The Developing Economies, XXXIV-3 (September 1996)

RICE LAND OWNERSHIP AND TENANCY SYSTEMS IN SOUTHEAST ASIA: FACTS AND ISSUES BASED ON TEN VILLAGE STUDIES

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I. INTRODUCTION

RAPID development in rice farming in Southeast Asia, promoted by significant improvements in infrastructure, technology, and support institutions, has caused substantial changes in the production structure of this staple food during the past decades. In some countries in more recent years, rapid economic development has been achieved by industrialization, with a significant impact on rural society and agricultural production. It is expected that the role of rice farming and related institutions, including land tenure systems, in the village economy have also undergone substantial alterations in the region. From the 1970s through 80s, during the period of rapid change in rice production and macroeconomic conditions in Southeast Asia, I was able to conduct a series of village studies in major rice double-cropping areas in Malaysia, Indonesia, Thailand, and the Philippines.[1] Most of the research findings have already been published as books [1] [3] [5] [6] [7], but it may be worthwhile to put these empirical findings into comparative perspective. It seems audacious to conduct such an overview of Southeast Asia and my analysis is certainly in the nature of a preliminary attempt to verify land tenure systems in major rice-growing areas in the region.

The information and discussion on the following subjects will probably be useful for analyzing agrarian transformation to provide a better understanding of the evolution of land tenure and agricultural development in Southeast Asia. This study will attempt to: (1) clarify the current state of land tenure systems and rice

[1] These studies were largely carried out under a research grant provided by the Japanese Ministry of Education, Science and Culture, and I have paid particular attention to the current state of technological innovation and land tenure systems in each study area as a member of a group of agricultural economists who principally aimed to clarify farm-level problems related to the introduction of new rice technology. A series of studies in Malaysia were largely conducted by myself as an individual research project beginning in the early 1970s and continuing up to the present. The preparation of this paper benefitted from a Grant-in-Aid for General Research [C], provided by the Ministry of Education, Science and Culture, 1993–95. I also received insightful and constructive comments on an earlier version of this paper from anonymous referees.

production under different levels of technological innovation and macroeconomic change; and (2) examine tenancy systems regarding contractual forms, conditions, and landlord-tenant relations under varying socioeconomic conditions. With the modest hope of contributing to the deepening of our understanding of land tenure systems in relation to agricultural change, this paper principally aims to clarify some prevailing features in land tenure and tenancy systems which are unique as well as common in a total of ten study villages in the four countries in the region.

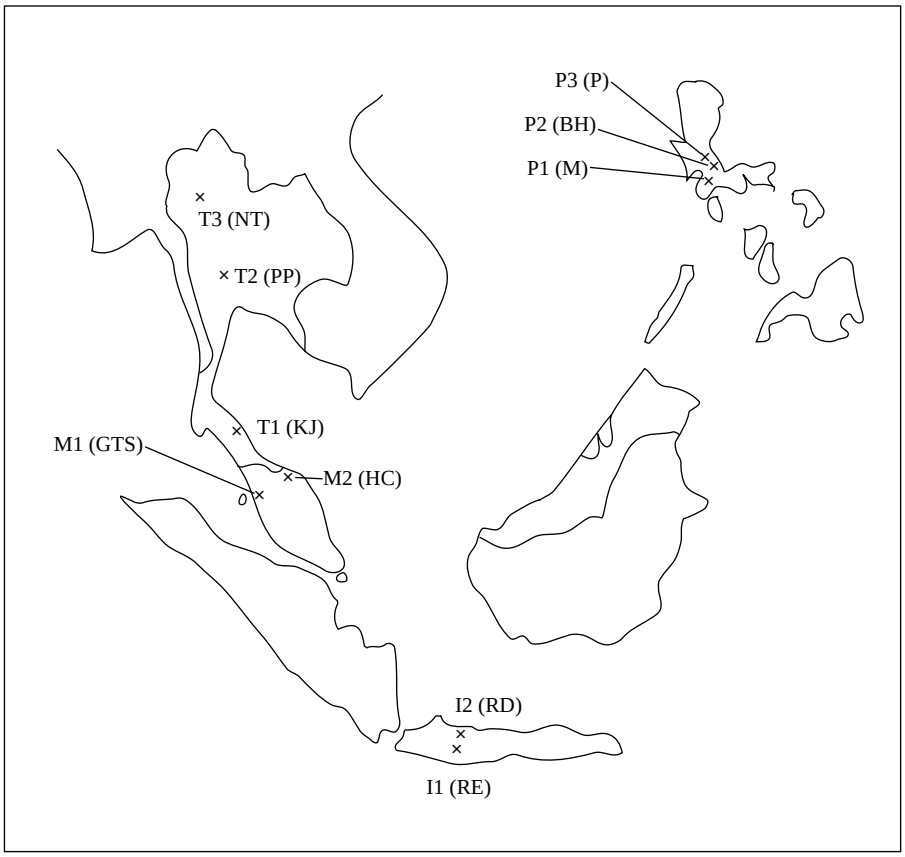
After a brief description of the study areas in Section II, the current state of landownership patterns, tenurial status, and farm size will be elucidated and an analysis of the relationship between land tenure and rice technology in the study villages will be presented in Section III. This will be followed in Section IV by an analysis of tenancy systems in the study villages particularly regarding contractual forms, conditions, and landlord-tenant relations. It is hoped that the analysis and discussion in Sections III and IV will reveal some common as well as unique features in land tenure systems in the major rice-growing areas in the four countries. In Section V an econometric analysis of tenancy systems will be conducted through the estimation and discussion of tenancy incidence function as well as rent function in order to verify key factors in the emergence of tenancy and the determination of rental level. Contractual choices will also be analyzed by a logit function in the form of clarification of the probability of occurring fixed rent tenancy instead of traditional share tenancy. Section VI presents the conclusions of this paper and briefly highlights theoretical issues of land tenure change and economic development in Southeast Asia.

II. STUDY AREAS AND VILLAGES

Data obtained from a total of ten villages in four countries in Southeast Asia form the basis of the analysis in the present study. These villages were selected, at different times, from the major rice-growing areas in the respective countries, where rice double-cropping was established and new rice technology adopted. The locations of the study villages are shown in Figure 1 while the following list provides the village names and the year of study.

I1 (RE) (1983): Desa Rancaekek, Regency of Bandung, West Java, Indonesia
I2 (RD) (1983): Desa Rancaudik, Regency of Subang, West Java, Indonesia
M1 (GTS) (1987): Kampung Guar Tok Said, Seberang Prai Utara, Penang, Malaysia
M2 (HC) (1984): Kampung Hutan Cengal, Pasir Mas District, Kelantan, Malaysia
T1 (KJ) (1985): Tambon Khao Jeak, Amphoe Muang, Phatthalung, Thailand
T2 (PP) (1985): Tambon Pho Phraya, Amphoe Muang, Suphan Buri, Thailand

Fig. 1. Locations of the Ten Study Villages



T3 (NT) (1985): Tambon Nong Tong, Amphoe Hang Dong, Chiang Mai, Thailand

P1 (M) (1988): Barangay Masiit, Municipality of Calauan, Laguna, Philippines

P2 (BH) (1988): Barangay Bantug Hacienda, Municipality of Talavera, Nueva Ecija, Philippines

P3 (P) (1988): Barangay Plaridel, Municipality of Llanera, Nueva Ecija, Philippines

A complete survey of all households was conducted in these villages. However, such administrative units as *desa*, *tambon*, and some *barangay* were too large for a survey, and a community within these units was therefore selected for complete enumeration. It also should be mentioned that two Malaysian villages (M1 [GTS]

and M2 [HC]) have been studied continually from the 1970s to the 90s,[2] and T3 (NT) in Thailand and P2 (BH) in the Philippines were also resurveyed in 1993 and 1995 respectively,[3] but the years indicated in the above list refer to the main surveys from which data were largely obtained for the analysis in this paper. Turning now to a brief description of each village and the study area, we will be concerned mainly with general socioeconomic conditions, infrastructure, and technology related to rice farming and land tenure systems.[4]

In Indonesia, the two villages chosen for study are in West Java and show remarkable contrasts in many aspects. I1 (RE) is located twenty kilometers east of Bandung, the capital city of West Java Province, and as such it has been under the direct impact of rapid urbanization. Reflecting this locational advantage, there were at the time of the study many villagers who were engaged in off-farm employment. The village was served by a semi-technical irrigation project, which sometimes lacked irrigation water, resulting in the cultivation of upland crops in some areas during the dry season. Regarding land tenure, there were many merchants and government officials residing mostly in Bandung and Jakarta, who made speculative land investments in the area and thereby became absentee landlords. The majority of villagers were either tenant farmers or landless agricultural laborers, some of whom were formerly landowners.

I2 (RD) is located in the Regency of Subang and served by the large-scale Jatiluhur Irrigation Project. It is in one of the major rice-growing areas of the country, and stable rice double-cropping has been practised since the end of the 1960s. The level of rice technology and resulting productivity were much higher than those in I1 (RE), but the availability of off-farm employment opportunities was severely limited. It was fortunate, however, that the great majority of villagers were able to earn a living from rice farming and farmers were mostly owner operators.

In Malaysia, one village was selected in each of the major double-cropping areas on the East and West Coasts of Peninsular Malaysia. M1 (GTS) located in Seberang Prai can be regarded as a successful show case for the country's rice policy which promoted infrastructural, institutional, and technological development. Rice double-cropping was introduced at the beginning of the 1960s. Despite its proximity to industrial estates and the general decline in rice farming in the surrounding area, a number of farmers in this village continued not only to grow rice but also to improve their farm management to attain viable farming. Highly developed labor-saving technology came to be well established in this village by the beginning of the 1980s. This consisted of tractor ploughing, direct-seeding,

[2] The detailed results of the continuing study over a period of two decades in the two Malaysian villages have been already published in [3].

[3] The results of these resurveys in T3 (NT) and P2 (BH) are now being written up.

[4] For a more detailed description of the study villages and rice farming in each area, see [1] [3] [5] [6] [7].

herbicide usage, combine harvesting, and the sale of products immediately after harvesting without any processing by farmers. Most farmers used to be tenants on land owned by an estate company but purchased their cultivated land under a state government–sponsored redistribution program during the 1960s and 70s [1]. Currently fixed rent and leasing contracts were the predominant forms of tenancy among the villagers.

M2 (HC) on the East Coast first experienced rapid improvement with the introduction of rice double-cropping in 1963, but rice farming has been in decline over the past decades. There was a steady improvement up to the mid-1970s, but idle land became a common feature from the end of the 1970s in Kelantan due to persistent low income from rice farming and emigration of rural labor to rapidly growing non-farm sectors in West Coast Malaysia and Singapore. In more recent years, increasing off-farm employment opportunities in the State of Kelantan has resulted in the increase of the nonagricultural population in this village which has easy access (less than twenty kilometers) to Kota Bahru. Regarding land tenure, farm size was generally small and share tenancy predominated in earlier years, but since the 1980s this has slowly been changing to fixed rent tenancy. With the introduction of more effective labor-saving technologies from the end of the 1980s and the increased output subsidy in 1990, rice farming has begun to revive and there has emerged an enterprising farmer who has expanded his farm size to nearly eight hectares [3].

Three villages were chosen in Thailand: T1 (KJ), T2 (PP), and T3 (NT), located in the southern, central, and northern regions respectively. Both T1 (KJ) in Phatthalung and T2 (PP) in Suphan Buri are located within large-scale government irrigation projects where rice double-cropping was introduced from around 1980, while T3 (NT) in Chiang Mai obtained water from a long-standing, small-scale traditional people's irrigation project and water shortage caused farmers to plant upland crops in a large part of the area during the dry season. In fact, T3 (NT) is located in the Chiang Mai Valley which is well known for crop diversity under multiple-cropping systems, but in recent years the village has witnessed an increase in nonagricultural population because of its proximity (only twenty kilometers) to the city of Chiang Mai. In more recent years, the conversion of rice land to fruit orchards has been taking place in this village.

In the adoption of modern rice technology, T2 (PP) was the most advanced in that not only direct-seeding but also mechanical threshing was well established by the mid-1980s. From the beginning of the 1990s, combine harvesters were also introduced in this area. This village was followed by T1 (KJ) and then T3 (NT) in the use of modern inputs, but the average yield was highest in T3 (NT), followed by T2 (PP) and T1 (KJ). It is interesting to note that a local variety was planted during the dry season and a hand knife was used for harvesting the rainy season rice crop in T1 (KJ), which was under the relatively remote impact of rice moderniza-

tion programs of the central government. Regarding land tenure, farm size was generally larger in T2 (PP) than the other two villages, while the predominant form of tenancy contract was fixed rent in cash in T1 (KJ), fixed rent in kind in T2 (PP), and share-cropping in T3 (NT). Reflecting differences in population density, availability of off-farm employment, and land productivity, the average rent varied greatly among the three villages.

In the Philippines, one village (P1 [M]) was chosen from Laguna in Southern Tagalog and two villages (P2 [BH] and P3 [P]) from Nueva Ecija in Central Luzon. P1 (M) is located in Calauan, about four kilometers away from the International Rice Research Institute (IRRI) located in Los Baños, and demonstrated a reasonably high level of yield. It was served by a communal irrigation project, centered on a small dam constructed during the Spanish period, and rice double-cropping had been introduced well before the establishment of the IRRI. Both P2 (BH) and P3 (P) are located in the large-scale Upper Pampanga Irrigation Project and have enjoyed stable year-round irrigation since 1970. In the adoption of modern rice technology, all three villages showed a very high level, but the resulting yield was the highest in P2 (BH), followed by P1 (M) then P3 (P). It should be noted that a pilot project of land consolidation or Japanese-style land improvement project was implemented in P2 (BH) in 1974. Regarding rice technology, in common with other villages in Laguna, P1 (M) relied on the *dapog* system of transplanting, while direct-seeding was commonly adopted by Central Luzon farmers including those of P2 (BH) and P3 (P).

Probably the enforcement of agrarian reform in the Philippines makes the three study villages distinctive from the study villages in the other countries in terms of contemporary land tenure systems. However, within the three Philippine villages there existed marked differences in the proportion of farmers by land tenure status, reflecting the nature of each village prior to the implementation of agrarian reform in 1972 under the Marcos administration. Although the average farm size did not differ greatly among the three villages, "deemed owners"[5] predominated in P2 (BH) which was part of a large hacienda, while tenants constituted the majority of farmers in P1 (M) even after land reform, as most of the paddy fields were owned by many small landlords in this relatively urbanized and highly populated village. P3 (P) showed a mixture of various tenurial statuses.

It should also be added that restrictions on tenancy under the Philippines' agrarian reform program and improved productivity under new technology have created an "indianized society" where the rural population has become clearly divided between non-working farmers and landless agricultural laborers [9]. In P2 (BH) too,

[5] The deemed owners refer to some beneficiaries of the government's ongoing agrarian reform. They did not have legal ownership of the land but the right to purchase and eventually become legal owners upon the completion of amortization. In this paper, they are regarded as owner farmers.

according to my resurvey, the emergence of permanent laborers could be observed in the 1990s, while restrictions on the expansion of rice land area promoted the introduction of livestock and short-term upland crops (such as water melon) between the existing two rice-cropping seasons.

In sum, the ten study villages were located in greatly varying environments including not only political, social, and economic conditions but also the infrastructural, technological, and ecological conditions for rice production. The role of rice farming in the village economy itself also varied considerably. The total numbers of households studied are presented in Table I, and the proportion of farm households in each village at the time of study was 44.1 per cent in I1 (RE), 65.3 per cent in I2 (RD), 78.8 per cent in M1 (GTS), 44.2 per cent in M2 (HC), 87.4 per cent in T1 (KJ), 98.1 per cent in T2 (PP), 72.5 per cent in T3 (NT), 39.0 per cent in P1 (M), 80.7 per cent in P2 (BH), and 90.9 per cent in P3 (P). I do have a feeling of being overwhelmed by this attempt to draw some generalization based on such diverse conditions. However, I also feel that it may be a valuable attempt to highlight some unique and common features in land tenure systems across the ten study villages as a first step toward the identification of a more general framework of land tenure and agricultural development in rice-based village economies in Southeast Asia.

III. LAND TENURE STATUS AND RICE TECHNOLOGY

A. *Landownership and Tenurial Status*

This section will clarify the current state of land tenure and rice production as observed at the time of study in each village. This will be pursued through the analysis of landownership structure, farm size, and the level of rice technology. Table I shows the current state of rice land ownership among the villagers studied. A number of observations can be made from this table.

First, using the approach of surveying all households including non-farming households in a particular village, the proportion of landowner households to the total number of households varied from the lows of 8.7 per cent (P1 [M]) and 10.8 per cent (I1 [RE]) to the highs of 88.3 per cent (T1 [KJ]) and 78.9 per cent (P2 [BH]). The remaining villages ranged from some 50 per cent to 70 per cent. What is clear from these figures is the existence of a high proportion of households which did not own any rice land in some villages, in spite of their location in the major rice double-cropping areas in the respective countries. This tendency was particularly obvious in highly populated and diverse economies: I1 (RE) (a suburban village near Bandung), P1 (M) (a suburban village in Laguna), T3 (NT) (a suburban village near Chiang Mai), and M2 (HC) (a rapidly urbanizing village in Kelantan). Non-landowners were engaged in various jobs, including tenant farming, trading,

TABLE I

RICE LAND OWNERSHIP IN THE STUDY VILLAGES

		No. of Households	No. of Family Members per Household	Average Age of the Household Head (Years)	Man-Land Ratio	No. of Rice Land Owner Households	Total Rice Land Area Owned (ha)	Average Area Owned per Owner Household (ha)	Proportions of Owned Rice Land Area by Method of Acquisition (%)	
									Purchase	Inheritance
Indonesia:	I1 (RE)	93	4.81	39.8	19.1	10	4.36	0.44	n.a.	n.a.
	I2 (RD)	98	3.27	35.8	6.9	59	37.66	0.64	n.a.	n.a.
	Overall	191	4.02	37.7	11.0	69	42.02	0.61	n.a.	n.a.
Malaysia:	M1 (GTS)	66	4.88	48.5	4.8	41	48.22	1.18	63.3	36.7
	M2 (HC)	86	5.55	52.8	14.2	46	32.88	0.71	30.5	69.5
	Overall	152	5.26	50.9	8.0	87	81.10	0.93	45.3	54.7
Thailand:	T1 (KJ)	111	5.05	48.0	3.9	98	118.00	1.20	24.5	75.5
	T2 (PP)	155	5.33	45.7	1.8	121	323.72	2.68	24.0	68.2
	T3 (NT)	178	3.70	45.6	6.5	93	67.43	0.73	36.6	62.9
	Overall	444	4.61	46.2	2.9	312	509.15	1.63	26.1	69.0
Philippines:	P1 (M)	172	5.60	54.9	7.3	15	23.80	1.59	55.9	44.1
	P2 (BH)	114	6.04	44.9	4.6	90	140.04	1.56	94.2	5.8
	P3 (P)	110	4.88	44.0	2.8	63	118.63	1.88	43.4	56.6
	Overall	396	5.53	49.0	4.6	168	282.47	1.68	69.6	30.4

Notes: 1. In the case of the Philippines, owners of rice land include "deemed owners" and purchase of rice land refers to the proportion of area acquired under the CLT to the total owned area.
2. In the case of Malaysia, proportions by land acquisition method for M1 (GTS) and M2 (HC) refer to the West Coast (113 households from two villages) and the East Coast (127 households from two villages) respectively [1]. Figures for population and average age for M2 (HC) (1984) were based on a total of 54 households.
3. In the case of T2 (PP), there were some cases (7.8 per cent of the total) for which the method of land acquisition could not be ascertained.
4. Man-land ratio was obtained by dividing the total area of rice land under operation by total population. It indicates the size of village population per hectare of rice land cultivated by the villagers.

TABLE II

RICE LAND AREA OPERATED IN THE STUDY VILLAGES

	No. of Farm Households	Total Area Rented Out (ha)	Total Area Rented (ha)	Total Area Fallowed (ha)	Total Area Operated (ha)	Average Area Operated per Farm Household (ha)	Proportions of Farm Households Which Operated Rented Land (%)
Indonesia:							
I1 (RE)	41	0.00	19.01	0.00	23.37	0.57	87.8
I2 (RD)	64	0.30	9.00	0.00	46.36	0.72	25.0
Total	105	0.30	28.01	0.00	69.73	0.66	49.5
Malaysia:							
M1 (GTS)	52	10.62	30.10	0.00	67.70	1.30	53.8
M2 (HC)	38	2.46	3.30	12.74	20.98	0.55	23.7
Total	90	13.08	33.40	12.74	88.68	0.98	41.1
Thailand:							
T1 (KJ)	97	24.88	51.72	0.00	144.84	1.49	45.4
T2 (PP)	152	67.76	202.56	0.00	458.52	3.02	53.3
T3 (NT)	129	2.08	36.32	0.00	101.67	0.79	43.4
Total	378	94.72	290.60	0.00	705.03	1.87	47.9
Philippines:							
P1 (M)	67	6.00	108.70	0.00	132.50	1.98	79.1
P2 (BH)	92	3.00	9.05	0.00	149.09	1.63	8.7
P3 (P)	100	5.00	72.10	0.00	190.73	1.91	43.0
Total	259	14.00	189.85	0.00	472.32	1.82	40.2

Note: (Total area operated) = (total area owned in Table I) − (total area rented out) − (total area fallowed) + (total area rented).

agricultural labor, and nonagricultural wage employment.

Second, rice land area owned was generally small, but there existed a large difference in the average size of landownership among these villages. The smallest area owned on average was 0.44 hectare per owner household in I1 (RE) (West Java) and the largest 2.68 hectares in T2 (PP) (Central Thailand). The relatively small differences among the Philippine villages may be due to the implementation of agrarian reform under which a ceiling was set at 3 hectares per household. Villages in Java, the East Coast of Peninsular Malaysia, and Northern Thailand generally had a smaller area of rice land than other villages. The size of landownership appeared to be related to the man-land ratio in that a higher ratio indicated higher population pressure which resulted in a generally small area of owned land. Population pressure notwithstanding, the largest owner household possessed the following area of rice land in their respective villages: 1.19 hectares in I1 (RE), 3.00 hectares in I2 (RD), 2.72 hectares in M1 (GTS), 1.80 hectares in M2 (HC), 3.58 hectares in T1 (KJ), 8.80 hectares in T2 (PP), 2.44 hectares in T3 (NT), 9.50 hectares in P1 (M), 3.75 hectares in P2 (BH), and 7.70 hectares in P3 (P).

Third, in these established rice-growing villages there were only two methods of land acquisition: inheritance and purchase. Exceptionally high rates of land purchase in M1 (GTS) and P2 (BH) reflected the government programs implemented in the past in these areas as mentioned earlier. In other villages, it seemed that inheritance was the main method of land acquisition, constituting roughly two-thirds of the total area owned. But purchase accounted for about one-third of land acquisition, indicating a high mobility of land in the study areas. The frequent sale of land in these villages was most likely associated with the practice of equal inheritance which tended to subdivide land area, eventually to the point of uneconomic operation or co-ownership, resulting in the sale of the land.[6]

Fourth, the mobility of land could be promoted not only through the sale and purchase but also the renting of land. As is seen from Table II, tenancy was in fact very common in most of the study villages. The much larger number of farm households than the number of landowner households presented in Table I points to the existence of many villagers who operated rice land that they did not own but instead rented from someone else. The proportion of farmers who operated rented land entirely or partly as pure tenants or owner-tenants ranged from the lows of 8.7 per cent (P2 [BH]) and 25.0 per cent (I2 [RD]) to the highs of 87.8 per cent (I1 [RE]) and 79.1 per cent (P1 [M]). The proportion generally reached 40 per cent to 50 per cent in other villages, indicating high incidence of tenancy in that roughly half the farmers cultivated some area of rice land under tenancy.

[6] The detailed process of subdivision through inheritance in the case of Malaysia was examined in [16], while Tsubouchi describes the mechanism of recapturing farm size through the purchase and renting of land [15].

In terms of land area, the rate of tenancy (proportion of rented land to the total area operated by the villagers) was as high as 81.3 per cent in I1 (RE), 19.4 per cent in I2 (RD), 44.5 per cent in M1 (GTS), 15.7 per cent in M2 (HC), 35.7 per cent in T1 (KJ), 44.2 per cent in T2 (PP), 35.7 per cent in T3 (NT), 82.0 per cent in P1 (M), 6.1 per cent in P2 (BH), and 37.8 per cent in P3 (P). The exceptionally high rate in I1 (RE) was due to the fact, mentioned earlier, that many villagers had sold their land to speculative investors, while most of rice lands in P1 (M) were still owned by small landlords who were exempted from the Operation Land Transfer Program. In contrast, the very low rate in P2 (BH) was due to the fact that all the former tenants of the hacienda were converted to deemed owners in 1972 by the agrarian reform and the existing tenants were those who emerged in more recent years. The low rate in M2 (HC) reflected the declining trend of rice farming in the area from the end of the 1970s with large areas of land left fallow and very few villagers wanting to cultivate rice [3]. Other than these exceptions, however, generally 20 per cent to some 40 per cent of the rice land area operated by the farmers was actually under tenancy in these major rice-growing areas in the four countries.

Turning to the matter of farm size in the study villages, the average size seemed to vary in relation to the man-land ratio. It was generally small in Java, the East Coast of Peninsular Malaysia, and Northern Thailand, while it was as large as 3.02 hectares in T2 (PP) in Central Thailand. Although farm size alone was not a sufficient indicator of the farmers' economic standing, it certainly carried significant implications for the level of expected income from rice farming. It is noteworthy that the average area operated was generally larger than the average area owned per household, with the exception of M2 (HC). This general trend may be interpreted as an indication of the positive functions of tenancy: providing non-landowners with the means for making a living and small- and medium-sized landowners with the means to expand their farm size, which in turn provided an opportunity for reducing income gaps among the villagers. Positive analysis of these points should be made through careful studies of income distribution patterns by land tenure status.

Table III presents a breakdown of farmers by tenurial status. Reflecting the landownership pattern, there were a high proportion of pure tenant farmers in I1 (RE) (75.6 per cent) and P1 (M) (77.6 per cent), while owner farmers predominated in P2 (BH) (89.1 per cent). There were also reasonably high proportions of owner-tenant farmers in all the villages except in the Philippines, where a clear division was observed between owner farmers and tenant farmers, and landless villagers. It is important to note that there was a marked tendency for owner-tenant farmers to be the largest group, supporting the above argument that tenancy functioned as a means of expanding farm size. In most of the villages there were also a number of households which rented out all or part of their holdings. However, as indicated by the size of landownership mentioned earlier, there were no especially large land-

TABLE III

NUMBER OF FARMERS AND AVERAGE FARM SIZE BY TENURIAL STATUS IN THE STUDY VILLAGES

	Landlords	Landlord-Farmers		Owner Farmers		Owner-Tenants		Tenant Farmers		All Rice Farmers	
	No.	No.	Farm Size	No.	Farm Size	No.	Farm Size	No.	Farm Size	No.	Farm Size
Indonesia:											
I1 (RE)	0	0	—	5	0.32	5	1.06	31	0.53	41	0.57
I2 (RD)	0	2	0.30	46	0.71	11	0.96	5	0.52	64	0.72
Overall	0	2	0.30	51	0.67	16	0.99	36	0.53	105	0.66
Malaysia:											
M1 (GTS)	3	10	1.16	14	1.12	14	2.08	14	0.81	52	1.30
M2 (HC)	0	0	—	29	0.50	4	1.12	5	0.40	38	0.55
Overall	3	10	1.16	43	0.70	18	1.87	19	0.70	90	0.98
Thailand:											
T1 (KJ)	7	20	1.00	33	1.32	38	1.94	6	1.23	97	1.49
T2 (PP)	1	24	3.88	47	2.39	49	3.69	32	2.25	152	3.02
T3 (NT)	1	4	0.90	69	0.77	18	1.15	38	0.63	129	0.79
Overall	9	48	2.43	149	1.40	105	2.62	76	1.36	378	1.87
Philippines:											
P1 (M)	0	0	—	14	1.52	1	5.50	52	1.95	67	1.91
P2 (BH)	0	2	1.25	82	1.67	2	2.00	6	0.94	92	1.63
P3 (P)	0	2	3.00	55	1.98	2	1.80	41	1.75	100	1.91
Overall	0	4	2.13	151	1.77	5	2.62	99	1.81	259	1.82

Note: Average farm sizes are in hectares.

lords, and the households which rented out some land were mostly among the aged and small landowners.

B. *Rice Technology and Land Tenure*

One question which has been frequently addressed in past economic studies is the implications of land tenure for technological innovation. It is the conventional view that tenancy, especially share tenancy, retards the progress of technological innovation [11] [12]. However, as thoroughly reviewed in a recent comprehensive study of share tenancy [8, Chap. 6], there are many past studies which point to the positive adoption of new technology by farmers regardless of their tenurial status and tenancy form. In this subsection, I will discuss the case of the ten study villages by reviewing the state of technological innovation in relation to land tenure.

Table IV presents the proportions of farmers who had adopted new rice technology in the study villages. As the study villages were chosen from the main rice double-cropping areas in the respective countries, it was expected and actually confirmed that new technology, both biochemical and mechanical technologies, had been widely adopted by the farmers. Perhaps the most commonly cited evidence of technological innovation has been the use of modern varieties, which was well established in most of the study villages. The widespread adoption of new varieties alone may be a sufficient indication of the positive attitude of the farmers, irrespective of land tenure status, toward technological innovation. However, in T1 (KJ) and T3 (NT) many farmers still planted local varieties due to the lack of agronomically suitable improved varieties and for the production of glutinous rice for home consumption. IR varieties were predominant in Indonesian and Philippine villages, whereas domestically bred new varieties (MR in Malaysia and RD in Thailand) were adopted in other villages.

Chemical fertilizer was also applied by almost all farmers irrespective of land tenure status, even though basal-dressing was seldom practised in Thai and Philippine villages. The use of pesticide was also a common practice in most villages except for T1 (KJ) and T3 (NT). The lower adoption rate of pesticide in the two villages was related to the planting of local varieties and the less frequent application of chemical fertilizer.

In addition to the above biochemical technology, which has often been referred to as “green revolution” technology, farmers in the study villages adopted labor-saving technology as well. This type of technological innovation is generally represented by the adoption of machinery or more efficient farm tools. In particular, the study villages were in the process of tractorization at the time of study in that the use of four-wheel tractors or hand tractors for land preparation was well established. But the hoe and buffalo could also be observed in Indonesian and Philippine villages. Farmers in Indonesian villages gradually adopted sickle harvesting during the 1970s and gave up the hand knife, whereas the use of combine harvesters was

TABLE IV

PROPORTIONS OF FARMERS ADOPTING NEW RICE TECHNOLOGY IN THE STUDY VILLAGES (WET SEASON)

	Indonesia			Malaysia			Thailand				Philippines			
	I1 (RE)	I2 (RD)	Overall	M1 (GTS)	M2 (HC)	Overall	T1 (KJ)	T2 (PP)	T3 (NT)	Overall	P1 (M)	P2 (BH)	P3 (P)	Overall
No. of farmers	41	64	105	52	38	90	97	152	129	378	67	92	100	259
Seasons studied	(1982/83)	(1982/83)		(1986/87)	(1983/84)		(1984/85)	(1984)	(1984)		(1987)	(1987)	(1987)	
Improved varieties	95	100	98	100	89	96	12	96	67	65	100	100	100	100
Fertilizer in nursery	85	100	94	87	53	72	99	44	76	69	3	88	21	40
Pesticide in nursery	7	42	29	17	n.a.	17	16	37	7	21	25	31	13	23
Tractors	68	72	70	100	100	100	100	100	88	96	97	89	87	90
Direct-seeding	0	0	0	69	0	40	0	59	0	24	0	8	82	34
Basal-dressing	73	80	77	100	90	96	6	2	4	4	28	5	11	14
Top-dressing	100	100	100	100	100	100	99	96	60	84	100	99	97	98
Herbicide	0	0	0	89	5	53	4	84	25	43	94	99	94	96
Pesticide	98	100	99	54	71	61	37	92	9	43	91	98	99	97
Sickles	100	100	100	n.a.	100	100	3	100	100	75	100	100	100	100
Combine harvesters	0	0	0	94	0	54	0	0	0	0	0	0	0	0
Mechanical threshers	0	0	0	6	0	3	92	97	0	62	100	100	100	100
Ownership of:														
Tractors	2	0	1	33	5	21	44	72	10	44	40	38	23	33
Irrigation pumps	2	0	1	8	0	4	18	54	37	39	1	0	11	5
Motor sprayers	12	39	29	39	0	22	0	18	7	10	40	62	31	44
Mechanical threshers	0	0	0	0	0	0	19	0	0	5	6	5	2	4

already common in M1 (GTS) by the beginning of the 1980s. Mechanical harvesting was adopted in M2 (HC) as well from the late 80s. In the Philippine and Thai villages, reaping was still carried out by sickle but, except for T3 (NT), threshing was mechanized. In T2 (PP), mechanical harvesting was adopted in the 1990s. In short, mechanization of land preparation, reaping, and threshing was a common trend in the major rice-growing areas in the region, while the use of combine harvesters also became common in some villages. It should be noted that these machines were not necessarily owned by individual farmers as indicated by the generally low rates of machinery ownership in Table IV. There was a clear tendency for machinery owners to be relatively large farmers irrespective of tenurial status. Those farmers who did not own machines had to depend on the hiring services made available by large farmers or professional contractors.

A more recent and rapidly spreading innovation in labor-saving technology was the adoption of pregerminated direct-seeding. It became widespread in the 1980s in M1 (GTS), T2 (PP), P2 (BH), and P3 (P). In M2 (HC), too, it was adopted by the end of the 1980s. Direct-seeding technology requires a reasonable level of water control at the field level, and the increasingly widespread adoption of the practice in major rice-growing areas was made possible by the gradual improvement of irrigation and drainage conditions. It can be seen that the adoption rate of herbicides was closely related to the practice of direct-seeding, except in P1 (M) where a unique system of transplanting ten-day seedlings was used.[7] The rapid adoption of direct-seeding in recent years in Malaysia, Thailand, and the Philippines has not only been because of its labor-saving advantage but also because of its cost-saving and yield-increases [4].

Having reviewed the rice technology in the study villages, I would now like to examine the impact of land tenure status on the adoption and effects of new technology. Taking chemical fertilizer as a representative of new technology, Table V indicates the amount of application by farm size and tenurial status, while Table VI shows the average yield corresponding to farm size and tenurial status. As already mentioned implicitly in the above discussion of rice technology, differences in the intensity of input use as well as resulting yield levels were much more obvious among farmers with different farm sizes rather than different tenurial statuses. This suggests that tenurial status and form of tenancy contracts per se were relatively insignificant determinants of rice technology and productivity, which were largely influenced by the size of farm under operation.

However, the relationship between share tenancy and technology needs a more careful examination. In past studies, a cost-sharing arrangement equal to the rate of output has often been considered as the way of attaining optimum resource alloca-

[7] Hirose not only describes the nature of the *dapog* transplanting system but also discusses the environmental conditions which lead to the adoption of direct-seeding vis-à-vis transplanting [10].

TABLE V

AVERAGE AMOUNT OF FERTILIZER USE BY FARM SIZE AND TENURIAL STATUS IN THE STUDY VILLAGES (WET SEASON)

	Indonesia (Rupiah/ha)		Thailand (Baht/rai)			Philippines (Pesos/ha)		
	I1 (RE)	I2 (RD)	T1 (KJ)	T2 (PP)	T3 (NT)	P1 (M)	P2 (BH)	P3 (P)
Farm size (1):								
A	40,115 (26)	37,426 (22)	165 (26)	216 (9)	100 (75)	580 (17)	1,092 (19)	1,146 (14)
B	31,618 (7)	34,027 (23)	153 (34)	208 (23)	55 (41)	642 (19)	1,185 (37)	961 (39)
C	31,827 (5)	28,667 (13)	118 (19)	214 (29)	39 (10)	549 (14)	869 (32)	816 (22)
D	31,914 (2)	28,075 (2)	101 (12)	193 (23)	197 (3)	561 (7)	345 (2)	856 (18)
E	15,771 (1)	13,816 (4)	143 (3)	179 (39)	—	833 (8)	—	783 (7)
F	—	—	138 (3)	165 (25)	—	—	—	—
G	—	—	—	224 (2)	—	—	—	—
H	—	—	—	136 (2)	—	—	—	—
Tenurial status (2):								
Landlord-owners	—	—	154 (20)	180 (24)	81 (4)	—	—	—
Owner farmers	44,889 (5)	33,188 (48)	136 (33)	189 (47)	105 (69)	589 (7)	845 (6)	1,002 (35)
Owner-tenants	37,422 (5)	30,765 (11)	141 (38)	191 (49)	61 (18)	845 (7)	1,042 (76)	963 (23)
Tenant farmers	35,210 (31)	31,730 (5)	155 (6)	210 (32)	50 (38)	595 (51)	1,211 (8)	836 (42)
Overall	36,210 (41)	32,658 (64)	143 (97)	192(152)	82(129)	621 (65)	1,032 (90)	923(100)

Notes: 1. Farm size categories are as follows: For Indonesia, A = 0.1–0.4 ha, B = 0.5–0.9 ha, C = 1.0–1.4 ha, D = 1.5–1.9 ha, and E = 2.0 ha or above. For Thailand, A = 0.1–4.9 rai, B = 5.0–9.9 rai, C = 10.0–14.9 rai, D = 15.0–19.9 rai, E = 20.0–29.9 rai, F = 30.0–39.9 rai, G = 40.0–49.9 rai, and H = 50.0 rai or above. For Philippines, A = 0.1–0.9 ha, B = 1.0–1.9 ha, C = 2.0–2.9 ha, D = 3.0–3.9 ha, and E = 4.0 ha or above.

2. For the Philippine villages, the category of owner farmers should be read as CLT holders.
3. Malaysian villages are excluded as all the farmers applied practically the same quantity of fertilizer under a subsidy scheme.
4. Figures in parentheses are the number of farmers.

TABLE VI

AVERAGE YIELD PER HECTARE BY FARM SIZE AND TENURIAL STATUS IN THE STUDY VILLAGES (WET SEASON)

	Indonesia		Malaysia		Thailand			Philippines		
	I1 (RE)	I2 (RD)	M1 (GTS)	M2 (HC)	T1 (KJ)	T2 (PP)	T3 (NT)	P1 (M)	P2 (BH)	P3 (P)
Farm size (1):										
A	4.04 (26)	6.28 (22)	n.a.	3.20 (12)	3.16 (26)	3.45 (9)	4.73 (75)	4.28 (17)	5.45 (19)	4.10 (14)
B	3.25 (7)	5.23 (23)	n.a.	2.86 (15)	2.86 (34)	3.67 (23)	4.05 (41)	3.78 (19)	4.85 (37)	3.45 (39)
C	3.96 (5)	5.27 (13)	n.a.	2.50 (11)	2.73 (19)	3.44 (29)	3.73 (10)	4.23 (14)	4.95 (32)	3.40 (22)
D	4.45 (2)	4.43 (2)	—	—	2.51 (12)	3.71 (23)	4.59 (3)	4.10 (7)	3.00 (2)	3.40 (18)
E	4.80 (1)	5.43 (4)	—	—	2.49 (3)	3.69 (39)	—	4.68 (8)	—	4.15 (7)
F	—	—	—	—	2.34 (3)	3.88 (25)	—	—	—	—
G	—	—	—	—	—	3.24 (2)	—	—	—	—
H	—	—	—	—	—	3.53 (2)	—	—	—	—
Tenurial status (2):										
Landlord-owners	—	—	n.a.	—	3.19 (20)	3.84 (24)	4.57 (4)	—	—	—
Owner farmers	3.86 (5)	5.75 (48)	n.a.	2.89 (29)	2.78 (33)	3.71 (47)	4.29 (69)	4.19 (7)	5.35 (6)	3.60 (35)
Owner-tenants	4.41 (5)	5.12 (11)	n.a.	2.43 (4)	2.74 (38)	3.58 (49)	5.36 (18)	4.14 (7)	5.00 (76)	3.35 (23)
Tenant farmers	3.87 (31)	4.88 (5)	n.a.	3.24 (5)	2.84 (6)	3.44 (32)	4.19 (38)	4.14 (51)	4.25 (8)	3.65 (42)
Overall	3.93 (41)	5.59 (64)	3.83 (52)	2.89 (38)	2.86 (97)	3.64(152)	4.43(129)	4.14 (65)	4.95 (90)	3.51(100)

Notes: 1. Farm size categories for Malaysia are as follows: A = 0.1–0.9 acre, B = 1.0–1.9 acres, and C = 2.0 acres or above. For other countries, see note 1 under Table V.

2. For the Philippine villages, the category of owner farmers should be read as CLT holders.

3. Statistics refer to the average yield (tons/ha) in the wet season. Figures in parentheses are the number of farmers.

tion and the adoption of new technology, as is the case dealt with here. Among the study villages where share tenancy prevailed (see Table VII), in both I2 (RD) and T1 (KJ) this postulation appeared to hold true as there were no significant differences between owner farmers and tenant farmers in the amount of fertilizer applied. However, in I1 (RE) and T3 (NT) the level of fertilizer application by share tenants was significantly lower than owner farmers. This indicates the need for a new approach to cost-sharing analysis which, based on my findings, Hayami and Otsuka [8, p. 81] proposed as a multi-period framework of interlinked credit contracts. In other words, under the equal sharing arrangement of fertilizer cost, poor tenants could not raise funds to pay half the fertilizer cost at the time of purchase, so they obtained production loans from the landlord. The repayment was made in kind at the time of harvest at the ongoing paddy price, which was usually the lowest level of the year, resulting in much higher value than the actual loans. The implicit rate of interest charged by the landlord in this manner was as high as 50 per cent and discouraged the tenant from applying more fertilizer.

There is one more dimension in the significantly low level of fertilizer application by share tenants in the case of I1 (RE). As repeatedly mentioned, most landlords were absentee landlords residing in Bandung or Jakarta who made speculative investment in landownership. As such, they were not greatly concerned with rice production and came to the village only to collect their share of paddy and pay off their necessary financial burdens at or immediately after harvest. Certainly the fertilizer cost was to be equally shared or sometimes borne fully by the landlord, while it was to be paid fully by the tenant under another arrangement. The important fact observed was the higher amount of fertilizer application by the tenant under the latter agreement. In other words, absentee and speculative landlords with small interest in rice production tended to discourage the share tenant's efforts to improve production efficiency [7].

In terms of average yield per hectare, however, these differences in fertilizer intensity between owner and tenant farmers, and between share tenants of different cost-sharing arrangements, did not actually result in the anticipated levels of productivity in the seasons studied (Table VI). For instance, there was no significant yield difference between owner and tenant farmers in I1 (RE) and T3 (NT) where a larger amount of fertilizer was applied by owner farmers. This may be taken to suggest that tenant farmers were technologically better than owner farmers, or rented land is more fertile than owner operated land; however it is almost impossible to identify the actual causes in this analysis because yield is a final outcome of a combination of various factors. What should be clearly noted, therefore, is the fact that interlinked production loans and landlord disinterest in production activity tended to discourage share tenants from working toward a higher productivity.

IV. TENANCY SYSTEMS

The preceding section revealed high incidence of tenancy in the study villages in the four countries. Overall, there were broadly two forms of tenancy contract depending on the manner of rental payment. One was a contract where a fixed proportion of produce was paid as rent, which therefore varied from season to season in accordance with actual production. This is normally referred to as share tenancy. The other form of contract, normally called fixed rent tenancy, involved a fixed amount of rent either in cash or kind, which was to be paid irrespective of actual production.

Based on the information in Table VII, I would like to discuss in more detail the tenancy forms and conditions observed in the study villages, as there existed some clear regional patterns. In Indonesia, share tenancy was practically the only form of contract at the time of study. In Malaysia, share tenancy predominated on the East Coast (M2 [HC]), while on the West Coast (M1 [GTS]) fixed rent in cash was the major form of contract and share tenancy had completely disappeared a long time ago. In Thailand, the predominant form at the time of study was share tenancy in the northern region (T3 [NT]), fixed rent in kind in the central region (T2 [PP]), and fixed rent in cash in the southern region (T1 [KJ]), but share tenancy, the traditional practice, could still be observed in the latter two villages. It should be noted that in T3 (NT) where multiple-cropping was a common system of rice land utilization, share tenancy applied to rice production only and a fixed rental in cash was charged if upland crops were planted during the dry season. In the Philippines, although share tenancy was converted to leasehold (fixed rent in cash) under agrarian reform in 1972, some agreements were still in the form of share-cropping in all three villages. In all of the study villages, share tenancy was characterized by equal sharing of the produce with some exceptions in T3 (NT).

From the above summary of tenancy forms in the study villages, two important facts can be confirmed. First, share-cropping was the traditional form of tenancy in all the study villages. According to interviews with the farmers, this was also true for other villages in the respective areas, i.e., the major rice-growing areas in the four countries. This traditional form has been largely converted to other forms, mainly fixed rent, in some study villages, while it has continued to predominate up to the present in other study villages. Second, the conversion from share tenancy to other forms was politically enforced in the Philippine villages, but it was gradually promoted over a period of time through a combination of complex factors in the villages of the other countries. In Section V I will attempt to analyze the choice of tenancy forms using a logit function.

In the remainder of this section, let me explain briefly the nature and characteristics of other tenancy forms observed in the study villages. Fixed rent contracts

TABLE VII

PROPORTIONS OF TENANCY CONTRACTS BY FORM AND AVERAGE AREA RENTED PER CONTRACT IN THE STUDY VILLAGES

	Share-cropping	Fixed Rent in Kind	Fixed Rent in Cash	Lease	Mort-gage	Rent-free	Un-known	Average Area Rented per Contract (ha)
Indonesia:								
I1 (RE)	97.8	0.0	2.2	0.0	0.0	0.0	0.0	0.42
I2 (RD)	87.5	0.0	0.0	0.0	12.5	0.0	0.0	0.56
Overall	95.2	0.0	1.6	0.0	3.2	0.0	0.0	0.46
Malaysia:								
M1 (GTS)	0.0	7.0	60.6	23.9	0.0	8.5	0.0	0.50
M2 (HC)	76.3	6.5	3.2	1.1	2.1	9.7	1.1	0.31
Overall	43.3	6.7	28.1	11.0	1.2	9.1	0.6	0.39
Thailand:								
T1 (KJ)	12.9	0.0	39.6	0.0	39.6	6.9	1.0	0.51
T2 (PP)	7.2	62.5	21.4	0.0	0.0	8.9	0.0	1.84
T3 (NT)	60.9	0.0	34.5	0.0	1.6	1.6	1.4	0.62
Overall	21.3	25.7	31.3	0.0	15.1	6.6	0.0	1.09
Philippines:								
P1 (M)	8.8	0.0	71.9	0.0	1.8	1.8	15.7	1.91
P2 (BH)	8.3	0.0	16.7	0.0	16.7	41.7	16.6	0.92
P3 (P)	2.6	0.0	92.3	0.0	0.0	0.0	5.1	1.62
Overall	6.5	0.0	73.1	0.0	2.8	5.6	12.0	1.70

Note: Figures for Malaysia refer to the West Coast (seventy-one contracts) and the East Coast (ninety-three contracts) respectively as of 1978.

involved the payment of a fixed amount of rent every season after harvest. From Table VII it can be seen that cash payments predominated, except in T2 (PP). It is likely that commercialized farmers in Suphan Buri preferred paying rent in paddy because of greatly fluctuating paddy prices and the common practice of selling all the produce immediately after harvest. In other words, the rent was paid in cash in practice or the landlord himself was also at the harvesting field to sell his share, but the formal agreement was in a fixed amount of paddy, pointing to a fluctuating value of rent in correspondence with the price level. The level of agreed rent, however, varied considerably from one village to another, reflecting various complex factors including demand for land, productivity, and landlord-tenant relations. For instance, my past study revealed that rent would be lower than otherwise if the agreement was established between relatives [1]. The mechanism of rental determination will be clarified by a regression analysis in the next section.

Mortgaging land was a customary way for landowners to raise a large sum of money, some of whom had to do so for subsistence reasons while others raised funds to repair homes or send children to school in the city. Mortgaging has been generally discouraged by the respective governments, but it was still practised to a large extent in T1 (KJ), and to some extent in P2 (BH) and I2 (RD). In the latter two villages where tenancy itself was rather rare, the practice of land mortgaging was also very limited and actually exceptional. In other words, such mortgage was still commonly practised only in T1 (KJ).

Somewhat between fixed rent tenancy and land mortgaging was a leasing contract in Malaysia called *pajak*. This involved an advance payment of rent for a contracted fixed period, usually running from four up to ten seasons, whereas fixed rent tenancy was usually renewed automatically in all the villages where it was observed. Because of the relatively large sum of cash required, this form of contract came to be preferred among poor farmers as a means of raising funds, thereby substituting for traditional land mortgaging. On the other hand, it was naturally accepted by better-off farmers who could meet the cash demand. In more recent years, it has been utilized in a positive way by enterprising farmers as a means of securing land for a fixed period, even if at a higher rent, with the greatly improved profitability of rice farming under government subsidy schemes in the 1980s [3].

Rental-free agreements were commonly observed, except in I1 (RE), I2 (RD), and P3 (P), and constituted nearly 10 per cent of all tenancy contracts in M1 (GTS), M2 (HC), T1 (KJ), and T2 (PP). These contracts were mostly limited to very close relatives, usually between parent and child, in which the better-off landowner provided a piece of land for his/her child to earn a living until the time of inheritance or purchase of land. This may be considered as parental assistance to the young couple who is newly beginning farming. The exceptionally high rate of this form in P2(BH) reflects the fact that most landowners were still deemed owners who were prohibited from renting out their land under the Philippines' agrarian reform program, and the closed tenancy market created in this way necessitated that some able farmers provide a part of their land to their children without a rental payment.

Following this discussion of tenancy forms, we now need to look into the nature of landlord-tenant relations in the study villages, as they appeared to execute significant influences not only in the determination of tenancy form and conditions but also the actual enforcement of contracts. Table VIII provides a breakdown of tenancy contracts by landlord-tenant relationship, occupation, and age of landlord. The predominance of kinship was observed in more than half of the study villages, whereas absentee landlords in I1 (RE), P1 (M), and P3 (P) appeared to be mostly non-relatives of the tenant farmers. This was reflected in the occupational structure of the landlords. They were mostly part of the non-farming population, whereas the farmer landlords tended to rent out their land to relatives. It is interesting that in the case of the three Philippine villages, the absentee landlords who were non-farmers

TABLE VIII

PROPORTIONS OF TENANCY CONTRACTS BY LANDLORD-TENANT RELATIONSHIP IN THE STUDY VILLAGES

	Indonesia			Malaysia			Thailand				Philippines			
	I1 (RE)	I2 (RD)	Overall	M1 (GTS)	M2 (HC)	Overall	T1 (KJ)	T2 (PP)	T3 (NT)	Overall	P1 (M)	P2 (BH)	P3 (P)	Overall
Kin relations:														
Close relatives	17.4	37.5	22.6	57.8	54.8	56.1	43.6	49.1	32.8	43.4	12.3	66.7	10.3	17.6
Distant relatives	2.2	37.5	11.3	19.7	18.3	18.9	17.8	17.0	9.8	15.7	3.5	16.7	10.3	7.4
Non-relatives	71.7	25.0	59.7	22.5	26.9	25.0	37.8	33.0	54.1	39.4	82.5	16.7	79.4	74.1
Unknown	8.7	0.0	6.4	0.0	0.0	0.0	1.0	0.9	3.3	1.5	1.7	0.0	0.0	0.9
Occupation of landlords:														
Farmers	28.3	75.0	40.3	n.a.	n.a.	n.a.	72.3	56.3	62.3	63.5	10.5	58.3	30.8	23.1
Professionals	4.3	0.0	3.2	n.a.	n.a.	n.a.	0.0	17.9*	4.9*	8.4*	22.8	0.0	12.8	16.7
Salary earners	28.3	18.8	25.8	n.a.	n.a.	n.a.	2.0	6.3	1.6	3.6	n.a.	n.a.	n.a.	n.a.
Trader/business	6.5	0.0	4.8	n.a.	n.a.	n.a.	15.8	11.6	18.0	14.6	15.8	25.0	38.5	25.0
Retired	19.6	6.2	16.1	n.a.	n.a.	n.a.	5.0	2.7	3.3	3.6	26.3	0.0	0.0	13.9
Others	13.0	0.0	9.7	n.a.	n.a.	n.a.	4.9	5.4	9.8	6.3	24.6	16.7	17.9	21.3
Age of landlords:														
Less than 40	15.3	31.2	19.4	n.a.	n.a.	n.a.	22.8	7.1	16.4	15.0	7.0	25.0	0.0	6.5
40–60	41.3	50.0	43.5	n.a.	n.a.	n.a.	52.5	58.1	44.3	52.9	22.8	41.7	43.6	32.4
60 or more	43.5	18.8	37.1	n.a.	n.a.	n.a.	22.8	34.8	39.3	31.4	70.2	25.0	56.4	60.2
Unknown	0.0	0.0	0.0	n.a.	n.a.	n.a.	1.9	0.0	0.0	0.7	0.0	8.3	0.0	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes: 1. Figures for M1 (GTS) and M2 (HC) in Malaysia refer to the West Coast and the East Coast respectively as of 1978.
2. Figures with asterisks indicate landowners whom tenants referred to “professional landlords,” people who are likely to be elderly landowners dependent upon rental income.

tended to be older than sixty years, which suggests that many of the small landlords exempted from the Operation Land Transfer could have been older people, either retired or dependent on petty trading.

V. ECONOMETRIC ANALYSIS OF TENANCY CONTRACTS

A. *Tenancy Incidence Function*

The preceding sections revealed a large variation in the rate of tenancy across the study villages. Theoretically, many factors can be considered responsible for the incidence of tenancy, but the earlier analysis of land tenure suggested that tenancy incidence would be high if population pressure was high, land area owned by the farmers was limited, landownership distribution was skewed, and off-farm employment opportunities were limited. In other words, the smaller the area owned by the farmers and the more economically important the role of rice farming, the higher should be the demand for tenancy. In this section I will attempt to confirm the causes of tenancy incidence by a regression analysis using the following model.[8]

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5,$$

where

Y = the frequency of tenancy contracts, as expressed in the percentage of rice land area under tenancy to the total area of rice land operated in the village (per cent),
X_1 = the average rice income per family member among tenant households in the village relative to per capita national income in the respective countries (per cent),
X_2 = the average gross rice income per season among tenant farmers relative to the possible wage income for an agricultural worker's household in the village (wage rate multiplied by 150 days for one rice cropping season) (per cent),
X_3 = the population pressure on rice land in the village (persons/hectare),
X_4 = the average farm size per farm household in the village (hectare), and
X_5 = the proportion of landowner households to the total number of households in the village (per cent).

Among these independent variables, X_1 and X_2 are related to the economic importance of tenancy, and X_4 and X_5 are indicators of size and distribution of

[8] Computation of the various regression equations reported in this section was carried out by Dr. Rangsan Pitipunya, then a graduate student at Tokyo University of Agriculture. I wish to express my appreciation for his contribution to the present study.

landownership. In view of the small number of cases ($N = 10$) used in regression analysis, the above variables were put into two models. The results of the estimation are presented in Table IX. The coefficients of determination (adjusted R^2) indicate that as much as 79 per cent and 31 per cent of the total variation in tenancy incidence could be explained by the three variables included in the two models respectively. The *t*-statistics show that four regression coefficients are statistically significant at least at the 10 per cent level. These results may be interpreted as follows.

First, X_1 is the proportion of tenant's rice income to the per capita national income and its mean value for the ten villages was 19.3 per cent, with a range from 5.1 per cent in I1 (RE) to 37.2 per cent in P3 (P). All three villages in the Philippines showed a proportion higher than 30 per cent, while the Indonesian and Malaysian villages had a figure lower than 10 per cent. These figures indicate that rice income among the tenant farmers was generally much lower than the national average. Although some farmers had other jobs in addition to rice farming, the major source of income for an average rice farmer in these rice double-cropping villages was certainly rice farming. In other words, it is expected that the higher the tenant's rice income, the stronger the demand for tenancy. However, the regression coefficient has a negative sign attached. This unexpected result may stem from the overwhelming impact of I1 (RE) where tenant's farm size and income were very small while tenancy incidence was very high.

Second, X_2 indicates the level of rice income for tenant farmers relative to an expected income for agricultural workers. The mean value for the ten villages was 285 per cent, with a range from 67 per cent in M2 (HC) to 682 per cent in P1 (M). Because this is the gross income from rice production, it does not necessarily correspond to the net income of tenant farmers, presenting a possibility of bias toward overestimation. At the same time, however, the expected wage income for agricultural workers was estimated on the basis of 150 days per season (six months). Because wage jobs in rice farming were not necessarily available every day, the above assumption carried a possibility of overestimation. In other words, the variable X_2 may be a good indication of relative income for tenants and agricultural workers. The estimated regression coefficient is significant and the sign is positive, indicating that the higher the rice income over and above the expected wage income, the stronger the demand for land, with resulting higher incidence of tenancy contracts. This result per se is quite understandable, but it must be noted that higher incidence of tenancy may be accompanied by the existence of much poorer wage laborers in the study villages.

Third, X_3 is the village population relative to land area. In other words, this is a man-land ratio for each village, with an average of 7.19 persons per hectare, ranging from 1.8 in T2 (PP) to 19.1 in I1 (RE). It was expected that the higher the ratio, the higher the rate of tenancy, but the regression coefficient is not statistically sig-

TABLE IX

ESTIMATES OF TENANCY INCIDENCE FUNCTION

Variables	Model I		Model II	
	Regression Coefficients	*t*-values	Regression Coefficients	*t*-values
Constant	73.7207	7.158	47.0577	1.729
b_1	–1.0494**	–2.222	–3.7646	–1.887
b_2			0.2247*	2.268
b_3			0.2272	0.125
b_4	25.3818***	3.313		
b_5	–0.8852***	–5.753		
Adjusted R^2	0.7859		0.3118	
F statistic	12.0093		2.3589	
DW ratio	3.3535		2.5082	
No. of cases	10		10	

Note: The regression coefficient for X_1 in Model II is also significant at the 12 per cent level.
*** Significant at the 1 per cent level.
** Significant at the 5 per cent level.
* Significant at the 10 per cent level.

nificant, indicating that population pressure is not a determinant of tenancy incidence. As will be shortly shown, this variable appeared to be a significant determinant of rental level in these villages. It seems that in the study villages where landownership was generally small in size, a lower population pressure did not necessarily mean ample access to land. Regardless of difference in the man-land ratio, the existing population in all the villages appeared to be too large for the limited land area available for the villagers.

Fourth, X_4 is the average farm size for all farmers and its mean value was 1.40 hectares for the ten villages, with a range from 0.57 hectare in I1 (RE) to 3.02 hectares in T2 (PP). The positive sign of the regression coefficient points to a positive relationship between farm size and tenancy incidence. This is consistent with the earlier argument that tenancy functioned as a means of expanding farm size among some farmers. It also means that larger farm size with an expected higher rice income tended to create a stronger demand for tenancy.

Fifth, X_5 reflects landownership patterns in the villages. The mean value for the proportions of landowner households was 55.0 per cent for the ten villages, with the lowest being 8.7 per cent in P1 (M) and the highest being 88.3 per cent in T1 (KJ). It is quite understandable that the regression coefficient has a negative sign, indicating that the higher the proportion, the lower the rate of tenancy incidence. In other words, as amply discussed in the preceding sections, a higher incidence of tenancy tended to occur in a village where a higher proportion of households did not own rice land, I1 (RE) and P1 (M) being the two typical cases.

In sum, in the ten study villages located in major rice-growing areas, some villages had a predominance of tenants and others owner farmers. The regression analysis revealed the common factors in high incidence of tenancy to be skewed landownership distribution, higher rice income relative to wage income, and a prospect of increasing rice income through the expansion of farm size.

B. *Rent Function*

In this subsection I will conduct an analysis of rental determination. As rents were of different levels and paid in different forms across the study villages, it is necessary to measure the average rent in a common manner in order to examine the impact of possible determinants. In this study, the agreed level of rent under the major form of tenancy contract was converted to the proportion of average yield of the tenant farmers and expressed in terms of a percentage for each village. The highest rate (50.0 per cent) was observed under share tenancy in I1 (RE), I2 (RD), and M2 (HC), while the lowest (15.3 per cent) was recorded in T1 (KJ), the overall average being 30.7 per cent. With this proportion as a dependent variable, a regression analysis was conducted to identify the quantitative relationships between the rental level and explanatory variables. The following regression equation showed statistically the best results:

$$Y = -17.9747 + 0.0048X_1 + 2.5440^{***}X_2 + 0.2315^{**}X_3,$$
$$\quad (-1.389) \quad (1.932) \qquad (5.769) \qquad\quad (2.553)$$

Adjusted $R^2 = 0.7762$, F statistic = 11.4047,
DW ratio = 2.8574, $N = 10$,

where X_1 is the average yield of tenant farmers (kilograms/hectare) which is taken to indicate differences in the quality of land under the prevailing technological level. The mean value was 3,750 kilograms with a range from 2,055 kilograms in M2 (HC) to 5,075 kilograms in P2 (BH). The expectation is that the higher the land fertility or yield, the higher the rate of rent. X_2 is a variable related to the availability of and the demand for land in the tenancy market. This is expressed in terms of a man-land ratio or population pressure on rice land (persons/hectare) for each village. This was not a significant determinant of tenancy incidence, but a positive relationship is expected in that the higher the population pressure, the higher the rate of rent because of the ample existence of alternative tenants. X_3 refers to landlord-tenant relationship and is expressed in terms of the proportion (per cent) of kinship-based contracts relative to the total number of tenancy contracts in the village. The mean value was 53.8 per cent, ranging from a low of 16.1 per cent in P1 (M) to a high of 83.3 per cent in P2 (BH). It is expected that the higher the rate of kinship-based contracts, the lower the level of rent because better-off landowners tend to provide a lower rent to their relatives under the tradition of mutual assis-

tance.[9] However, there was also an indication of higher rent in the case of kinship-based contracts in Thailand [2]. Therefore, this variable was included in the model with the primary objective of examining the general direction of the impact of kinship on rental level in the study villages in four countries.

The coefficient of multiple determination (adjusted R^2) indicates that 78 per cent of the total variation in rental levels could be explained by the three variables included in the model. Figures in parentheses are *t*-values. Regression coefficients for X_2 and X_3 are highly significant, and that for X_1 is also significant at the 12 per cent level. These results indicate that the level of rent becomes higher as the level of average yield and population pressure increase in the village. The impact of kinship is also seen to raise the rental level. This result may have stemmed from the predominance of kinship-based tenancy contracts in I1 (RE) and M2 (HC), where share tenancy was the major form of contract. It is also possible to perceive the phenomenon as a reflection of the fact that under higher population pressure and stronger demand for land, which tended to raise the rental level, tenancy contracts were more likely awarded to kin by landowners. If this is so, it simply means that the rental level increases as the demand for land increases, and kinship plays an increasingly important role under the tighter tenancy market, giving a superficial impression that kinship raised the rental level.

A similar analysis of rental determination was conducted using the estimation of a rent function in M1 (GTS) in 1978, based on a total of forty-five tenancy contracts for which a variety of information was confirmed [1, p. 102]. With the estimation of a similar function for 1987 data (forty-two tenancy contracts for which information was available), some changes in the relative importance of determinants can be noted. Table X presents the estimates of rent functions for two different points in time for the same village.[10] The variables used are as follows. The dependent variable, Y, is the average rent per acre per season, expressed in the Malaysian ringgit for each observation. X_1, land value, is also the same variable for both surveys and expressed in the Malaysian ringgit per acre. X_2 is a dummy variable for the existence of kinship ties in landlord-tenant relations: 1 for relatives, and 0 for non-relatives. X_3 is land area in acres under cultivation by a tenant in question before the tenancy contract was taken up. This variable was actually included in the computation of a different model for 1987 data as well, but it was not significant even at the 20 per cent level. X_4 is the total landholding of landlords, expressed in acres. The same information was not available for 1987 data. Instead, two new variables were added in the latest computation. X_5 is the average yield of tenant farmers during a normal season, expressed in terms of gantang per acre. This variable was also used

[9] This was clearly demonstrated in Malay villages during the 1970s [1].

[10] To be precise, the 1978 data were collected from two villages in the same sub-district in Northern District of Seberang Prai, one of which was M1 (GTS). The available data were not exactly the same for the two surveys.

TABLE X

ESTIMATES OF RENT FUNCTIONS IN M1 (GTS), 1978 AND 1987

Variables	1978		1987	
	Regression Coefficients	Standard Errors	Regression Coefficients	Standard Errors
Constant	163.871		49.446	
b_1	1.965**	1.004	0.0005	0.0011
b_2	–35.388**	16.654	62.613***	20.26
b_3	–6.057	4.637		
b_4	–4.565	2.860		
b_5			0.0292	0.085
b_6			72.7464***	22.35
R^2	0.202		0.286	
No. of cases	45		42	

Sources: For 1978, [1, p. 102]; for 1987, new computation.
*** Significant at the 1 per cent level.
** Significant at the 5 per cent level.

in one estimation for 1978 data, which was however not statistically significant. X_6 is a dummy variable for the form of tenancy contract: 1 for *pajak*, and 0 for *sewa* or fixed rent contract.

The average rent was 122 ringgit per acre in 1978 and 138 ringgit in 1987. A major factor for the increased average rent during the period was the increase in *pajak* rate (from 123 ringgit/acre to 164 ringgit/acre) compared to *sewa* rate (from 118 ringgit/acre to 130 ringgit/acre). The regression coefficient for tenancy form (X_6) is highly significant and has a positive sign, confirming a higher rental under *pajak* contracts. Regarding landlord-tenant relationship, the average rent in 1987 was 133 ringgit per acre for those contracts established between non-relatives and 144 ringgit per acre for kinship-based contracts. Judging by the signs attached to the regression coefficients, it functioned to lower the level of agreed rent in 1978, whereas the rental level tended to be higher in kinship-based contracts than otherwise in 1987. This new tendency probably reflects the increase of *pajak* contracts in the village including those contracts established between relatives.

C. *Logit Analysis of Tenancy Form*

Despite legal prohibition against share tenancy, it still existed in most of the study villages and certainly carried a much higher rate of rent than other forms of contract. In view of the stable practice of rice double-cropping in the study areas, the conventional explanation of risk is in itself not an adequate explanation for the continuation of share tenancy. In fact, in more recent economic studies of share tenancy, not only risk and transaction cost but also input incentive, wealth constraint, landlord's screening and cost-sharing aspects have been taken into consid-

eration [13]. Hayami and Otsuka [8, p. 174] argued recently that share tenancy was not necessarily inefficient, but an adequate explanation of its prevalence would need further analyses not only in the economics but also anthropology and sociology of agrarian contracts.

The remainder of this section will present the results of a logit function analysis in order to obtain some clues for a more comprehensive understanding, both in economic and non-economic terms, of contractual choice at the farm level. Using the case of T3 (NT), where a reasonable number of both share tenancy contracts and fixed rent in cash contracts coexisted at the time of study, a probability function for the form of tenancy was estimated using a logit model. This was computed by the maximum likelihood method for the following general form [14, p. 632]:

$$L = \log [P_i/(1 - P_i)] = a + b_i \log X_i,$$

where L is a log of the odd ratio, or the logit of incidence of occurrence of a certain tenancy form, and P is the probability for the ith tenancy contract to be a certain form. In this analysis of tenancy form in T3 (NT), the probability of fixed rent tenancy to occur was measured, as it is a new form. In other words, this analysis measures the impact of possible factors, including sociological factors, which are responsible for a new contract to be fixed rent tenancy instead of the traditional share-cropping, because the dependent variable in the logit model is expressed in terms of a 0 to 1 interval: 0 for share tenancy, and 1 for fixed rent tenancy. This variable was regressed on the following independent variables:

X_1 = the occupation of landlord: 0 for farming, and 1 for non-farming;
X_2 = the place of landlord residence: 0 for the same village as tenant, and 1 for a different village;
X_3 = landlord-tenant relationship: 0 for non-relatives, and 1 for relatives;
X_4 = the year of establishing contract: 0 for the 1970s or before, and 1 for the 1980s;
X_5 = the age of landlord (years);
X_6 = the area of rented land (rai);
X_7 = the distance of landlord residence from the field (kilometers);
X_8 = the age of tenant (years); and
X_9 = the farm size for tenant (rai).

Of various models estimated, three models with high significance levels of equation are presented in Table XI. In view of the preliminary nature of the application of the logit model to the analysis of contractual choice, the significance level is lowered to 20 per cent for testing the null hypothesis for each regression coefficient in this paper. It is then clear that a total of six regression coefficients (X_2, X_4, X_5, X_6, X_7, and X_9) are statistically significant at this level.

Two variables, X_2 and X_4, have a positive sign, but the remaining four are negative. It seems that a tenancy contract was more likely to take the form of fixed rent

TABLE XI

ESTIMATES OF TENANCY FORM FUNCTION IN T3 (NT): LOGIT MODEL

Variables	Model I		Model II		Model III	
	Regression Coefficients	*t*-values	Regression Coefficients	*t*-values	Regression Coefficients	*t*-values
Constant	0.4877	0.235	2.3468	1.544	2.1964	1.467
b_1	0.0865	0.114				
b_2	1.1800**	1.491				
b_3	–0.2095	–0.284	–0.0201	–0.032	–0.0624	–0.099
b_4	1.4849*	1.771				
b_5	–0.0222	–1.111	–0.0230*	–1.254	–0.0250*	–1.377
b_6	–0.0837	–0.296	–0.2277**	–1.508		
b_7	–1.8146***	–2.797	–1.4271***	–2.545	–1.4777***	–2.591
b_8	0.0276	0.798	0.0162	0.590	0.0203	0.714
b_9	–0.0690	–0.338			–0.1488*	–1.320
Significance level	0.0025		0.0016		0.0020	

*** Significant at the 1 per cent level.
** Significant at the 15 per cent level.
* Significant at the 20 per cent level.

when the landlord resided in a village different from the tenant's. This indicates that higher costs involved in implementing sharing arrangements had caused the incidence of fixed rent tenancy. Transaction costs tended to be higher not only for the landlord but also the tenant under share tenancy if they lived far apart, in that the former had to monitor the work of the latter from a distance, while the latter had to travel far for negotiation and to obtain inputs under cost-sharing arrangements. Moreover, compared to those contracts established before and during the 1970s, contracts established in the 1980s had a tendency to be fixed rent tenancy, indicating a gradual change in the villagers' minds to accept a transformation from the traditional share tenancy to modern cash contracts. In contrast, the older the age of the landlord, the smaller the area of rented land, the closer the field to the landlord's house, and the smaller the size of the tenant's farm, the more likely was a particular contract to take the form of share tenancy.

These tendencies seem to confirm the more traditional nature of share tenancy, i.e., if a small area of land is rented by a small tenant from a landowner living nearby, it tends to be contracted under share tenancy. This was particularly obvious when the agreement was made some years ago and continuously renewed to the present. However, with the growth of population in more recent years, an increasing number of farmers came to seek land beyond the traditional village boundaries,

TABLE XII

PROBABILITIES FOR INCIDENCE OF FIXED RENT TENANCY IN T3 (NT)

Models	Variables	Logit	Probability
I		–3.493	0.030
I	Landlord's residence: same village	–4.034	0.017
I	Landlord's residence: other villages	–2.854	0.054
I	Landlord-tenant relationship: non-relatives	–4.475	0.011
I	Landlord-tenant relationship: relatives	–2.990	0.048
II		–2.863	0.054
II	Landlord's age: 30	–2.307	0.091
II	Landlord's age: 70	–3.227	0.038
II	Contract area: 1 rai	–2.196	0.100
II	Contract area: 10 rai	–4.248	0.014
II	Distance: 0.2 km	0.598	0.645
II	Distance: 2 km	–1.971	0.122
III		–2.945	0.050
III	Farm size: 1 rai	–2.361	0.086
III	Farm size: 10 rai	–3.702	0.024

Source: Calculated from Table XI.

resulting in the emergence of tenancy contracts with landowners residing in different villages, and these contracts tended to be in the form of fixed rent.

The estimated regression coefficients were converted to probabilities for the incidence of fixed rent tenancy. The results are presented in Table XII. Allowing the variables to fluctuate within a certain range, the direction in the impact of different conditions on tenancy form can be identified. For instance, in relation to the location of landlord residence, there was a higher probability (5.4 per cent) for contracts to be fixed rent rather than share tenancy if the landlord lived in a village different from the tenant's. The probability for fixed rent tenancy was only 1.7 per cent if both lived in the same village. In terms of distance from landlord residence to the field, however, the highest probability (64.5 per cent) for tenancy to be in the form of fixed rent was when the landlord's residence was located at a proximity of only 0.2 kilometer. But this probability fell to 12.2 per cent for land located 2.0 kilometers away. This can be interpreted to suggest that a tenancy contract was most likely to be fixed rent for land located nearby the house of a landlord residing in a different village, i.e., the land located at a distance from the tenant's house, whereas the land located far from the owner's house could actually be near the tenant's house within the traditional village boundaries and with a tenancy contract established some years ago in the form of share-cropping.

A higher probability of fixed rent tenancy can be noted where there is kinship in landlord-tenant relations (4.8 per cent, as against 1.1 per cent between non-relatives). This reflects the nature of a tenancy market where contracts were sought

through kinship ties and personal relations, resulting in a higher probability for a landlord, living far away from the village, to contact his relative first for an agreement.

In the same manner, the analysis indicates that the agreement was more likely to be fixed rent tenancy where the landlord was younger (9.1 per cent for a thirty-year-old landlord, as against only 3.8 per cent for a seventy-year-old landlord), the smaller the area of rented land per contract (10 per cent if only 1 rai, as against 1.4 per cent for 10 rai), and the smaller the size of tenant's farm (8.6 per cent for 1 rai, as against 2.4 per cent for 10 rai). However, the generally low probabilities obtained indicate the limited explanatory power of the variables included in the analysis of the causes of fixed rent tenancy. In other words, the variables which were considered responsible for the determination of tenancy form were in fact not very convincing. Share tenancy may have persisted simply because of tradition or other factors which were not taken into consideration in the analysis. Yet some useful clues were obtained for factors which influence the shift of tenancy form from share-cropping to fixed rent in cash. Particularly suggestive are the location of landlord residence, landlord age, and the size of rented land and tenant's farm.

VI. CONCLUSION

There were broadly two objectives in writing this paper: the clarification of the current state of land tenure systems and rice production under different levels of technological innovation and macroeconomic change in Southeast Asia; and the examination of tenancy systems with reference to contractual forms, conditions, and landlord-tenant relations in relation to the varying general socioeconomic conditions in the region. This paper was based on primary data obtained from a total of ten village studies, conducted mostly in the 1980s, in the major rice double-cropping areas in Indonesia, Malaysia, Thailand, and the Philippines. In particular, landownership patterns, tenurial status, rice technology, tenancy forms and conditions, and landlord-tenant relations in the study villages were analyzed. This was followed by a series of econometric analysis of tenancy systems across the study villages, including the estimations of tenancy incidence function, rent function, and tenancy form function.

In this conclusion, some important facts and insights will be highlighted to provide a more comprehensive understanding of land tenure and economic development in Southeast Asia. First, it was made clear that landownership patterns and their economic implications differed in accordance with the conditions of each area. The study areas showed broadly two different types of conditions: one where a large population depended upon farming, and another where an increasingly large population moved out of the village and farming. Under the former condition, an obvious trend was the subdivision of landownership and the increased depen-

dence on tenancy and wage labor as village population increased. Certainly the maintenance of a reasonable farm size and greatly increased productivity through intensification of land use were the main agendas for poverty eradication and sustainable agricultural development. Some measures also needed to be taken for many landless villagers. Under the latter condition, there were frequent transactions in land rights through selling and buying as well as tenancy, especially with the increasing impact of urbanization in recent years. This was also accompanied by the possible accumulation of land by a small number of rich, most of whom were in the nonagricultural sectors especially in Indonesia and Thailand. The increasing conflict and loss of fertile farmland to nonagricultural purposes presented a serious challenge for agricultural sustainability in this type of area in the region. There was an obvious need for policy and institutional intervention to secure the continued existence of farmland and farming opportunities.

Second, tenancy of rice land was a common phenomenon in all the study areas, and its frequency of incidence appeared to be determined by skewed landownership distribution, higher rice income relative to wage income, and the prospect of increasing rice income by expanding farm size. In contravention of the common view of tenancy as detrimental to agricultural development, the prevalence of tenancy appeared to have provided an opportunity not only for landless villagers to earn a living but also for some farmers to expand the size of their farming activity. However, the form and conditions of tenancy differed according to area. Tenancy contracts were often established on the basis of kinship, but conditions of contracts showed a complex nature in relation to the impact of kinship. It appeared to function traditionally as a key factor in assisting poorer and younger relatives through the renting out of a part of the land owned by better-off villagers, but the role of kinship has been changing in recent years as economic opportunities in village society have widened. In the Philippines, however, the politically enforced agrarian reform program appeared to increase the role of kinship in establishing a tenancy contract in the institutionally closed tenancy market.

Third, the rental level also varied from area to area. One may postulate a positive relationship between rent and productivity, but the most significant factor in rental determination was not the level of technology and yield, rather it appeared to be the strength of demand for land which reflected a skewed landownership distribution, population pressure, and limited off-farm employment. In other words, a stronger demand for land tenancy resulted in not only small farm size but also a higher rent irrespective of the level of productivity. The final outcome of this mechanism seemed to be the poverty of tenant farmers. It therefore seems vitally important to provide off-farm employment for landless villagers while at the same time promoting further intensification of farming on the existing small farms.

Fourth, rice technology in the major rice double-cropping areas was generally at an advanced level in terms of the adoption of both yield-increasing and labor-sav-

ing technologies. Tenurial status and form of tenancy contracts per se were relatively insignificant determinants of rice technology and productivity. However, share tenancy in some cases appeared to have serious implications for the intensity of modern inputs use. It seemed that input incentives for tenants were restricted if the contract was accompanied by interlinked production loans and maintained by absentee landlords.

Fifth, a probability function of contractual choice revealed the relative importance of various determinants of tenancy form, including non-economic factors, in line with the argument put forward by a recent study [8]. It was confirmed in most of the study areas that the traditional form of tenancy was share-cropping and this has been gradually changing to fixed rent tenancy. Apart from the legal enforcement of such a change, there appeared to exist a number of reasons for the shift. This study analyzed a number of responsible factors in the case of a northern Thai village and discovered that the location of landlord residence and landlord age were highly significant. With the increased social mobility and change in value system in recent years, there emerged many landlords, young and residing far away from their tenants, who preferred fixed rent tenancy. This was caused by the increasing number of tenancy contracts established beyond the traditional village boundaries and which have increased the cost of implementing share tenancy arrangements.

Finally, it has been clearly demonstrated that a rural institution like contractual tenancy is multidimensional, and any overall theoretical evaluation for the region as a whole should await the accumulation of a very much larger number of systematic village studies within the context of the individual national economies. This paper should be regarded as a first step in this direction.

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