemption and Tenancy

The incidence of land tenancy is closely related to the preemption of land. Of course, a land tenancy relationship can emerge as a practice among peasants in the absence of preemption. If external forces did not disturb a rural community, land tenure institutions would evolve gradually from communal to private ownership. Corresponding to the growing relative scarcity of land under mounting population pressure, it becomes necessary to intensify the utilization of land, typically from shifting cultivation with long furrow to that with short furrow, to annual cropping, and further to multiple cropping per year involving irrigation (Boserup 1965).

The process of agricultural intensification requires major investment for improving land infrastructure, from removing stones and roots from newly opened land, to land leveling and terracing, and further to irrigation and drainage. To secure incentives for such investment, it becomes necessary to give land users the right to use their land exclusively. Thus land tenure institutions normally evolve from communal ownership to private ownership, involving various steps from periodical reallocation of communal land among community members, to life-long usufruct rights, to usufruct rights inheritable by heirs, and further to private property rights amenable for market transactions.

Land tenancy arrangements gradually develop as an institution to increase production efficiency by improving combinations of land and labor (including entrepreneurship) as individual land tenure becomes longer and more exclusive. When a farmer finds his family labor short for cultivation of a land parcel on which a long-term usufruct is established (because of sickness or some other reason), he may rent out a part of it to someone whose land endowment is short relative to their labor endowment. It is a Pareto improvement if the latter pays to the former a rent equivalent to the marginal productivity of the land. At the same time, land tenancy associated with private property rights on land can work as an institution to increase inequality in income distribution and social hierarchy within a community. A farmer endowed with superior muscular power or entrepreneurship may rent more land and increase income and may eventually buy the land. As he eventually accumulates more land than his family labor can efficiently cultivate, he may rent out a part of his land to someone who has become landless for whatever reason. Increased income from rent revenue added to farm income may motivate him to purchase more land for renting. This process should progress faster as the relative scarcity of land rises under increased population pressure.

Such autonomous evolution of land property rights and tenancy relationships does not usually result in the large-scale absentee landlordism observed in several developing economies. Rather it tends to create stratification of peasantry along a continuous spectrum between landlord-cum-owner and owner-cum-tenant farmers. Although land tenancy is commonly practiced, a majority of farmland continues to be under owner cultivation, and both noncultivating landlords and pure tenants are the minority.

Such an agrarian structure is typically found in the peasant sector in Indonesia. Unlike other colonial powers, the Dutch did not try to impose Western institutions, such as private property rights in land. Rather they preserved or even strengthened traditional community institutions and organizations. The Agrarian Law of 1870 granted long-term lease of wild public land to foreign planters, but did not allow them to purchase or rent cultivated land from native peasants individually. Instead, sugar planters were allowed to lease rice land through contracts with the heads of villages. The contracts normally extended for less than 20 years. The lessee was allowed to occupy only one-third of the village land, which had to be rotated over three crop seasons. This rotation was designed to prevent planters from gaining a permanent hold on village land. Periodic reallocation of village land under the direction of village headmen strengthened traditional tendencies toward communal landholding (Pelzer 1945).

The situation in the Philippines provides a sharp contrast. At the time of conquest, the Spaniards introduced the notion of legal title to land (McLennan 1969). They applied to the Philippines the same principle they applied to other new territories—that all the lands except those officially proved to be private or communal possessions belonged to the Spanish crown. The Crown's property rights were established over vast areas of uncultivated land, including areas used as commons by native people. Much of the royal domain was granted to conquistadors and monastic orders, such as Augustinian and Franciscan friars. This institutional development in the early Spanish era represented a wholesale preemption of usable land, closing access by native people. Later, the population increased, and foreign demand for Philippine products increased through trade liberalization. Large landholdings created from earlier royal grants became plantations in the upland areas and rice haciendas with tenant labor in the lowland areas.

Native peasants were even deprived of the opportunity to establish ownership by opening new lands for cultivation. For example, the inner part of Central Luzon had been covered by jungle and used only for cattle ranching. When it was finally converted into large rice haciendas in the late 19th century, many peasants migrated from the north, believing that they had settled in no-man's-land. After the peasants opened the jungle, landowners' agents visited and notified the peasants that they had to pay rent as tenants on haciendas (Hesters and Mabun 1924).

Pervasive landlordism in the Philippines was also rooted in the relatively free land transactions under the Spanish regime. Chinese and Chinese mestizos, who engaged

in internal trade along littorals, where native peasants held traditional land rights, acquired land through moneylending using land as collateral. A common arrangement was that the borrower continued to cultivate his land as a sharecropper of his creditor during the loan period. If the borrower became unable to repay the loan at the end of the period, the land title shifted to the creditor and the borrower usually continued sharecropping (McLennan 1969). The scale of landholding accumulated in this commercial process in the coastal area was typically much smaller than that of haciendas in the inner part of Central Luzon (Hayami and Kikuchi 1981). Thus, before the Marcos land reform in the 1970s, rice area in the Philippines was predominantly cultivated by share tenants, typically owning no land of their own. The pervasive landlordism in the rice sector and plantations in the cash crop sector that characterized the traditional agrarian structure in the Philippines were both rooted in the preemption of land in the Spanish period.

In Thailand, preemption occurred in the vent-for-surplus stage through the granting of land concessions to private canal builders in the Chao Phraya Delta. As a result, the incidence of tenancy is significant in the Central Plain, especially in the Rangsit area northeast of Bangkok, where the private company intensively dug canals. Yet, taking Thailand as a whole, tenancy is of minor importance compared with Indonesia and the Philippines, partly because of relatively abundant land endowment and, more important, because of government policy.

The country's ancient custom was to give every man the right to take as much land from the state as he and his family could cultivate, which was normally considered to be 25 rai (equivalent to 4 hectares). This institution was maintained even after opening trade with the West. The Consolidated Land Act of 1908 did not specify an exact area of land, but gave people the right to take as much land as they could profitably cultivate. In practice these areas ranged between 20 and 50 rai. The Land Act of 1936 specified 50 rai as the maximum that one could take. These laws kept access to land wide open for ordinary Thai, making the situation diametrically different from that of the Philippines.⁷ Both of these Thai laws incorporated the old custom that the cultivator could receive title to the land only after he cultivated it for three years. This clause together with land taxation, which applied to not only cultivated but also uncultivated holdings, discouraged holding land idle for speculation (Ingram 1971).

The basic factor underlying the major difference in land policy between the Philippines and Thailand was the difference in the culture or the value system between the Spanish colonial rulers and the rulers of the independent kingdom. The Dutch colonial rulers tried to preserve traditional village institutions, thereby avoiding alienation of land from peasants in Indonesia. Their motivation might have been to maintain social stability for the sake of extracting tropical agricultural products from this colony at minimum administrative cost, as argued by Furnivall (1944, 1948).

It is also important to observe that the preemption of rice land through canal construction in Thailand resulted in the emergence of large-scale landlordism, but not

in the formation of plantations. This was similar to the case of the Philippines. In Thailand, large holdings of landlords were usually subdivided into small parcels for rice cultivation by the family labor of landless peasants under tenancy contracts. The owners of large tracts of rice land established titles through land preemption, such as obtaining concessions for canal digging in the Chao Phraya Delta. They preferred tenancy to plantation operations, perhaps at least in part because of the difficulty of standardizing tasks of rice production and, hence, of monitoring the efforts of workers.

Another reason the owners preferred tenancy may have been because paddy is storable. Unlike black tea and bananas, paddy does not require close coordination between farm production and processing/marketing. Although rice milling and marketing for export involved significant scale economies, the operators could secure adequate supply of paddy through ordinary market transactions. As the result, they could dispense with efforts to vertically integrate farm production with processing and marketing by means of the plantation system or the contract farming system. Therefore it may not be unreasonable to postulate the counterfactual hypothesis that, if the nature of rice-milling technology were such as to require close coordination with paddy production, large rice plantations would have been established in the Rangsit area where territorial concessions were granted to private canal builders.

Outside the newly opened delta area, the practice of tenancy is fairly common in the old settled North region. The agrarian structure in the north of Thailand, which did not experience preemption, is similar to that of the peasant sector in Indonesia. It is characterized by a continuous spectrum from landlord-cum-owner to owner-cum-tenant farmers.

Agrarian Structure and Agricultural Growth Performance

This section discusses whether the different agrarian structures that emerged along different historical paths under different ecological conditions explain, at least in part, the different agricultural growth performance across Indonesia, the Philippines, and Thailand. The analysis focuses on two questions. First, why did Indonesia and the Philippines, which had strong comparative advantage in tropical cash crops such as sugar before World War II, lose ground to Thailand in world market competition in recent years (table 4)? Second, why was the agricultural output growth of the Philippines so slow relative to growth in Indonesia and Thailand (table 3)?

Decline in the Advantage of Plantations

The previous section argued that the efficiency of plantations relative to the peasant system is high in the initial opening-up process of land-abundant and labor-scarce economies. However, several negative aspects of plantations grow large as tropical

economies shift from the land-abundant to the land-scarce stage after the completion of the opening-up process. Correspondingly, the relative advantage of the peasant system increased.

Negative aspects of the plantation system. First, the plantation system tends to substitute capital for labor because of the inherent difficulty in supervising wage laborers in spatially dispersed and ecologically diverse farm operations. In addition, plantations have relatively easy access to both the private credit market and concessional loans from the government. The substitution of capital for labor is socially inefficient in many developing economies, which are characterized by the abundant endowment of labor relative to capital.

Second, agricultural land tends to be cultivated less intensively in the plantation system, which employs mainly wage labor and usually practices monoculture. Complicated intercropping and crop-livestock combinations are more difficult to manage in the command system, implying that both the labor input and income per hectare are lower on the plantations.⁸ This is a source of inefficiency in the plantation system where land becomes scarce relative to labor under the pressure of population growth. By contrast, small-sized family farms tend to cultivate land more intensively.

Third, plantations usually specialize in a single crop. This monocrop bias reduces the flexibility of productive organizations to respond to changing demand by shifting to the production of other crops. Moreover, continual cropping of a single crop tends to result in soil degradation and an increase in the incidence of pests. Counter-application of fertilizer and chemicals causes serious stress on the environment and human health and incurs high costs.

Fourth, the specialization of plantation workers in specific tasks inhibits the development of their managerial and entrepreneurial capacity (Baldwin 1956; Myint 1965; Beckford 1972).

Fifth, the plantation system is a source of class conflict between laborers and managers/capitalists. The presence of a plantation enclave in rural economies where the peasant mode of production predominates has often strained relationships in rural communities. Therefore, in terms of the criterion of social stability, the plantation system is no match for the system of relatively homogeneous small producers that own small assets.

Increased advantage of the peasant system. Although Southeast Asia had traditionally been endowed with relatively abundant land resources ready for exploitation, frontiers for new land opening were progressively closed under the explosive population growth that characterized developing economies after World War II. It seems reasonable that the advantage of the plantation system declined and that of the peasant system increased correspondingly. Therefore it is not surprising that Thai agriculture, which predominantly consisted of smallholders, began to perform better than

that of Indonesia and the Philippines, which were characterized by large plantation sectors.⁹ Major increases in the export of nonrice agricultural commodities, such as rubber, kenaf, and cassava tips from Thailand, were totally based on the production of smallholders. To a significant extent, the expansion in the production of nonrice export crops in Thailand was supported by the existence of open land frontiers, which enabled relatively fast increases in the area under cultivation (table 1). The important point in the present context, however, is that the exploitation of cultivation frontiers was carried out by smallholders and not by plantations.

Relative increases in the efficiency of the peasant system were not limited to Thailand. The dramatic rise in Indonesia's share in world coffee and cocoa markets was entirely based on smallholders (Akiyama and Nishio 1996). The production of coconut oil in the Philippines, for which the country was able to maintain its high world market share, was extracted predominantly from copra made by smallholders, although some coconut plantations continued to operate, especially in Mindanao.

The advantage of the plantation system is better coordination between large-scale marketing/processing and farm-level production. Yet the disadvantage of the peasant system in this aspect could be overcome by organizing contract farming. In contract farming, an agribusiness firm manages processing and marketing, but contracts for the supply of farm products with peasant farmers. The firm provides technical guidance, credit, and other services to peasants in return for their pledged production to the firm. In this way, the system can take advantage of peasants in farm production without sacrificing scale economies in processing and marketing. An advantage of this system is that it taps not only the manual labor but also the management ability of rural people in developing economies. Thailand used this system when it began production of canned pineapple relatively recently; Thailand has surpassed the Philippines, formerly the world's leading exporter, whose production is based on large plantations in Mindanao.¹⁰

The Dilemma of Land Reform

The Philippine government has attempted to mitigate the social unrest rooted in pervasive landlessness and landlordism. Redistributive land reform extends back to the American colonial regime. However, the framework of the reform applied in the past four decades was established by the Agrarian Land Reform Code of 1963, which was enacted under President Macapagal (Hayami and others 1990).

The major thrust of the code was the creation of owner-cultivatorship on rice and corn land. This involved two steps. First, "Operation Leasehold" converted share tenancy to leasehold tenancy with rent fixed at the rate of 25 percent of the average harvest for three normal years preceding the operation. Second, "Operation Land Transfer" transferred land ownership to tenants. In the latter operation, the government expropriated land in excess of landlords' retention limit (75 hectares). It com-

pensated the landlords with 10 percent of the land value in cash and the rest in interest-free redeemable Land Bank bonds. The land was resold to the tenants for annual amortization payments within 25 years.

The code was amended in 1971 under President Marcos to extend land reform to the whole nation, with automatic conversion of all share tenants to leaseholders. The 1971 Code was enforced by Presidential Decrees No. 2 and No. 27 under the martial law proclaimed in 1972. The landlord's retention limit was reduced successively from 75 to 7 hectares. The period of amortization payments was shortened to 15 years. It is easy to enumerate the shortcomings of the land reform programs in the Philippines, yet there is no denying that large haciendas in Central Luzon were broken down. Most tenants established their status as leaseholders or amortizing owners, although sizable areas remain under the direct administration of landlords.

The beneficiaries of land reform have captured a large economic surplus. Rice yields have increased significantly due to the development of irrigation and the application of new varieties and fertilizers, while rent and amortization payments have been fixed. Thus, land reform has been successful in transferring much of the economic return to land from absentee landlords to former sharecroppers. However, the reform has created serious income inequality within village communities. The income of landless laborers has not risen (or may have declined) because the strong population pressure on land has prevented their wages from rising despite agricultural productivity increases.

Major distortions in resource allocations occurred because reforms were applied in a discriminatory manner to a certain sector of agriculture. By limiting program application mainly to tenanted land, the reforms created a strong incentive for landlords to evict their tenants and cultivate their land directly. However, labor inputs and, hence, agricultural output and labor income per hectare are usually higher in small family farms than in large farms. This is because of the inherent difficulty large farms have in supervising wage laborers. Therefore, the exemption of land under the direct administration of landlords had the effect of reducing labor input per hectare below an optimum level, thereby reducing the income of the laborers.

The impact of the regulations on tenancy contracts (especially the prohibition of share tenancy and the control of land rent) were equally serious. They reduced the incentive of large landholders to rent out their land in small parcels, resulting in a reduction in social product and labor income. This behavior applied not only to landlords but also to land reform beneficiaries. As the income of former sharecroppers, who were converted into leaseholders or amortizing owners, rose significantly, many of them retreated from arduous farmwork, leaving it to landless laborers. Yet they hesitated to subrent their holdings to landless laborers because their formal titles might be transferred. The land reform laws said that formal titles would be transferred to sublessees if they could prove to the agrarian reform office that they were the actual tillers of the land. Thus land reform beneficiaries have to continue to cultivate

their land based on hired labor, even if they are not able to work because they are sick, old, or engaged in nonfarm activities. The reforms inevitably resulted in inefficient combinations of land and labor.

Significant negative effects of land reform on agricultural production efficiency also occurred outside the rice and corn sector. The cash crop sector has not been covered by reform programs. The Comprehensive Agrarian Reform Law of 1988 intended to cover the cash crop sector, but it has not been significantly implemented. However, plantation owners fear that their land will eventually be expropriated. It is only natural that they have stopped investing in improvements in their land infrastructure, including planting and replanting trees. Some landowners even preferred to keep their land idle rather than use it for agricultural production. This was often the case in frontier regions like Mindanao.

Such fears and lack of investment might underlie, to a significant extent, the low rate of expansion in cropland area in the Philippines as compared with Thailand (table 1). The poor performance of the Philippines in competition for world export market shares is at least partly rooted in the uncertainty of the planters of tropical cash crops concerning the future course of land reform (table 4).

Toward Political Economy

Different agrarian structures developed in Indonesia, the Philippines, and Thailand along different historical paths and under different ecological conditions. From the late nineteenth to the early twentieth century, development of the three economies followed a typical pattern along the vent-for-surplus theory. Vent-for-surplus development is based on the exploitation of unused natural resources corresponding to their integration into the world market. Thailand represents the continental zone of Southeast Asia, whose resource base for vent-for-surplus development was the major delta of the Chao Phraya River. Indonesia and the Philippines represent the insular zone, whose resource base was the tropical rain forest. This difference in the resource base underlay the major difference in farm-size distribution—the unimodal distribution of peasants or family farms in Thailand as compared with the coexistence of peasants and large estate farms or plantations specializing in tropical export crops in Indonesia and the Philippines.

Different land policies, especially with respect to preemption of unused land by the elite, under different political regimes resulted in major differences in the pattern of land ownership. The preemption was wholesale in the Philippines under Spanish colonialism. It provided the base for the highly skewed land distribution, which was characterized by the bifurcation between noncultivating landlords and sharecroppers in lowland rice areas and between plantation owners and wage laborers in upland areas. In Indonesia, the preemption took place as the Dutch colonial govern-

ment granted long-term lease of uncultivated public land to foreign planters. However, the government tried to prevent the alienation of cultivated land from native peasants to avoid social instability. As a result, the peasant sector continued to consist mainly of landlord-cum-owner and owner-cum-tenant cultivators, and both noncultivating landlords and the pure landless remained a minority. In Thailand the preemption occurred through the grant of concessions for private canal building. However, the incidence of tenancy did not become serious because the government of the independent kingdom preserved the traditional institution of giving land to anyone who could open and cultivate it. Relatively homogeneous landowning peasants continued to dominate the rural sector of Thailand.

It appears that major differences in the agrarian structure have been significant factors in the differences in agricultural growth performance across the three economies in recent years. As frontiers for opening new land for cultivation were progressively closed, the initial advantage of the plantation system in large-scale land development began to be outweighed by its disadvantage in monitoring hired labor. At the same time, the advantage of the peasant system increased with respect to the use of family labor needing no supervision. This tendency seems to be manifest in Thailand's growing share in world exports of tropical cash crops in recent years. Furthermore, the land reform programs in the Philippines that called for reducing inequality in the distribution of land ownership have made land markets inactive, resulting in major distortions in resource allocations and serious underinvestment in agriculture.

Many factors in addition to the agrarian structure have contributed to the differential performances in agriculture. For example, one factor that is commonly cited in explaining the poor growth performance of Philippine agriculture is the prolonged continuation of the country's industrial protection policy geared for import substitution. Under this policy regime, the agricultural sector was penalized by high tariffs on manufactured commodities and overvalued exchange rates (Ariff and Hill 1985; Bautista 1987; Intal and Power 1989). Another factor was the state's trade monopoly on sugar and coconut products, which was heavily tinted with cronyism in the late stage of the Marcos regime (Hayami and others 1990). The political instability in the 1980s from the downfall of the Marcos administration throughout the succeeding Aquino regime discouraged both domestic and foreign investments in agriculture as well as in other sectors.

By contrast, Thailand began to shift from the import-substitution to the export-oriented strategy in the 1970s, almost two decades ahead of the Philippines (Warr 1993; Warr and Nidhiprabha 1995). In addition, the government of Thailand intervened little in the activities of private traders in agricultural marketing. The government's control of trade was largely limited to indirect measures, such as the imposition of an export tax on rice (the rice premium). A large number of traders of various sizes, ranging from small collectors of farm produce at the village level to large ex-

porters to the foreign market, were well coordinated through free competition. They made up a highly efficient channel to deliver overseas demands to farmers. Their activities were facilitated by major public investment in infrastructure, especially highways. This free trade system, supported by the government's provision of public goods, created remarkable diversification of agricultural resources to new export crops. The agricultural diversification was achieved while Thailand continued to strengthen its competitive position in rice production (Siamwalla and others 1990; World Bank 1987).

It is unlikely that such differences in government policy are independent of differences in the agrarian structure and value system in society that are deeply rooted in different ecological conditions and historical paths. For example, Hara (1994) advances a hypothesis on the reason why import-substitution industrialization was pursued more strongly for a longer period in the Philippines than in Thailand and other Association for Southeast Asian Nations economies. He argues that in the Philippines the business elite who benefited from industrial protection originated from the landed oligarchy. Therefore little countervailing power was mobilized against the industrial protection policy. By contrast, the rural countervailing power against industrial protection was comparatively high in Indonesia, Malaysia, and Thailand because the urban business elite were predominantly ethnic Chinese. Also, the rather harmonious division of labor that developed between Thai farmers and Chinese traders in the Siam Kingdom may have prevented the modern Thai government from adopting antimarket and antitrader interventions.

Another example is the remarkable success of the Green Revolution in Indonesia. The country's high growth of land productivity was, to a large extent, based on the strong support of the rice sector during the three decades of the Soeharto administration. It invested in irrigation, agricultural research and extension, plus subsidies for inputs and credits. This support was effective in overcoming the "Dutch disease effects" that seriously damaged agriculture in some oil-producing countries, such as Nigeria in the 1970s and early 1980s (Hayami 1997). It seems that Soeharto's policy choice was not independent of the tradition in Indonesia of protecting peasants as the stabilizing block of society.

In the Philippines in the 1970s, the Masagana-99 Program promoted the Green Revolution by means of distributing to farmers packages of new seeds, subsidized fertilizers, and other modern inputs, in a manner similar to Indonesia's Bimas Program. However, in the absence of "peasant fundamentalism" in the Philippines comparable to that of Indonesia, the Masagana Program lasted only about a decade (Hayami and Kikuchi 2000). Thus rice self-sufficiency in the Philippines, which had been achieved during the 1970s, could not be sustained in the 1980s. Indonesia rose from the world's largest importer of rice in the 1970s to achieve self-sufficiency in the 1980s. However, the country again became a major importer with the recent economic crisis associated with the downfall of the Soeharto regime. Unlike Indonesia and the

Philippines, in Thailand's liberal trade regime, the role of government policy in promoting fertilizer application was not very significant and effective (World Bank 1987).

For now, such political-economy theorizing is largely conjectural. Yet the agrarian structure of a nation and the value system in its society have been created along a unique historical trajectory, under unique ecological conditions. These should have a far-reaching influence on the organization of political economy and, hence, on policy choices. The positive analysis of this relationship presents a major challenge for future research. The analysis might be extended beyond the comparison within a region, as attempted here, to comparisons across regions. It might shed light on major questions in world development. For example, it might help in analyzing why Africa lags behind in achieving innovations in agricultural technology comparable to the Green Revolution in Asia.

Notes

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1. For a more comprehensive assessment of agricultural growth performance in Asia including Southeast Asia, see the five-volume report of the Asian Development Bank's project titled "Study of Rural Asia." Especially relevant to the context of this section are its overview (Asian Development Bank 2000), volume one by Rosegrant and Hazell (2000) and volume two by Kosa-ard and Rekasem (2000). Another major study specifically addressed to Southeast Asian agriculture is in progress by the Development Economics Research Group at the World Bank, titled "Dynamism of Rural Sector Growth: Policy Lessons from East Asian Countries."

2. Huke and Huke (1997) estimate paddy field areas in Indonesia, the Philippines, and Thailand in the mid-1990s as being 9,441,000, 3,456,000, and 9,806,000 hectares, respectively. However, they do not specify the years for these data. The substitution of Huke and Huke's estimates for the data used in table 1 does not change the conclusion of this article.

3. Descriptions of ecological and environmental conditions in Southeast Asia in this article are mainly based on Takaya (1985).

4. Though the corvée obligation was replaced by tax in kind or money, slavery was also phased out gradually over the reigns of Kings Mongkut and Chulalongkorn, ending in its abolishment in 1905 (Ingram 1971; Feeny 1982). The elimination of slavery and the corvée should have been an important factor for allocating a greater share of Thai labor to rice cultivation.

5. This section draws heavily on Hayami (1994, 1996).

6. Absence of scale economies in agriculture is also attested by the estimation of aggregate production functions based on inter-country cross-section data (Hayami and Ruttan 1985).

7. All forestlands were *de jure* state-owned, but were *de facto* open-access, except valuable teak forests that were an important source of the kingdom's revenue (Feeny 1999).

8. Official statistics often record that yields per hectare of cash crops such as coffee and rubber are higher in plantations than in small holders. However, these statistics do not take into account various products intercropped with principal cash crops by small holders, whereas monoculture is the common practice of plantations.

9. In addition to this disadvantage, the plantation sector in postindependence Indonesia that expropriated the estates of Dutch planters seems to have suffered from inefficiency common to state enterprises. Several attempts to cure this problem include the “nuclear estate” scheme by which a state plantation acts as a marketing/processing center with a demonstration farm for technical extension, along which smallholders are organized in a manner similar to contract farming. These attempts have often been marred by the direct application of the technology and practice of plantations without due understanding of the conditions of smallholders (Barlow and Tomich 1991). The case of Indonesia represents a contrast to the relatively high efficiency of plantations in Malaysia under private entrepreneurship. Private plantations in Malaysia are also well supported by the cooperative research and extension system that has been organized since the colonial period.

10. However, it needs a high degree of entrepreneurship and managerial skill to organize and operate the efficient contract farming system. It is not easy to enforce contracts with a large number of smallholders concerning the quantity, quality, and time of their product delivery to processing plants and/or marketing centers. Insufficient ability and effort of agribusiness firms in this regard have often resulted in failure in the operation of contract farming. Thus the performance of contract farming has so far been mixed even in Thailand (Siamwalla 1992). The same applies to other areas, including Africa where it is reported that contract farming organized by government agencies is usually inefficient (Jaffee and Morton 1995).

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