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EVOLUTION OF LAND TENURE SYSTEM IN A LAGUNA VILLAGE

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In spite of land reform regulations in the Philippines, an economic force is operating to produce a multi-stage landlordism. This paper reports the methods and results of a study conducted to investigate the process by which population pressure and changes in rice-growing technology are inducing changes in the land tenure system. A survey was conducted of all heads of households in a village of Laguna province during the period November, 1976, to January, 1977. The study findings show that population growth has been very high since the 1960s; that the number of landless farm workers has rapidly increased; that the average land holding per farm has decreased. Over the past decade, the tenure status of a large fraction of tenants has been converted from share tenancy to leasehold tenancy. The rates of land rent have not been raised, despite growing competition for land and the increased crop yields. Sub-tenancy arrangements have increased, in spite of land reform laws prohibiting such arrangements. The economic basis for the emergence of sub-tenancy is the gap between the actual rent and the functional share of land. This gap is a result of the population pressure on land. The same economic forces have resulted in the emergence of a labor contract known as "gama," in which hired workers agree to weed a field in exchange for the right to harvest the crop and receive one-sixth of the produce. Evidently the "gama" system has been adopted because it is profitable for both the employers and employees. It is more secure also; the farmer is guaranteed sufficient daily workers at harvest, and the workers are guaranteed employment.

Project "Dynamics of Agrarian Change"
Report No. 1

EVOLUTION OF LAND TENURE SYSTEM IN A LAGUNA VILLAGE*

Masao Kikuchi, Luisa Maligalig-Bambo and Yujiro Hayami**

In this study, based on an intensive survey of a typical rice village in the province of Laguna, we attempt to identify a wide spectrum of land tenure arrangements actually operating in the rice-growing area of the Philippines. Further, we try to analyze the process of evolution in the land tenure system in response to demographic and technological changes.

PROBLEM AND DATA

Focus of the study

For the past two decades the Philippines has experienced a high population growth rate over 3% per annum. Labor absorption in the urban sector being limited, agricultural labor force has increased at a rate higher than 2%. On the one hand, population growth would have added to the demand for food products and raised food prices, providing an incentive for the expansion of cultivation frontiers into more marginal areas. On the other, the increase in rural labor force would have increased competition to establish a right to cultivate the limited land area. Altogether, it seems reasonable to expect that the economic rent as a functional share of land in agricultural income has increased sharply.

However, partly because of social inertia and partly because of land reform regulations, the rate of rent actually paid to landlords had not increased so much. The surplus of the economic rent over the actual rent would have been captured by the tenants. The surplus would have also been increased with the increase in the productivity of land through the developments of irrigation system and agricultural technology such as modern semidwarf varieties. Such process is, in fact, reflected in the high premium of the tenancy right as high as 30% of land value.[1/]

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*This study was supported jointly by the International Rice Research Institute and the International Development Center of Japan.

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1/Hayami, Yujiro, and Luisa Maligalig. "Structure of Asset-Holdings of the Households in a Rice Village in Southern Luzon," International Rice Research Institute, Department of Agricultural Economics, Paper No. 70-20, 1976.

The difference between economic rent and actual rent may be realized as a part of mixed income of tenant farmers. Besides, there are cases where tenants capture the surplus more explicitly by sub-renting their rented land. Thus, an economic force is, operating in the Philippines to produce a multi-stage landlordism, despite the land reform regulations. A major focus of this study is to investigate the process by which the increasing population pressure, together with the developments in irrigation and rice-growing technology, may have induced changes in the land tenure system.

Data collection

In order to identify the spectrum of land tenure arrangements and their historical changes, a survey was conducted for November 1976-January 1977 in a barrio (village) in the province of Laguna. This is the village for which somewhat similar surveys were conducted in 1966 by Hiromitsu Umehara and, again, in 1974 by the International Rice Research Institute. Those previous studies provide the benchmark information with which the historical changes can be ascertained.

The survey was based on the interview with the heads of all households in the barrio. Data collected are primarily of 1976. However, to the extent possible we tried to collect data for 1956 and 1966. In the following, unless otherwise stated, the data for 1976 and 1956 are based on our survey; those for 1974 based on the previous IRRI survey; and those for 1966 based on the Umehara survey supplemented by our survey.

GENERAL CHARACTERISTICS OF THE VILLAGE

The village under study is located in about 90 kms south of Manila along the Laguna de Bay, the largest lake in the Philippines. The barrio is connected by a narrow unpaved road of about 2 kms to the poblacion (urban district) of the Municipality to which this barrio belongs.

The poblacion of this Municipality has been developed since the early Spanish period. Within the Municipality, this barrio represents a newly developed area, inhabited since the late 19th century. The major area in this barrio had been left uncultivated and used as a common pasture for grazing carabaos until the beginning of this century.

However, the major area in the barrio is now a well-developed paddy field. According to the aerial survey in 1976, only about 10 ha out of the total area of 350 ha in the barrio was the coconut grove and the rest was used as paddy fields. There is little difference in the elevation between the paddy fields and the Laguna de Bay demarcating the northeastern border of the barrio. Therefore, the fields are often flooded during the rainy season.

Rice farming is by far the most important source of income in this barrio (Table 1). Duck and hog raising are the common sideline enterprises. Coconuts are a very minor source of income of villagers. Except a few wealthy farmers who own housing lots, villagers are residing under the coconut trees only with the implicit consents of coconut owners living outside of the barrio. By custom, they are allowed to utilize the space below the trees by planting fruits and vegetables or raising livestock and poultry. In return, they serve as caretakers by clearing the undergrowth of the coconuts, etc.

Wage earnings are another major income source, especially for the households of landless farm workers. Major employment opportunities for the landless workers are the rice farming within the village, especially for planting, weeding and harvesting activities.

The most important change in the village economy for the past two decades was the extension of a national irrigation system to this barrio in 1958. The irrigation has enabled the double cropping of rice in all the paddy fields in the barrio, thereby doubling the rice yield per unit of physical area. It also converted the land used for upland crop into paddy fields, establishing a complete rice monoculture pattern.

Another major change was the introduction of modern semi-dwarf varieties of rice developed in the International Rice Research Institute and the University of the Philippines, College of Agriculture, located in the same province. According to the Umehara survey, no one in the barrio tried the modern varieties in 1966. In 1976, 100% of the farmers planted the modern varieties. The diffusion of modern varieties has been accompanied by the application of fertilizers and chemicals and by the adoption of improved cultural practices such as intensive weeding, straight-row planting, and the "dapog" method of seedbed preparation.[2/]

As the result of the improvements in irrigation and technology, the average paddy yield per hectare of planted area in this village increased as follows:

	Wet season	Dry season	Total
	----------cavans/ha----------		
1956	56.2	0	56.2
1966	53.0	69.5	122.5
1976	69.8	79.4	149.2

[2/] The "dapog" method prepares the seedbed with banana leaves on dry land, usually in the yard of farmer's house. Seedlings are transplanted to the fields in a very early age. Picking and transporting of the seedlings are much easier in this method, though it consume more seeds than the traditional wet seedbed preparation. However, this method is effective only in the fields of good water control.

Another aspect of technological innovation in agriculture is reflected in the changes in the holdings of productive assets (Table 2). From 1966 to 1976, the number of hand tractors increased from 14 to 24. In contrast, the number of carabaos declined from 21 to 8, indicating the process of substitution of automotive power for animal power. Corresponding to the introduction of the seed-fertilizer technology, the numbers of sprayers and rotary weeders increased dramatically.

DEMOGRAPHIC AND OCCUPATIONAL PATTERNS

Population

Data available for estimating the changes in population growth rates in this barrio since the first national census are shown in Table 3.

The population growth rate in this barrio was very high, as much as 2.7% per annum for 1903-1976. Moreover, the rate was accelerated from 2.3% for 1903-1966 to 5.3% for 1966-76. The population growth rate for 1903-60 was substantially higher in this barrio than in the whole Municipality, reflecting the fact that this barrio represented a frontier in this area. However, for 1960-75, there is almost no difference between the barrio and the Municipality.

Since the population growth rate in this barrio for 1966-76 was substantially higher than in the Philippines (about 3% per annum), it seems reasonable to expect that there was a net migration into the barrio in addition to a high natural reproduction rate. From 1966 to 1976 the pyramid of population distribution by age groups widened its base distance, indicating the sharp rise in the birth rate (Figure 1). By comparing the distribution of 1976 for the population above 10 years old with the distribution of 1966, we can infer that there were relatively large net inflows of the male population of 20-24, 25-29 and 45-49 years old, and of the female population of 25-29 to 45-49 years old.

As the result of the large net inflow of the people in economically active ages, the ratio of the economically inactive population (less than 15 and more than 65 years old) to the active population (15 to 65 years old) declined from 1.21 in 1966 to 0.98 in 1976, despite the rapid increase in the infant population.

Households

The increase in the number of households from 1966 to 1976 paralleled with the growth in the population (Table 4). The total number increased from 66 to 109 households, but it is dramatic to observe that, while the number of farmer households increased rather slowly by 20% per decade, the households of landless workers increased by as rapidly as 170%.

Especially, all the households increased from 1974 to 1976 belonged exclusively to the landless class. As the result, the share of landless households in the total number of households increased from 30% to 50%. Rapid increases in the number of landless worker households reflect the strong population pressure on the limited land area for cultivation.

The households in the barrio were created either through the independence of children from parents within the barrio or through migration from outside of the barrio. Out of the total of 109 households existing in the barrio in 1976, 75 households were formed through independence and 34 through migration (Table 5). It is remarkable to observe that the ratio of landless workers in the households created through independence increased over time; this trend indicates the growing difficulty for the parents in the farmer households in this barrio to subdivide their land for cultivation by children at their independence. Due to the limitation of cultivated area within the barrio, the chance became smaller for children to become independent as farm operators.

The number of households migrated from outside began to increase rapidly in the 1960's, and the ratio of those migrated as landless workers also increased sharply. Table 6 shows the migrations classified according to the reasons of migration for 1966-76. It is indicated that in earlier years more people migrated into this barrio as farmers by acquiring land either through marriage or some other means, whereas in later years more people migrated only because employments were available as landless farm workers. Such trends reflect the growing scarcity of land for cultivation as well as the growing opportunities for agricultural employment in this barrio due to the intensification of rice farming resulted from the improvements in irrigation system and the diffusion of seed-fertilizer technology.

The class demarcation between farmers and landless workers was not fixed. It was fairly frequent that landless workers became farmers by acquiring land through various processes, and _vice versa_. Twenty three out of 55 farmers are those who moved up from the landless class, and 26 out of 54 landless workers are those who stepped down from the farmer class (Table 7). It is important to notice that the inter-class movements have become more frequent for more recent years, corresponding to the acceleration in the population growth. Such a tendency suggests a process by which the population pressure has intensified the competition in the acquisition of land for farming.

LAND HOLDINGS

Land ownership

In 1976, the area of paddy fields cultivated by 54 farmers residing

in the barrio was 108 ha which were owned by 66 landlords.[3] In 10 years ago, 104 ha cultivated by 46 farmers were owned by 41 landlords. The ownership distribution became more dispersed during the decade. Twenty one out of 54 farmers were renting land from 2 to 8 landlords.

The barrio residents who owned rice land were only 3, and none of them owned more than 1 ha. Such absentee landlordism is common in rice-producing areas in the Philippines. However, unlike Central Luzon where the hacienda system prevails, the landlords in this area are relatively small and most of them are living in the same municipality (Table 8).[4]

Operational land holdings

The average farm size measured in terms of average paddy field area per farm operator had been stable at 2.3 ha for 1956-66, but it declined from 1966 to 1976 corresponding to the acceleration in population growth rate (Table 9).

The process by which the population pressure resulted in the reduction in the average operational holding can be inferred from the changes in the farm-size distribution (Figure 2). In 1956, the distribution was bi-modal; the largest and the second largest fractions of farms belonged to the size-classes of 3-5 and 1-2 ha, respectively.[5] From 1956 to 1966, the percentage of farms belonging to the class of 3-5 ha declined with the corresponding increase in the class of 2-3 ha.

From 1966 to 1976, the percentages of the classes of 3-5 and 2-3 ha declined, and the share of the class of 1-2 ha was increased. The process shows clearly that the land was first transferred from the 3-5 ha class to the 2-3 ha class and, later, moved to the 1-2 ha class.

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[3] There were other fields within the barrio, which were cultivated by farmers residing in the poblacion or neighboring barrios. One of 55 farmers was, in fact, a widow having ownership for a part of her farmland and leasehold title for another part, but does not cultivate the land by herself and let her grandson and nephew to cultivate. Thereby, in the following tabulations, we have omitted her from the data.

[4] See Hiromitsu Umehara, A Hacienda Barrio in Central Luzon: Case Study of a Philippine Village, Institute of Developing Economies, Tokyo, 1974.

[5] The 1956 data should be taken with reservations, because the data refer only to those still living in the village at the time of survey in 1976. Therefore, there is certain underestimation both in number of farmers and in rice area for all size classes.

LAND TENURE SYSTEM

Distribution of tenancy

In this barrio all the farmers are tenants in some sorts. Traditionally, the share tenancy was the most common tenure type; about 70% of the farms belonged to this category in both 1956 and 1966 (Table 10). From 1966 to 1976, the land tenancy distribution experienced a major change. The conversion of the share to the leasehold tenancy since 1968 by the Agricultural Land Reform Code (R. A. 3844) in 1963 resulted in a marked decline in the number of share tenants.6/

Another significant change, which can be observed from the changes in the distribution of land plots under various types of tenancy, was an increase in the land under the "sub-tenancy" (Table 11). The number of the plots that the tenants rented to the sub-lessees increased from only 1 in 1956 to 5 in 1966 and, further, to 16 in 1976.

The sub-tenancy is illegal in terms of the land reform laws, and the contract is usually made without the formal consent of the owner of land. The fact that the land under sub-tenancy has been increasing against the law indicates that the rent actually paid by tenants to landlords increased less than the economic rent or the functional share of land, producing a substantial surplus to be captured by the tenants. As hypothesized previously, such tendency should have been the result of the increased competition to farm land due to population pressure and on the increased productivity of land due to the improvements in irrigation and technology.

Leasehold tenancy

The leasehold tenancy with the fixed rent in kind (paddy) is now a dominant tenure type in this barrio. However, traditionally the leasehold tenancy was limited to a small number of large farmers, as indicated by the relatively large farm and plot sizes of leasehold tenants in 1956 and 1966 (Tables 10 and 11). The average farm and plot sizes of leaseholders declined from 1966 to 1976 partly because relatively small-sized share tenants were converted into leaseholders through the Land Reform programs, and partly because the large holdings were sub-divided under the growing population pressure.

6/ The 1963 code was developed to the Code of Agrarian Reform (R. A. 6389) in 1971, which was further reinforced by Presidential Decree No. 2 and No. 27 after the Declaration of Martial Law in 1972.

From 1956 to 1966, the average rice yield per hectare of paddy field area cultivated by the leasehold tenants was more than doubled, due to the extension of the National Irrigation System that enabled the double cropping of rice (Table 12). Meanwhile, the rent paid in kind increased only by 70%, resulting in the reduction in the average share of landlords in rice output from 24% in 1956 to 19% in 1966. During 1966-1976 there was no change in the average share of rent.

Actually, the share of rent for the old leaseholders continued to decline from 19% in 1966 to 16% in 1976. However, the average share for the whole leasehold area did not decrease because to the new leaseholders converted from share tenants a higher rate of rent was applied than to those who had held the leasehold title since before the Land Reform Operations.

The lease contracts have been more formalized with the progress of the land reform programs. In 1966, none of the leasehold tenants had a written contract. Whereas, in 1976, 25 out of 44 leasehold plots were under the written contracts.7/

Corresponding to the formalization of the lease contracts, the benevolent relations between landlords and tenants were reduced. The loan advanced by the landlords to the tenants, which used to be one of major credit sources, is now of a minor importance in this barrio (Appendix Table A).

Also, the arrangements of rent reduction in bad-crop seasons were reduced; the ratio of the plots under such contracts to the total number of leasehold plots declined from 66% in 1966 to 27% in 1976 (Table 13). Almost none of the plots converted from the share to the leasehold tenancy has the rent-reduction practice.

Share tenancy

There are large variations in the form of share tenancy in terms of the sharing of output and cost, that underwent significant changes from 1966 to 1976 (Table 14). In 1966, all the plots under share tenancy were under the arrangement of sharing both output and cost equally between tenants and landlords.

In 1976, 17% of the plots had the arrangement for the tenants to receive 75% of the output while shouldering 100% of the cost; this arrangement is fairly similar to the leasehold tenure because the Land Reform

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7/ The written contracts were more pervasive for the plots converted from the share to the leasehold tenure; 21 plots out of 31 new leasehold plots were under the written contracts, whereas 8 out of 13 old leasehold plots were under the oral contracts.

programs assume the determination of rent for the newly converted leasehold land in terms of 25% of average yield for three normal crop years preceding to the year of tenure change.

There was one case in which the landlord receives 80% of output while paying 100% cost. In this arrangement, the role of the tenant is more like a farm manager or supervisor (called "katiwala" or "encargado") than a farmer.

In the traditional equal-share arrangement, the cost sharing is not exactly 50:50. The most common sharing arrangement in this barrio is: 100% of the cost for land preparation borne by tenants; 100% of irrigation fee borne by landlords; and other costs, including seeds, fertilizers and chemicals, planting, weeding, harvesting and threshing, are shared equally. There are other variations; for example, the whole cost of fertilizers and chemicals in addition to the irrigation fee is shouldered by the landlords. The trend in the past decade was such that the cost sharing became more favorable for tenants.

Most of the farmers who were converted from the share to the leasehold tenants replied that the change was profitable to them. Nevertheless, more than 20% of farmers have been maintaining their status as share tenants, despite the fact that their tenure can be changed to the leasehold if they request to the Regional Office of Agrarian Reform.

Why don't they try to change their tenure status? Their answer was that their landlords were either relatives or friends who have been good to them. In fact, 18 out of 24 plots under the share tenancy in 1976 were those for which landlords and tenants were relatives. The benevolent relations between share tenants and their landlords are reflected by the fact that none of them has exchanged a written contract.

Sub-tenancy

A remarkable change in the land tenure system in the last two decade was the rapid increases in the number of plots and the area under the sub-tenancy arrangements as observed in Table 11.

The sub-tenancy can be classified into three categories. First, the sub-lessor and the sub-lessee share the output and the cost on the 50:50 basis; this is the most common type to which 9 out of 16 plots under the sub-tenancy in 1976 belonged.

Second, the sub-lessor receives a fixed rent from the sub-lessee. This is rather a special type; only 2 cases belonged to this category, both of which were the cases in that fathers sub-leased their tenanted land to their sons.

Third, the sub-renting takes a form in which the sub-lessor put his land in pawn to the sub-lessee; in other words, the sub-lessee advances a credit to the sub-lessor in order to establish a right to cultivate a land for the period until the loan is paid back. This type can be sub-divided into 3 categories: (a) the sub-lessor receives a share rent; (b) the sub-lessor receives a fixed rent; and (c) the sub-lessor receives no rent.

The numbers of plots under those categories of sub-tenancy have all been increased for the past two decades (Table 15). Correspondingly, the number of farmers cultivating the sub-rented land has increased sharply (Table 16).

All the plots under the sub-tenancy arrangements were the land for which the sub-lessors held the leasehold titles. The condition for such a sub-tenancy system should be that the rents actually paid from the leasehold tenants to landlords were somehow held lower than the functional income share of land; thereby the surplus was created to be captured by the tenants.

In fact, partly because of social inertia and partly because of the land reform regulations, it has been difficult to raise the rates of rent under the leasehold tenancy, even if the productivity of land has been increased due to improvements in irrigation and rice-growing technology (see Table 12). Thus, the opportunity has increased for the leasehold tenants to transform themselves into intermediate landlords.

As a test of the hypothesis that the gap between the functional share of land and the actual rent provided a condition for the emergence of sub-tenancy, we have estimated the factor shares of rice output for the 1976 wet season for different tenure types, by imputing unpaid factor inputs by market prices. The results show that the share of land was lowest and the operators' surplus was the highest for the land under leasehold tenancy, in both absolute and relative terms (Table 17). In contrast, the share of land was the highest and no surplus was left for farm operators under the sub-tenancy. It is clearly shown that the substantial surplus for leasehold tenant operators provided as opportunity to become intermediate landlords; the surplus represents a basic force underlying the emergence of a multi-stage landlordism against the Land Reform Laws.[8/]

8/ If a sub-lessee reports to the Regional Office of Agrarian Reform and proves that he is the actual cultivator of the land, he can obtain a formal title of leasehold tenancy by forfeiting his lessor's title. In fact, there occurred such cases, one each in 1970 and 1975. The sub-lessees took such action when the sub-lessors tried to take back their land from the sub-lessees.

There is a sign that the multi-stage landlordism will progress further. In 1976, two cases were reported in that the sub-lessee rented a part of his sub-rented land. In one case, a farmer residing outside of the barrio received 1 ha of land as a pawn from a leaseholder in the barrio, and let a landless worker to cultivate a part (0.3 ha) on a share basis. In another case, a sub-lessee of 0.8 ha of land pledged 0.4 ha of the sub-rented land. Thus, if the economic forces that induced the emegency of the sub-tenancy will increase, the number of layers in the multi-stage landlordism may multiply in future.

TRANSACTION OF LAND

Changes in the tenure status often take place through the transactions of land. Table 18 summarizes the distribution of past land transactions by the tenants in acquiring their present operational holdings.

Before 1949, the most important source for the acquisition of land was direct renting from the landlords. During the 1950's the inheritance of the tenancy right from relatives became a more important source.

It is dramatic to observe that, during the 1960's when the population growth was accelerated, the number of land acquisitions through the purchase of tenancy right increased sharply. Further, in the 1970's the sub-renting by tenants began to increase its importance as a source of land acquisition. As in the case of sub-tenancy, the emergence of the monetary transaction of tenancy right should be the result of a gap between the actual rent and the functional share of land.[9/]

The transactions classified in the purchase of tenancy right were not necessarily the transactions among tenants. Six out of 20 transactions in this category are the cases in which landlords paid for tenancy rights in evicting ex-tenants to be replaced by new ones.

The transfers of land through the transactions of land ownership titles were very seldom. Most of such transfers were the cases in which one of children purchased back a part of his father's land inherited by his brothers and sisters. One case in 1970 involved a transaction in that a landlord who purchased 1.1 ha of land gave 0.4 ha to an ex-tenant as a compensation for him to move out. In this case, the tenancy right was evaluated as much as 36% of the land value.

Land transactions in the barrio were not limited to those in Table 18 which lists only the acquisitions of land by the farmers operating in the barrio. Transactions of land within the barrio could occur among landlords and tenants residing outside of the barrio. Table 19 lists all the land

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[9/] By custom the sale of tenancy right requires the permission of landlords, whereas the sub-renting of tenanted land does not required the consent of landlords.

transactions since 1959 and the prices involved. Increasing trends in the number of transactions in the tenancy rights corresponding to the acceleration in population growth are clearly shown in this table as well as in Table 18.

It is interesting to observe that the price of tenancy right shows an increasing trend since the late 1960's while the price of land ownership title itself shows a decreasing trend. It seems reasonable to hypothesize that the rising value of tenancy right was resulted from the increase in the surplus of the functional share of land over the actual rent to be captured by tenants.

On the other hand, the declining value of land property right would have been caused by the decrease in the expected return to land purchase because the share of landlords was reduced by the conversion of share tenancy to leasehold tenancy and, also, because it became more difficult to raise rent or to evict tenants due to the land reform programs.

However, it must be emphasized that the data represent a rather weak evidence, because land prices are highly variable according to variations in the quality of land. The number of transactions recorded in Table 19 is too small to average out the heterogeneity of land quality.

LABOR CONTRACTS

The economic forces that have induced changes in the land tenure system have had pervasive impacts on the employment relations between farmers and landless workers.

The forms of labor used for rice production in this area are: (a) family labor, (b) exchange labor, (c) "upahan" meaning the hired labor for a certain wage rate, (d) "hunusan" meaning the labor employed specifically for harvesting and threshing to receive one-sixth of paddy output, (e) "gama" meaning an arrangement similar to "hunusan" except that the employment for harvesting and threshing is limited to the workers who did weeding of the field without receiving wages -- in other words, in the "gama" system the weeding labor is a free service of workers to establish a right to participate in harvesting and receive one-sixth of the harvest.

Combinations of those different forms of labor inputs for various tasks of rice production in the 1976 wet season are shown in Table 20. The share of hired labor was more than 90% for both planting and harvesting threshing works. However, while rice transplanting works were based on a team of daily wage workers ("upahan") organized by a leader called "Kabisilya," harvesting and threshing works were largely dependent on "gama" or "hunusan". Other tasks for which the share of hired labor was high were land preparation and weeding; the former based on "upahan" and the latter on "gama".

Today, the "gama" is the dominant form of labor contract for harvesting, and threshing, as shown in the data for the 1976 wet season (Table 21). However, traditionally the "hunusan" was the common arrangement, and it was only a decade ago since when the "gama" has become pervasive in this area. No farmer before 1960 adopted the "gama" system for harvesting his crop. The system diffused rapidly during the late 1960's and the early 1970's (Table 22). In 1976, 83% of the farmers adopted the "gama" system, and the number of families employed by the "gama" contract was larger than the number of landless workers' households, implying that not only landless workers but some of small farmers were also employed for other farmers' harvesting.[10/]

The "gama" contract is usually made between a farmer employer and a family head representing the family to be employed. The minimum unit of contract is one "pilapil" (a small piece of paddy field subdivided by narrow banks). From 1966 to 1976, the number of farmers who adopted the "gama" system, the area and the number of the "gama" contracts, increased almost 4 times. However, the average number of contracts per farm and the average area per contract remained stable, suggesting that the structure of the system did not change despite the rapid diffusion of the system (Table 23). The composition of the total of 413 contracts made by the employer farmers in the barrio are:

	Number of contracts	%
Contracts with		
Landless workers	342	83
Other farmers	71	17
Contracts with		
Barrio residents	323	78
Residents outside of the barrio	90	22

Looking at the situation from the employee side, an increase in the area contracted was faster than increases in the numbers of households and contracts, resulting in increases in the average areas per household and per contract (Table 24).

[10/] An interesting fact regarding the "gama" system is that some of "gama" workers employed other workers (mainly the "upahan" workers) for harvesting and/or threshing on the field for which they had established the right to harvest through free weeding, because of stringent time constraint for right time harvesting/threshing. Eighteen out of 66 families worked as "gama" workers in the 1976 wet season employed such workers whose labor man-days accounted for 5% of total man-days worked under the "gama" contracts for harvesting/threshing.

The "gama" system can be considered as an institutional innovation for the employer farmers to reduce the wage rate for harvesting to a level equal to a marginal productivity of labor. In earlier days when the rice yield per hectare was low and labor was more scarce, the one-sixth share of output under the "hunusan" system might have represented a wage rate equal to the marginal product of harvesters' labor. However, as the productivity of rice farming was increased and the labor supply became more abundant due to the growing population pressure, one-sixth of output would have become substantially larger than the marginal product of labor for harvesting works.

In such a situation, farmers could increase their incomes by replacing the "hunusan" by the labor of daily wage workers ("upahan"). However, the cost of changing a long established custom in the village community such as the one-sixth share of harvesting workers would have not been so small. Also, even though labor is normally abundant, there is a risk involved for an individual farmer not to find the sufficient number of daily wage workers at a right time for his harvesting.

The "gama" system is another way to reduce the wage rate, because the one-sixth of output cover the costs of both weeding and harvesting in this system. The "gama" is more congruent with the traditional "hunusan" system, thereby involving less social frictions. Also, the availability of labor at the harvesting time is guaranteed by contract. For the employee's side, the "gama" is more secure, involving less risk to find employment.

Thus, it seems reasonable to hypothesize that the "gama" system has been adopted rapidly because it represented an institutional innovation profitable for the adopters to equate the cost of harvesters' share of output to the marginal productivity of labor. As a test of the hypothesis, we have made an imputation of labor inputs applied for rice production under the "gama" system, by using market wage rates, and compared to those imputed wage costs with the actual shares of "gama" harvesters. The results show remarkable affinities between the imputed wages and the actual harvesters' shares (Table 25). Such results provide evidence for an equality between the actual payment to "gama" workers and the marginal product of labor, assuming the marginal products equal the market wage rates.

SUMMARY OF FINDINGS

Major findings of this study on a rice village in Laguna are summarized as follows:

1. The population growth rate has been very high in this village, even exceeding the average rate for the Philippines. Moreover, the population growth rate has been accelerated since during the 1960's.

2. One of the results of population growth on limited area for cultivation was a more rapid increase in the number of landless

farm workers than in the number of farm operators. This tendency has become more conspicuous for more recent years.

3. Correspondingly, the average operational land holding per farm has decreased. Also, the land ownership has become more fragmentary.

4. For the past decade, the tenure status of a large fraction of tenants was converted from the share to the leasehold tenancy, primarily due to the land reform programs. An increasing number of tenure contracts has changed from an oral to a written form and the tenure status has become more secure for tenants. The rates of land rent have not been raised, despite the growing competition for land and the rising productivity of land.

5. Another major development in the land tenure system was the emergence of sub-tenancy arrangements. The cases of leasehold tenants to sub-rent a part or whole of their holdings to landless workers have increased in number, despite the Land Reform Laws prohibiting such arrangements.

6. The economic basis for the emergence of sub-tenancy can be identified as the gap between the actual rent and the functional share of land, resulting from the population pressure on land. This hypothesis was confirmed by the estimates of factor shares in rice output.

7. The surplus of the functional share of land over the actual rent also manifested itself in the sharp increase in the market value of tenancy right. The purchase of tenancy right and the sub-renting has recently become the major sources for the acquisition of land for farming, while in earlier years the direct renting from landlords and the inheritance of tenancy right were the major ones.

8. The economic forces that have induced the emergence of sub-tenancy and have risen the value of tenancy right have also resulted in the diffusion of a labor contract known as "gama" in which hired workers agree to weed a field in exchange for the right to harvest the crop and receive one-sixth of the produce. Compared to the traditional arrangement called "hunusan" in which one-sixth of output was given to harvesters without any other obligations, the "gama" system would have had the effect of reducing the share of labor to be consistent with the marginal productivity of labor. This hypothesis was confirmed by the imputation of "gama" by market wage rates.

Notes

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1/ Hayami, Yujiro, and Luisa Maligalig. "Structure of Asset-Holdings of the Households in a Rice Village in Southern Luzon," International Rice Research Institute Department of Agricultural Economics, Paper No. 70-20, 1976.

2/ The "Dapog" method prepares the seed-bed with banana leaves on dry land, usually in the yard of farmer's house. Seedlings are transplanted to the fields in a very early age. Picking and transporting of the seedlings are much easier in this method, though it consumes more seeds than the traditional wet seed-bed preparation. However, this method is effective only in the fields of good water control.

3/ There were other fields within the barrio, which were cultivated by farmers residing in the poblacion or neighbouring barrios. One of 55 farmers was, in fact, a widow having ownership for a part of her farmland and leasehold title for another part, but does not cultivate the land by herself and let her grandson and newphew to cultivate. Thereby, in the following tabulations, we have omitted her from the data.

4/ See Hiromitsu Umehara, A Hacienda Barrio in Central Luzon: Case Study of a Philippine Village, Institute of Developing Economies, Tokyo, 1974.

5/ The 1956 data should be taken with reservations, because the data refer only to those still living in the village at the time of our survey in 1976. Therefore, there is certain underestimation both in number of farmers and in rice area for all size classes.

6/ The 1963 Law was revised in 1971, which was further enforced by Presidential Decree No. 27 after the Declaration of Martial Law.

7/ The written contracts were more pervasive for the plots converted from the share to the leasehold tenure; 21 plots out of 31 new leasehold plots were under the written contracts, whereas 8 out of 13 old leasehold plots were under the oral contracts.

8/ If a sub-lessee reports to the Regional Office of Agrarian Reform and proves that he is the actual cultivator of the land, he can obtain a formal title of leasehold tenancy for forfeiting his lessor's title. In fact, there occurred such cases, one each in 1970 and 1975. The sub-lessees took such action when the sub-lessors tried to take back their land from the sub-lessees.

9/ By custom, the sale of tenancy right requires the permission of landlords, whereas the sub-renting of tenanted land does not require the consent of landlords.

10/ One interesting fact regarding the "Gama" system is that some of "Gama" workers employed other workers (mainly the "Upahan" workers) for harvesting and/or threshing on the fields for which the "Gama" workers had established the right to harvest through free weeding, because of their stringent time constraints for right time harvesting/threshing. Eighteen out of 66 families worked as the "Gama" workers employed such workers whose labor mandays accounted for five percent of total mandays worked under the "Gama" contracts for harvesting/threshing.

Table 1. Average household incomes by sources, 1976

Source	All households		Large farmers		Small farmers		Landless workers	
	₱	%	₱	%	₱	%	₱	%
Farming:								
Rice	2,882	(49)	9,899	(70)	2,694	(48)	-	(-)
Other	894	(15)	920	(6)	1,517	(27)	514	(20)
Total	3,776	(64)	10,819	(76)	4,211	(75)	514	(20)
Non-farm enterprise	351	(6)	263	(2)	370	(7)	378	(15)
Wage earning:								
Farm	1,000	(7)	391	(3)	709	(13)	1,432	(56)
Non-form	771	(13)	2,717	(19)	280	(5)	238	(9)
Total	1,771	(30)	3,108	(22)	989	(18)	1,670	(65)
Total	5,898	(100)	14,190	(100)	5,570	(100)	2,562	(100)

Table 2. Changes in the holdings of productive assets

	1976				1966		
	Total	Large farmers	Small farmers	Landless workers	Total	Large farmers	Small farmers
Hand tractor	24	17	7	0	14	8	5
Sprayer	26	18	8	0	0	0	0
Rotary weeder	127	41	43	43	45	20	25
Carabao	8	6	2	0	21	11	10

Table 3. Changes in the population

	This barrio		Whole municipality		Source
	Number	(1960=100)	Number	(1960=100)	
1903	94	(27)	6,040	(54)	Census
1960	349	(100)	11,156	(100)	Census
1966	383	(110)			Umehara survey (as of Dec. 1)
1974	549	(157)			IRRI Survey (as of Nov.)
1975	571	(164)	18,356	(165)	Census (as of May 1)
1976	644	(185)			This survey (as of Dec.)

Table 4. Changes in the number of households.[a/]

	Farmers	Landless Workers	Total
1966	46 (70)	20 (30)	66 (100)
1974	55 (58)	40 (52)	95 (100)
1976	55 (50)	54 (50)	109 (100)
1974/1966	1.20	2.00	1.44
1976/1966	1.20	2.70	1.65

a/ Percentage in the parenthes.

Table 5. Causes of the formation of households

Date of household formation	Migration			Independence			Total
	Farmer household (1)	Landless worker household (2)	Total (3)=(1)+(2)	Farmer household (4)	Landless worker household (5)	Total (6)=(4)+(5)	(7)=(3)+(6)
	Number of households[a/]						
Before 1939	2 (15)	- (-)	2 (15)	9 (70)	2 (15)	11 (85)	13 (100)
1940-49	4 (31)	1 (7)	5 (38)	5 (38)	3 (23)	8 (61)	13 (100)
1950-59	2 (11)	1 (6)	3 (17)	9 (50)	6 (33)	15 (83)	18 (100)
1960-69	5 (17)	2 (7)	7 (24)	10 (35)	12 (41)	22 (76)	29 (100)
1970-76	6 (16)	11 (31)	17 (47)	3 (8)	16 (45)	19 (53)	36 (100)
Total	19 (18)	15 (14)	34 (31)	36 (33)	39 (36)	75 (69)	109 (100)

a/ Figures inside of the parentheses are percentage.

Table 6. Migrations into the barrio during 1946-76, by occupation and by reason of migration

	Total	Occupation		Reason of migration		
		Farmer	Landless worker	Marriage	Acquiring farming land	Finding employment
1966	1	1			1	
1969	1		1			1
1970	2	1	1	2		
1971	1	1		1		
1972	2		2			2
1973	2		2	1		1
1974	2		2	1		1
1975	3	1	2		1	2
1976	5	1	4	1	1	3
Total	19	5	14	6	3	10

Table 7. Mobility between farmers and landless workers.

	From landless worker to farmer [a]		From farmer [a] to landless worker	
	Number [a]			
Before 1949	1	(4)	1	(4)
1950 - 59	4	(17)	3	(11)
1960 - 69	10	(44)	9	(35)
1970 - 76	8	(35)	13	(50)
Total	23	(100)	26	(100)

[a] Figures inside of parentheses are percentage.

Table 8. Distribution of landlords owing rice land in the barrio [a/]

	1976		1966
	Number of landlords	Area owned (ha)	Number of landlords
Distribution by residence:			
This barrio	4	2.4	3
The same municipality (except this barrio)	34	56.6	32
Laguna province (except this municipality)	7	11.7	4
Batangas province	14	17.6	2
Rizal province	5	15.7	0
Manila	1	2.2	0
Baguio	1	2.0	0
Total	66	108.2	41
Distribution by ownership size:			
Less than 1 ha.	20	10.2	n.a.
1 to 2.9 ha.	34	46.2	n.a.
3 to 6.9 ha.	11	38.2	n.a.
More than 7 ha.	1	13.6	n.a.
Total	66	108.2	n.a.

Note: a/ Only for the areas that the farmers in the barrio are cultivating.

Table 9. Farm-size distribution [a/]

	1956				1966				1974				1976			
	Number of farmers		Rice area		Number of farmers		Rice area		Number of farmers		Rice area		Number of farmers		Rice area	
	No.	(%)	ha.	(%)	No.	(%)	ha.	(%)	No.	(%)	ha.	(%)	No.	(%)	ha.	(%)
Below 1 ha	5	(16)	3	(3)	6	(13)	3	(3)	8	(15)	4	(4)	13	(24)	6	(6)
1 ha-1.9 ha	9	(29)	12	(17)	14	(30)	18	(17)	22	(41)	29	(26)	20	(37)	28	(26)
2 ha-2.9 ha	4	(13)	9	(13)	10	(22)	21	(20)	11	(20)	24	(22)	8	(15)	18	(17)
3 ha-4.9 ha	12	(39)	42	(59)	13	(28)	46	(44)	11	(20)	40	(36)	11	(20)	41	(38)
5 ha and a above	1	(3)	6	(8)	3	(7)	17	(16)	2	(4)	14	(13)	2	(4)	14	(13)
Total	31	(100)	71	(100)	46	(100)	104	(100)	54	(100)	111	(100)	54	(100)	108	(100)
Average rice area per farm (ha)			2.3				2.3				2.1				2.0	

a/ Farm size in terms of the operational holding of puddy field.

Table 10. Distribution of farms by tenure status

	Number of farmers (1)		Area (2)		Average area per farmer (2)/(1)
	No.	(%)	ha	(%)	ha
1976					
Owner/leasehold	3	(6)	11.2	(10)	3.7
Leasehold a/	29	(54)	48.5	(46)	1.7
Share tenancy a/	14	(26)	24.7	(22)	1.8
Share/leasehold a/	8	(15)	23.9	(22)	3.0
Total 5	54	(100)	108.2	(100)	2.00
1966					
Owner/leasehold	2	(4)	10.3	(10)	5.2
Leasehold	7	(15)	18.0	(17)	2.6
Share tenancy a/	35	(76)	65.9	(63)	1.9
Share/leasehold	2	(4)	10.1	(10)	5.0
Total	46	(100)	104.2	(100)	2.26
1956					
Owner/leasehold	2	(7)	10.3	(14)	5.2
Leasehold	6	(19)	15.0	(21)	2.5
Share tenancy	21	(68)	38.2	(53)	1.8
Share/leasehold a/	2	(7)	8.1	(11)	4.0
Total	31	(100)	71.5	(100)	2.31

a/ Include sub-tenant.

Table 11. Distribution of plots by tenure status

	Number of plots (1)		Area (2)		Average area per plot (2)/(1)
	No.	(%)	ha	(%)	ha
1976					
Owned	3	(3)	1.7	(2)	0.6
Lease	44	(47)	67.7	(63)	1.5
Share	30	(32)	29.7	(27)	1.0
Sub-rented	16	(17)	9.1	(8)	0.6
Total	93	(100)	108.2	(100)	1.2
(Average number of plots per farm = 1.7)					
1966					
Owned	2	(3)	1.3	(1)	0.7
Lease	12	(19)	29.9	(28)	2.5
Share	44	(70)	66.1	(63)	1.5
Sub-rented	5	(8)	6.9	(7)	1.4
Total	63	(100)	104.2	(100)	1.7
(Average number of plots per farm = 1.4)					
1956					
Owned	2	(5)	1.3	(2)	0.7
Lease	11	(28)	26.9	(38)	2.4
Share	25	(64)	42.1	(59)	1.7
Sub-rented	1	(3)	1.2	(2)	1.3
Total	39	(100)	71.5	(100)	1.8
(Average number of plots per farm = 1.3)					

Table 12. Changes in average rent and yield per hectare of the land under leasehold tenancy

	Rent (1)	Yield (2)	(1)/(2)
	----- cavan/ha -------		
1976 a/			
Whole area:			
Dry	17.5	85.6	0.20
Wet	12.6	71.4	0.18
Total	30.1	157.0	0.19
New leasehold area:			
Dry	18.7	86.4	0.22
Wet	14.9	71.4	0.21
Total	33.6	157.8	0.21
Old leasehold area:			
Dry	15.7	84.1	0.19
Wet	8.6	71.3	0.12
Total	24.3	155.4	0.16
1966			
Dry	12.9	60.5	0.21
Wet	9.2	54.4	0.17
Total	22.1	114.9	0.19
1956			
Dry	-	-	-
Wet	13.3	55.7	0.24
Total	13.3	55.7	0.24

Note: a/ Yields for 1976 are 1974 - 76 averages

Table 13. Leasehold plots with the rent-reduction arrangements for bad-crop seasons

	1976		1966	
	No.	(%)	No.	(%)
With rent-reduction arrangement	12	(27)	8	(66)
Without rent-reduction arrangement	32	(73)	2	(17)
No reply	-	(-)	2	(17)
Total	44	(100)	12	(100)

Table 14. Output and cost sharing arrangements under share tenancy

Output			Costs			1976		1966	
Tenant		Landlord	Tenant		Landlord	No. of plots	(%)	No. of plots	(%)
50	:	50	50	:	50	24	(80)	44	(100)
75	:	25	100	:	0	5	(17)	-	(-)
20	:	80	0	:	100	1	(3)	-	(-)
Total						30	(100)	44	(100)

Table 15. Distribution of plots under sub-tenancy contracts

	1976		1966		1956	
	Number of plots	Area per plot	Number of plots	Area per plot	Number of plots	Area per plot
	No.	ha.	No.	ha.	No.	ha.
Sub-tenancy plot with share rent	9	0.76	4	1.61	1	1.20
Sub-tenancy plot with fixed rent	2	0.40	-	-	-	-
Sub-tenancy plot by pledging:						
share	-	-	1	0.5	-	-
fixed rent	3	0.35	-	-	-	-
no rent	2	0.20	-	-	-	-
Total	5	0.29	1	0.5	-	-
TOTAL	16	0.57	5	1.39	1	1.20

Table 16. Number of farms under sub-tenancy contract

	1976		1966		1956	
	Number of farms	Area per farm	Number of farms	Area per farm	Number of farms	Area per farm
	No.	ha.	No.	ha.	No.	ha.
Sub-tenants:						
Sub-tenant with share rent	4	0.86	2	1.60		
Sub-tenant with fixed rent	2	0.40				
Sub-tenant by pledging	1	0.10	1	0.50		
Sub-tenant with share rent + by pledging	1	0.88				
Total	8	0.65	3	1.23		
Farmers with sub-tenanted areas as a part of their farm:						
Share + sub-tenanted under sharing	1	1.25				
Leasehold + sub-tenanted under sharing	1	3.75	1	5.75	1	3.75
Share + Leasehold + sub-tenanted under sharing	1	1.90				
Share + Leasehold + sub-tenanted under sharing + sub-tenanted by pledging	1	3.75				
Total	4	2.66	1	5.75	1	3.75
TOTAL	12	1.32	4	2.36	1	3.75

Table 17. Factor shares of rice output per hectare, 1976 wet season

	Number of plots	Area	Rice yield (paddy)	Factor shares [a/]						
				Current inputs	Land: Landlords' share	Land: Sub-lessers' share	Land: Total	Labor	Capital [b/]	Operator surplus
		ha.	cavans/ha							
Leasehold land [c/]	31	60.4	70.1 (100.0)	12.9 (18.4)	12.6 (18.0)	0 (0)	12.6 (18.0)	22.6 (32.2)	9.8 (14.0)	12.2 (17.4)
Share-tenancy land [c/]	17	26.7	58.1 (100.0)	15.2 (26.2)	14.4 (24.8)	0 (0)	14.4 (24.8)	18.4 (31.7)	6.3 (10.8)	3.8 (6.5)
Sub-tenancy land	9	6.3	78.1 (100.0)	18.9 (24.2)	11.3 (14.5)	18.0 [d/] (23.0)	29.3 (37.5)	22.4 (28.7)	6.6 (8.5)	0.9 (1.2)

a/ Percentage shares are shown in parentheses.

b/ Sum of irrigation fee and paid or imputed rentals of carabao, tractor and other machines.

c/ Exclude the plots of which the yields per hectare were below 60 percent of the average for 1974-76.

d/ Rents to sub-lessors in the case of pledged plots are imputed by applying the interest rate of 40 percent per season (a mode in the interest-rate distribution in the village shown in Appendix Table B).

Table 19. Transactions of land ownership and tenancy right

	Transfer of land ownership				Transfer of tenancy right			
	Number	Area	Current Value	Value deflated by rice price index a/	Number	Area	Current Value	Value deflated by rice price index a/
	No.	ha.	-----peso/ha.----		No.	ha.	-----peso/ha.-----	
1959	-	-	-	-	1	1.0	150	822
1960	-	-	-	-	1	2.4	125	658
1961	-	-	-	-	-	-	-	-
1962	1	3.0	6,333	28,786	-	-	-	-
1963	1	1.3	7,692	28,489	1	2.0	1,500	5,556
1964	1	3.5	5,429	16,975	-	-	-	-
1965	-	-	-	-	1	3.0	433	1,443
1966	1	1.0	11,000	36,667	-	-	-	-
1967	-	-	-	-	1	1.5	467	1,557
1968	1	1.5	18,000	60,000	3	3.9	611	1,852
1969	1	0.8	14,667	40,742	3	2.5	980	2,722
1970	1	2.0	9,500	27,143	4	6.4	2,100	5,714
1971	1	2.5	10,000	23,256	-	-	-	-
1972	2	1.4	12,143	21,684	4	5.0	1,300	2,321
1973	1	1.0	15,000	17,857	2	3.5	3,086	3,674
1974	-	-	-	-	2	3.1	4,113	4,284
1975	1	0.4	15,600	15,600	4	5.1	4,068	4,068
1976	-	-	-	-	1	1.2	6,667	6,667
(Total)	(12)	(18.4)			(28)	(40.6)		

Note: a/ The rice price index used is of Southern Tagalog area, 1975 = 1.00. No change in rice price is assumed from 1975 to 1976, based on the survey data.

Table 20. Composition of family, exchange and hired labor used for rice production by tasks, 1976 wet season

	Mandays per hectare	%
1. Land preparation:		
Family	4.1	38
Exchange	0.9	8
Hired	5.8	53
Total	10.8	100
2. Planting:		
Family	0.2	2
Exchange	0.1	1
Hired	8.4	97
Total	8.7	100
3. Fertilizer and chemical application:		
Family	**4.4**	**76**
Exchange	**0.1**	**2**
Hired	**1.3**	**22**
Total	**5.8**	**100**
4. Weeding:		
Family	**8.8**	**28**
Exchange	**0.2**	**1**
Hired	**22.5(16.3)[a/]**	**71(52)**
Total	**31.5**	**100**
5. Harvesting and threshing:		
Family	3.7	10
Exchange	-	-
Hired	34.1(27.4)[a/]	90(73)
Total	37.8	100
6. Seed-bed preparation		
Family	0.9	62
Exchange	0.5	37
Hired	0.0	1
Total	1.4	100
7. Irrigation control and maintenance:		
Family	**6.5**	**74**
Exchange	**0.2**	**3**
Hired	**2.0**	**23**
Total	**8.7**	**100**
8. Total:		
Family	**28.6**	**27**
Exchange	**2.0**	**2**
Hired	**74.1(43.7)[a/]**	**71(42)**
Total	**104.7**	**100**

Note: a/ Hired labor under the "Cama" system

Table 21. Distribution of farms by types of labor used for harvesting and threshing, 1976 wet.

	Number of farms	(%)	Area (ha.)	(%)
"Gama" only	40	(74)	79.8	(78)
"Gama" + "Hunusan"	5	(9)	14.2	(14)
"Hunusan" only	2	(4)	6.5	(6)
Family only	7	(13)	1.9	(2)
Total	54	(100)	102.4	(100)

Table 22. Diffusion of "Gama" system

	Employers' side			Employees' side		
	Number of farmers adopting "Gama" (1)	Total number of farmers (2)	(1)/(2)	Number of "Gama" workers (3)	Total number of landless workers (4)	(3)/(4)
1959				1		
1960	1			1		
1962	2			5		
1964	6			11		
1966	14	46	0.30	21	20	1.05
1968	15			23		
1970	24			26		
1972	33			40		
1974	43	54	0.80	52	40	1.30
1976	45	54	0.83	66	54	1.22

Table 23. Number of gama adaptors, paddy area under "Gama" system and number of "Gama" contracts (the data of employers' side)

			1976 wet	1966
(1)	Number of farms who adapted "Gama" system	(No.)	45	14
(2)	Area under "Gama" system	(ha.)	90.3	26.2
(3)	Number of "Gama" contracts	(No.)	413	113
	(3)/(1)	(No.)	9.2	8.1
	(3)/(2)	(No.)	4.6	4.3
	(2)/(3)	(ha.)	0.2	0.2

Table 24. Number of "Gama" contractors, number of "Gama" contracts and paddy area under "Gama" contracts (the data of employees' side)

			1976 wet	1966
(1)	Number of households working under "Gama" system	(No.)	66	21
	Farmer households	(No.)	16	6
	Landless worker households	(No.)	50	15
(2)	Number of "Gama" contracts	(No.)	365	106
(3)	Number of "Pilapil" under "Gama" contracts	(No.)	782	174
(4)	Estimated area under "Gama" contracts a/	(ha.)	70.4	15.7
	(2)/(1)	(No.)	5.5	5.0
	(3)/(1)	(No.)	11.8	5.0
	(4)/(1)	(ha.)	1.1	0.7
	(4)/(2)	(ha.)	0.2	0.2

a/ Assuming 0.09 ha. for the average "Pilapil" size.

Table 25. Comparison between the imputed value of harvesters' share and the imputed cost of "Gama" labor

	Based on employers' data	Based on employees' data
Number of working days of "Gama" labor (days/ha.)[a/]:		
Weeding	20.9	18.3
Harvesting/threshing	33.6	33.6
Imputed cost of "Gama" labor (₱/ha.)[b/]:		
Weeding	167.2	146.4
Harvesting/threshing	369.6	369.6
(1) Total	536.8	516.0
Actual share of harvesters:		
In kind (cavan/ha.)[c/]	11.2	12.2
(2) Imputed value (₱/ha.)[d/]	504.0	549.0
(2) - (1)	-32.8	33.0

a/ Include the labor of family members worked as "Gama" laborers.
b/ Imputation using market wage rates (daily wage = ₱8.0 for weeding, ₱11.0 for harvesting).
c/ One-sixth of output per hectare.
d/ Imputation using market prices (1 cavan = ₱45).

Appendix Table A. Average debts outstanding per household, Dec. 1976

	All households				Large farmers				Small farmers				Landless workers			
	Number		Debts per household		Number		Debts per household		Number		Debts per household		Number		Debts per household	
	in kind	cash	in kind	cash	in kind	cash	in kind	cash	in kind	cash	in kind	cash	in kind	cash	in kind	cash
	No.	No.	cavans	peso	No.	No.	cavans	peso	No.	No.	cavans	peso	No.	No.	cavans	peso
Purpose:																
Production:																
Rice farming		60		1,064		25		3,262		35		1,396				
Others		53		860		5		463		18		1,072		30		880
Consumption	3	56	0.1	369		7		1,010		16		331	3	33	0.1	143
Clearing debts	1	2	0.1	8						2		26	1		0.2	
Unpaid rent	9		1.5		3		4.2		6		2.3					
Total	13	171	1.7	2,300	3	37	4.2	4,735	6	71	2.3	2,825	4	63	0.3	1,023
Source:																
Institutional		82		1,684		23		3,838		36		1,689		23		842
Private		22		139		4		133		12		315		6		30
Friends/relatives	4	62	0.2	442		8		654		20		775	4	34	0.3	151
Landlords	9	5	1.5	36	3	2		110	6	3	2.3	47				
Total	13	171	1.7	2,300	3	37		4,735	6	71	2.3	2,825	4	63	0.3	1,023

Appendix Table B. Distribution of interest rate per year by source of lending, 1976 wet season a/

	Total	Institutional	Private	Friends and relatives	Landlords
	number				
No interest	43	-	3 b/	26	14 c/
1 - 12%	97	97	-	-	-
13 - 20%	1	-	1	-	-
21 - 40%	4	-	-	3	1
41 - 60%	4	-	-	2	2
61 - 80%	5	-	1	2	2
81 - 100%	39	-	11	27	1
101 - 150%	13	-	2	11	-
151 - 200%	38	-	8	29	1
201 - 320%	7	-	2	5	-
No reply	25	-	11	12	-

Note: a/ Impute repayment in kind (paddy), by 1 cavan of paddy = 45 peso.

b/ Purchase of groceries on credit from village retail stores.

c/ 11 cases in the form of unpaid rent.

Appendix Table C. Standard rates of wages, rentals and interest, and rice price used for imputation

Wages	
Land preparation	13.00 pesos/day
Planting	8.40 "
Fertilizer and chemical application	10.00 "
Weeding	8.00 "
Harvesting and threshing	11.00 "
Hauling of palay	5.00 "
Water control	5.00 "
Clearing dike	10.50 "
Repairing dike	11.50 "
Seed-bed preparation	5.00 "
Rentals	
Hand tractor	65.00 pesos/day
Carabao	15.00 "
Threshing machine	1 ganta/cavan
Blower	0.5 ganta/cavan
Irrigation fee	2 cavans/wet season
Interest rate	40 percent/season
Rice price	45 pesos/cavan

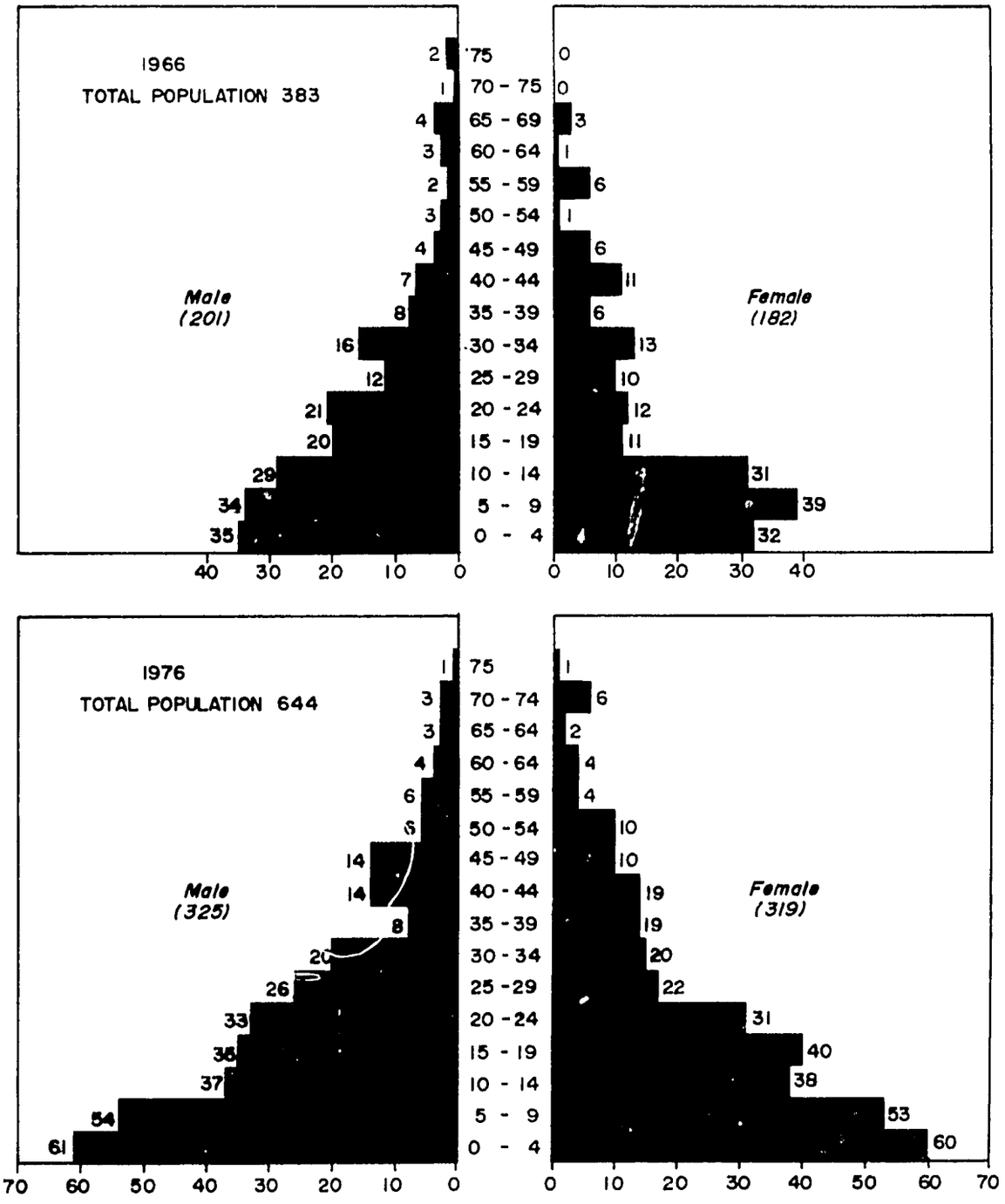

Fig. I. Changes in the age distribution of village population.

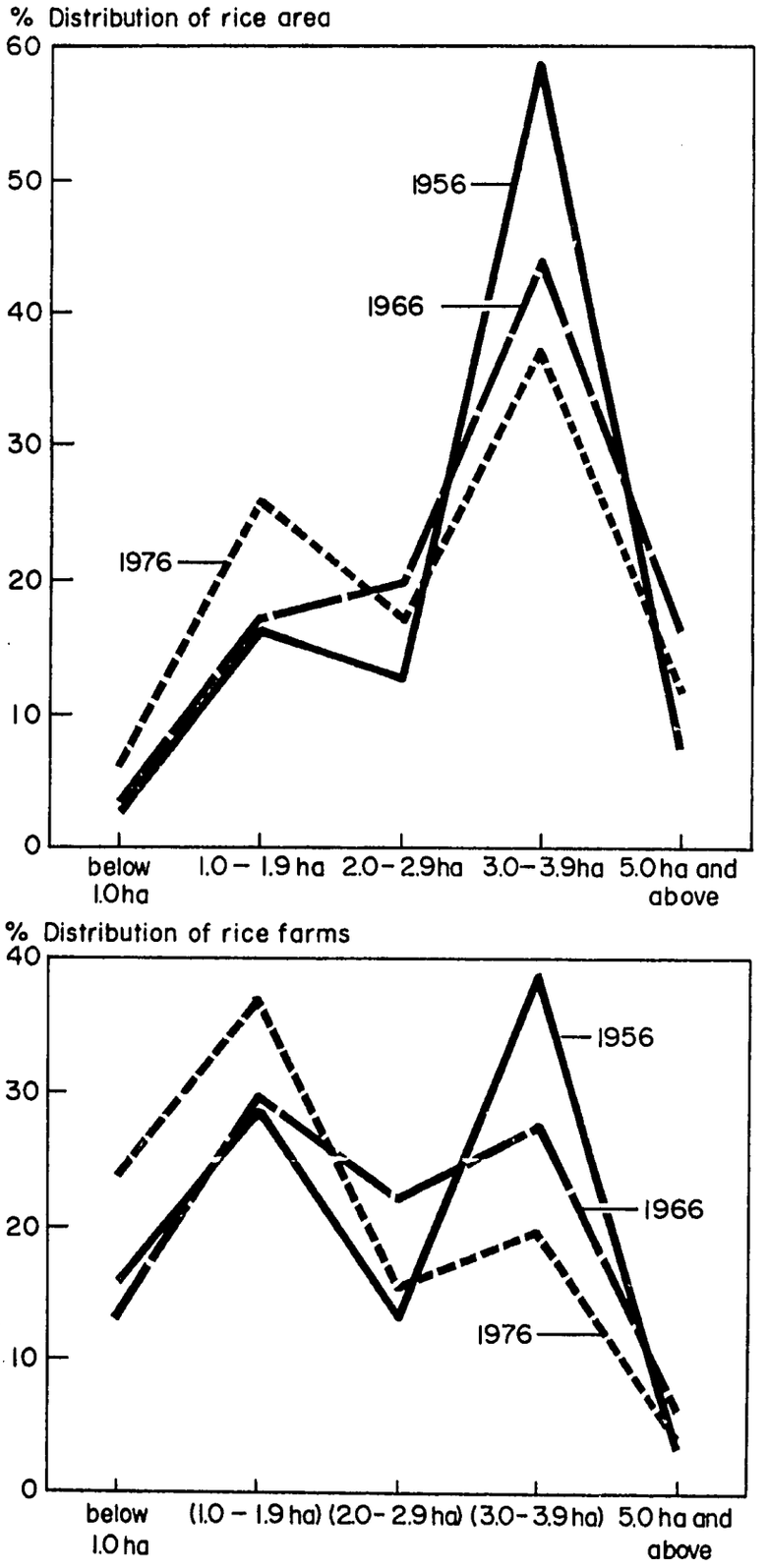

Fig. 2. Changes in farm-size distribution, 1956–1976.