AGRO-ECONOMIC SURVEY

Rural Dynamics Study

Bogor, Indonesia

LAND TENURE AND LABOR MARKETS IN EAST JAVA, INDONESIA

by

Soentoro
William L. Collier
Sri Hartoyo

August, 1981

With the compliments of

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ASSOCIATE

The Agricultural Development Council, Inc.

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This report is based on several studies, with major emphasis on research carried out by the Agro-Economic Survey's Rural Dynamics Study (AES-RDS) in East Java. Other studies used in this report were from Rice Intensification Study of the AES in East Java 1969-1972, MS Thesis of Mr. Soentoro and Mr. Hidayat, and colonial report. The activities of East Java Rural Dynamics Study since 1978, was partly financed by USAID.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDIX

LAND TENURE AND LABOR MARKETS IN EAST JAVA, INDONESIA

INTRODUCTION

Background

In a report on recent developments in Indonesia, a substantial amount of optimism about rural development was expressed because of the large rice crop of between 18.5 and 20 million tons in 1980, the rehabilitation of the irrigation system during the last decade, the spread of the new rice varieties especially IR36, the possibility of even a third crop of rice which already covers 10% of the irrigated areas, the intensification of production through the Bimas program, and subsidized fertilizer.[1/] As is obvious in any trip through Java and the other islands, the Indonesian Government has made major progress in rural development which is indicated by the greatly increased production of rice from 11.67 millions tons in 1968 to the estimated 18.5 to 20 million tons in 1980.[2/] This study will examine the role of land tenure and labor markets in East Java to determine if everyone in the rural society is benefiting from this rural development.

To understand the situation in East Java, one must remember that rural Java has been experiencing rapid change in rural institutions related to agriculture during the last twenty years. Sickles are replacing the hand-held rice knives (ani-ani). Motor powered small scale rice hullers have replaced hand pounding of rice. Farmers have

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1/ Peter G. Warr, "Survey of Recent Developments", Bulletin of Indonesian Economic Studies, November 1980, pp. 1 to 32.

2/ Peter G. Warr, Ibid, p-7 and 11.

tried to reduce the number of people who join their rice harvests. Contract labor groups of a few laborers have replaced the much larger numbers of workers who individually joined in various cultivation practices. These changes are affecting the labor markets in rural Java which are closely related to the major changes that have occurred in the land markets. In order to understand what has happened in rural Java, it is essential to examine both of these markets, and to show what are the relationships between the two markets. Of course, the capital market is closely connected to both the land and labor markets but this third market will not be examined in this study. The purpose of this study is to describe and analyze the rural land markets and labor markets in East Java and to indicate where possible what are the relationships with the capital markets. To summarize this paper we will suggest several propositions for explaining the functioning of land and labor markets in densely populated lowland, rice producing regions in Java.

Since this study has been carried out primarily in the lowland, maj rice producing areas in East Java, it is important to place this work in the context of what has occurred in rice production during the last few years. At the risk of over simplifying the historical process of change in rural East Java, it appears that since independence labor absorption in rice cultivation has gone through the following periods:

1. 1948-1965: A period of relative economic and political instability when people who owned and farmed rice land needed the support of a large number of villagers, could not appear to have much wealth, and absorbed as many workers as possible in rice cultivation. Land and labor markets were characterized by the dominance of the landless laborers and marginal farmers demand for access to employment and land.

2. 1965-1968: A change in political leadership that was able to stabilize the economy, achieve reasonable political stability, and lay the foundation for improvements in the situation in rural Java, though rice cultivation remained traditional in methods and varieties .

3. 1968-1973: Having achieved political stability, the new high yielding rice varieties were introduced and spread throughout Java. Bimas credit was available to the farmers, irrigation systems were rehabilitated, yields increased, and there were major changes in the agricultural institutions that caused a decline in labor use in rice cultivation per ha and some concentration of land ownership. During this period the balance of power in the land and labor markets shifted more to those who had land and who could control access to employment in rice cultivation.

4. 1973-1978: A period of crisis in rice cultivation caused primarily by the Brown Planthopper which devastated major areas of rice fields in Java. The labor market was unable to respond adequately to this situation and many landless laborers and marginal farmers' were unable to secure sufficient employment. The land market responded by an acceleration in the sales of land owned by the marginal farmers to wealthier farmers and people living outside of the villages.

5. 1978-1981: With the introduction and rapid adoption of the rice varieties (PB-32 and 36) resistant to the Brown Planthopper, improved water control, and more rain in the dry season, the rice farmers in Java were able to greatly increase their yields per ha, able to increase the number of crops per year because of the shorter growing period of the HYV's, and to provide more employment per year in rice cultivation. An associated change which is not fully understood is the increased availability of off-farm employment which may be causing labor shortages in densely populated areas. Obviously, in this situation the labor market will respond by offering higher wages to laborers. The land market in East Java will respond by prices for land increasing and marginal farmers will try to hold on the their farm land.

To initiate this study, the authors first want to explain what has caused them to reverse some of their concepts about rural Java and present several propositions based on recent visits to 10 villages in East Java.

In the 1968 to 1973 period, the first two authors of this paper were involved in a study of rice production in 37 villages scattered throughout the major rice producing regions in Indonesia. At that time several papers were published which suggested that major changes had occurred in labor use in rice production.3/ These studies concentrated on labor use reductions in harvesting and milling of rice caused by changes in institutions related to agriculture. In general this is the postulated 1968-1973 period when major institutional changes related to rice cultivation occurred in primarily lowland Central and East Java.

The first two authors continued their research on rice production primarily in East Java, although during the 1976-78 period the concentration was on land and labor relationships and the impact on land

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3/ These are:

1. William L. Collier, Soentoro, Gunawan Wiradi and Makali, "Agricultural Technology and Institutional Change in Java", Food Research Institute Studies, Vol.XIII, No.2, 1974.

2. William L. Collier, Gunawan Wiradi, and Soentoro, "Recent Changes in Rice Harvesting Methods", Bulletin of Indonesian Economic Studies, Australian National University, Vol.IX, No.2, July 1973.

3. William L. Collier, Jusuf Colter, and Sinarhadi, "Choice of Technique in Rice Milling in Java: A Comment", Bulletin of Indonesian Economic Studies, Australian National University, March 1974.

tenure.[4/] At this time the Brown Planthopper infestation was either still in progress or only just overcome and the villagers were still suffering from its effect.

All of the authors were involved in research in East Java on rice production in 1980 and this is the time period (1978-1981) when rice cultivation made major progress. This research resulted in the formulation of several propositions that need to be examined by researchers to dtermine their validity. These propositions are based on the authors research in East Java since 1969 and a recent two week field trip to a number of villages in East Java by the first author. The purpose of presenting these propositions is to suggest what has occurred recently in Java, and then to test some of these proposition that are directly related to land and labor markets in East Java.

The following propositions are rather general and based on observations in all of the ten villages:

1. In the period of approximately 1976 to 1978 there was a change in the agricultural situation (the lowland predominately rice producing areas) in East Java. At this time the Brown Planthopper resistant varieties were widely used and the rice farmers

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4/ Two studies have resulted from this work:

1. Soentoro, William L. Collier, and Kliwon Hidayat, Land Markets in Rural Java, paper presented at the IRRI-Rural Dynamics Study's jointly sponsored Village Studies Workshop in Los Banos, Philippines on August 26 to 27, 1980.

2. William L. Collier, "Declining Labor Absorption (1878 to 1980) in Javanese Rice Production", presented at the Agricultural Economics Society of South East Asia's Third Biennial Meeting on November 27 to 29, 1979, in Kuala Lumpur, Malaysia, and published in Kajian Ekonomi Malaysia (Malaysian Economic Studies), VolXVI, No. 1 and 2, June/December 1979, pp 102-136.
The mimeographed paper presented at the meeting had 36 appendices' tables on labor use that were not included in the journal article.

after two or three years of very poor harvests because of this pest were able to achieve significantly higher yields per ha per season. combined with these varieties, the seasons were wetter, the irrigation systems more efficient, and the rice farmers were able to plant an additional crop in a twelve month period which meant they either planted two crops of rice and one of palawija or three crops of rice in the year. This increased cropping intensity made it possible to increase the yearly demand for landless laborers. However, the changes in institutions related to the cultivation and harvesting of rice and the use of improved agricultural tools caused a decline in labor use per ha, primarily in hired female labor. Since these rural areas studied in East Java are relatively close (50 to 100 km) to Surabaya, the many factories (plastics, mi-won, sandals, soap, bicycle) are absorping younger workers from the rural areas, especially those with an SD diploma (grade school 6 years). Therefore, large numbers of the grown up children of the slightly better off families, especially those that educated their children, are able to find sufficient work in these semi-rural located industries causing a shift in employment from within the village to outside the village. The landless laborers and their children are able to achieve a higher income since 1978 because of more job opportunities as agricultural and non-farm laborers. This situation which has lasted from 1978-1981 is based on more rainfall, more efficient water management, pest resistant rice varieties, and more jobs in small scale industries associated with the economic viability of Surabaya and other large cities in Java. All of these factors are subject to change due to both internal and external forces and indicate that this

improved situation is still very fragile and could easily be reversed by an outbreak of rice pests, a severe drought, and/or an economic downturn affecting the viability of the industries near Surabaya.

2. The improved agricultural situation has caused an accelerated demand for irrigated rice land by people (both urban and rural) who live outside of the villages. The 1960 land reform made it much easier for the farmers in East Java to sell their land to both residents of their village and outsiders. In areas where the gogolan system (partially communally controlled) existed in East Java, the concept of control over land changed from a communal one to individual ownership rights. After the country achieved stability and the agricultural situation improved, there was a very much increased level of land sales. Also, associated with this was an increase in long term renting from the smaller operators to the wealther farmers and short-term share cropping (and kedokan) from the wealthy farmers to the landless which results in increased control over the agricultural land by those who have capital or access to credit.

3. Agricultural institutions (bawon, ngasak, sakap, simpan pinjam) that have in the past provided security, income, and perhaps welfare to the landless and marginal farmers have been weakened or disappeared and will not be functional in case of natural calamaties in the future. As long as the present prosperity is maintained, these institutions are not an important part of village life, but if this fragile situation should collapse the landless and marginal farmers may not be as capable of surviving as in the past.

4. During the last 50 years the rural villages have evolved in the following manner:
   a. The number of landless has greatly increased.
   b. The average size of farm operations has declined.
   c. The number of large farm operations has declined.
   d. The number of people migrating, both permanently and seasonally, has greatly increased.
   e. The wage levels in real terms have ramained reasonable the same.
   f. The price of land has greatly increased.
   g. The opportunities for work outside of the villages has greatly increased.
   h. The role of the village leader and his being from the village has changed.
   i. Population pressure on the same amount of land has greatly increased.
   j. The use of purchased agricultural inputs has greatly increased.
   k. The distribution of land and income is much less equal than in the past.
   l. The control over land has shifted from most of the people in the village to only a few of the people in the village.

The primary purpose of this study is to examine the land tenure and labor market situation in East Java. Most of the research for this paper fits into the third (1968-73) and the fourth (1973-78) periods. Thus, only those propositions above related to land tenure and labor markets will be examined in this study.

Also, this study will show how the renting of agricultural land by the small, marginal land owners who are renting their fields to the wealthy land owners is rapidly replacing the more traditional system

of sharecropping which was primarily wealthier landowners sharing out their land to landless laborers and marginal farmers. This emerging trend is examined in detail in this study especially since the renting of land leads to the sale of the land and thus affects land distribution adversely. The study also examines how the land market has functioned (buying and selling of agricultural land) in East Java during the last 30 years.

Since the land market is also greatly influenced by the Government's land reform, the impact of the land reform of 1960 will be examined as well as the distribution of Dutch owned land in the 1950's. The Government owned sugar cane factories have affected these land markets for generations and this influence will also be examined.

The problem of land scracity in Java has been a long-recognized fact, while population has increased very rapidly, the availability of agricultural land has remained fairly constant. This situation has led to diminishing farm size and the fragmentation of land. People respond to the situation according to Geertz, through a process called "shared poverty"[5/]. However, Geertz did his research in 1950 at a time when modern agricultural technology had not reached rural areas. Several studies conducted in the 1970's have reached conclusion which dispute the validity of Geertz's theory and propose instead that the agricultural sector was simply unable to support the increase in the rural population[6/].

A case study conducted by Siahaan (1977) shows that farm size determines the likelihood of adoption of new technology[7/]. Owners of large farms are more responsive than owners of small farms to the

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5/ Clifford Geertz, Agricultural Involution, University of California Press, 1963, p.97.

6/ William L. Collier, "Agricultural Evolution in Java", in Gary E. Hansen (ed.), Agricultural and Rural Development in Indonesia, Westview Press, 1981. pp.147-177.

7/ Hotman Siahaan, Pemilikan dan Penguasaan Tanah, Adopsi Teknologi Modern dan Disparitas Pendapatan di Pedesaan (draft Study in Central Java).

adoption of new techniques, which means that the income of the former group tends to increase as a relatively faster rate, for all these reasons, therefore, an assessment of land distribution in quite important and is a part of this study.

New technologies do not always have unique influences on labor absorption. Research conducted in the beginning of the 1970's suggests that irrigation improvements, the use of fertilizers, and the planting of high-yielding cross are able to increase employment in agriculture (Sajogyo, Collier, 1972)[8/]. However, in years following this research, tractors, rice hullers and sickle harvesting entered the rural scene and had the effect of reducing farm employment. Subsequently, other phenomena began to develop, e.g. changes in social relationships and labor transactions (ngepak-ngedok, borongan system, kebyokan, ijon system), that tended to dilute the bargaining power of the labor force vis-a-vis farm owners. These processes and changes also are studied in this report.

Research Objectives

a. To determine the extent of the inequity of land distribution in the rural areas of East Java and its associated effects on income distribution.

b. To study the process of land market transactions in East Java and to delineate the factors which determine the pattern of landownership and distribution.

c. To study the nature of the labor market in the agricultural sector of East Java and the role of the existing transaction system which determines laborer-employer relations.

8/ Sajogyo and William L. Collier, "Adoption of High Yielding Rice Varieties by Java's Farmers", Research Note No.7, Agro Economic Survey, Bogor, (mimeo), May 1972, 20 pp.

Geographical Coverage

This report will summarize the findings of various research activities already conducted in villages in East Java by the Agro Economic Survey's (AES), 1969-72 Rice Intensification Study (RIS), the 1978 Rural Dynamics Study (RDS), and by other institutions. The village samples are as follows:

a. Gemarang Village (Ngawi Kabupaten)

This village was studied by the AES in 1969-71 and in 1978 was chosen as a sample village for the RDS. This village is located in a flat area where lowland rice dominates.

b. Sumokembangsri Village (Sidoarjo Kabupaten)

This village was studied by the AES in 1972 and in 1978 was studied by the AES staff member for his Master's thesis at the Bogor Agricultural University.

c. Petung Village (Trenggalek Kabupaten)

This village belongs to the RDS' 1978 sample and is representative of limestone hilly areas. Most of the land is utilized for upland farming. Before the village was studied by the AES, a socio-economic study was conducted by one of the authors using the village as representative of a marginal area.

d. Tamansari Village (Malang Kabupaten)

This village is located on the slopes of Mount Semeru at an altitude of about 1000 meters above sea-level. The village represented a volcanic area in the RDS research in 1978. Only upland farming can be found here, with cultivation being devoted to crop combinations consisting of coffee, tea, cassava, corn, sugar cane, and fruits.

e. Sungunlegowo Village (Gresik Kabupaten)

This village is located in the northern coastal area of Java. Under the RDS 1978 it was considered representative of an area devoted to tambak (brackish water) fish farming, which is the chief occupation in the village.

f. Kraton Village (Lumajang Kabupaten)

This village is located on the southern coast of Java and was studied in 1979 by a student of Brawijaya University, who focussed his work on the kedokan system.

g. Sukasari Village (Jember Kabupaten)

This village is located in a typical lowland but rather hilly area. It was studied in the 1969-72 RIS and subsequently by the RDS in 1978.

These villages are resonably representative of the various agricultural and topographical situations in East Java. In a rather simplifed divisions in East Java there are:

(1) Lowland plain dissected by major rivers which is a major rice producing region and has a very dense population (700 to 3000 persons per Km 2) and the selected villages of Gemarang, and Sumokembangsri represent this type;

(2) Hilly regions with a mixture of cropping patterns of corn and rice predominating and a lower population density, and the selected villages of Sukasari and Petung represent this type;

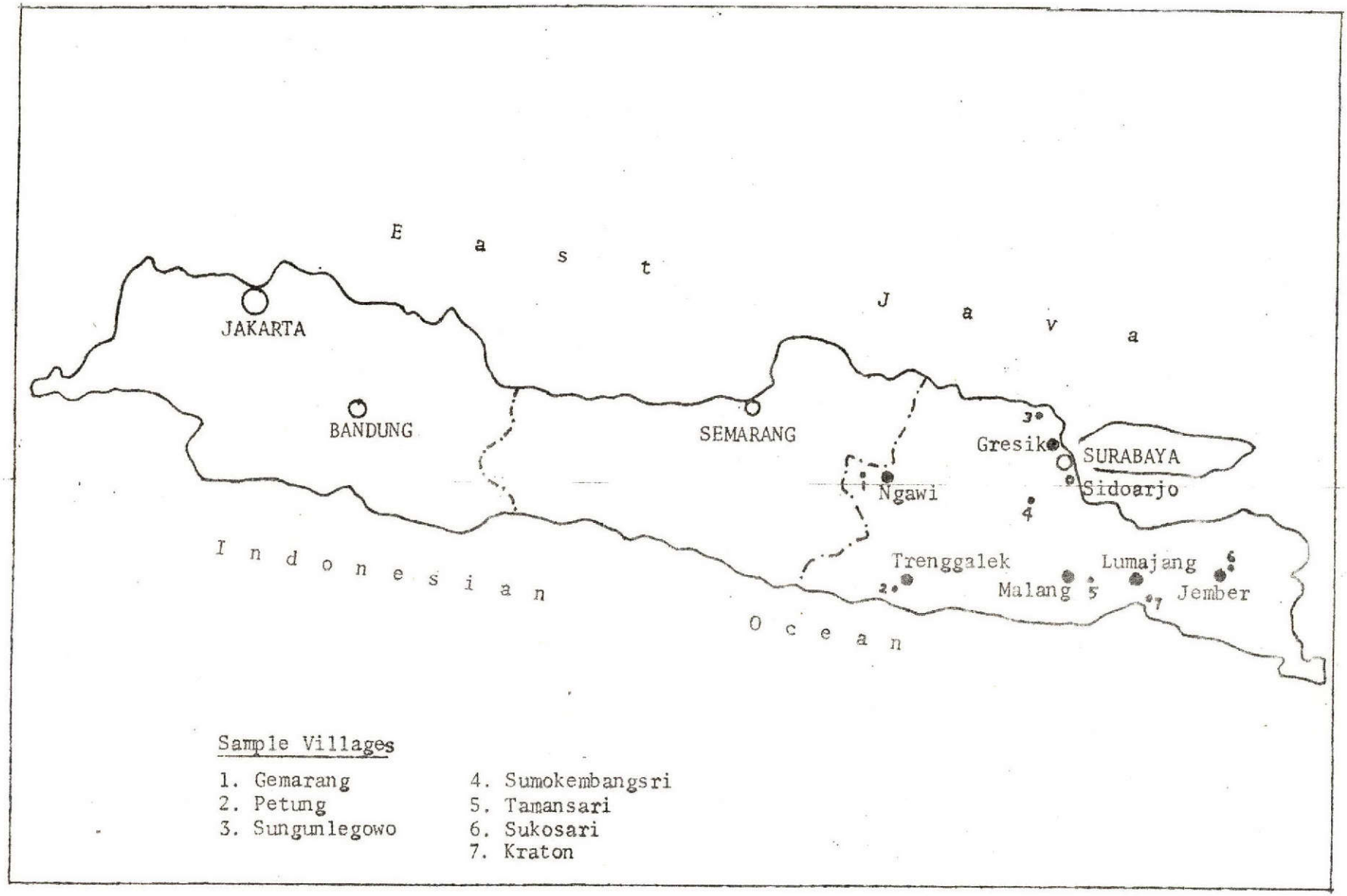
(3) Mountanious regions with low population desities and growing cassava, corn, rice, and tree crops which is represented by the selected village of Tamánsari;

(4) Lowland, major rice producing areas on the southern coast of East Java which is represented by Kraton Village;

(5) Coastal villages on the North Coast where there is a combination of brackish water aquaculture and rice fields which is represented by Sungunlegowo village.

(6) Coastal villages, very densely populated, that have sea fishing as the major occupation of the residents, and is not included in this study.

Of course, one can have other division of the situation in East Java but with a limited number of villages, the above division into six zones does adequately portray the East Java rural situation.


East Java
JAKARTA
BANDUNG
SEMARANG
Gresik
SURABAYA
Sidoarjo
Ngawi
Trenggalek
Malang
Lumajang
Jember
Indonesian Ocean
Sample Villages
1. Gemarang
2. Petung
3. Sungunlegowo
4. Sumokembangsri
5. Tamansari
6. Sukosari
7. Kraton

HISTORICAL REVIEW OF POSSESSORY RIGHTS IN THE PAST AND THEIR EFFECTS ON THE PRESENT: CASE STUDY OF SUMOKEMBANGSRI VILLAGE AND GEMARANG VILLAGE

In order to understand the nature of land markets in these villages, it is important to review significant past events in the villages and to trace their influence on the current situation. Since rice fields (sawah) in Sumokembangsri village were originally owned communally and in Gemarang village was originally Dutch estate land that was redistributed for private ownership, a historical comparison of the two villages will provide an insight into the current land markets of each village. The main conclusion to emerge from this comparison is that although in the past one village had communal land rights and the other, individual ownership, a trend toward concentration of land control developed in both villages. Unfortunately, the study in Kraton village is lacking in a historical review of land control and, therefore, this paper will cover the relevant histories of only Sumokembangsri and Gemarang villages, since the very detailed and frequent interviewing ove a long period of time was not carried out in the other selected villages.

History of Land Ownership and Use in Sumokembangsri Village

Information on this village was drawn from respondents and village records. In order to carry out this part of the study, only older residents were interviewed.

The present village is the result of the 1930 consolidation of three former villages. The oldest living resident interviewed could not recall when any of the three villages was first established. Neither did anyone know who the first settlers to open the land were, although

the event is mentioned in the book, Cikol Bakal Desa (Village History). However, the discovery of an ancient well in 1959 located in a village field indicates that Sumokembangsri has been inhabited for a very long time.

The village is located in the very fertile Brants Delta of East Java, which indicates that the first settlers were probably farmers. Its location is not far from the Kalimas and Brantas rivers, the latter having formerly been used as a major transport artery. The center of the Mojopahit kingdom 1293-1520 was only 23 km. from the present village site.

The village families were known as either gogol or angguran families, the difference being that the gogol had use rights to the land but the angguran did not.

The gogolan system was originally a form of communal ownership that conveyed inheritable rights to a portion of the total sawah land without specifying an exact location of the plot. This system was, perhaps, established by the Dutch to enable their sugar cane factories to have access to the village land on a rotational basis. The village land was divided into three sections or blocks that were rented on a rotational basis to the sugar cane factory. Theoretically, only one section was used every 18 months by the factory to cultivate sugar cane, although in reality there was a considerable overlap and at times two sections might be planted concurrently. The village residents with rights to the sawah land were said to have a gogol, meaning a share in land in each of the three sections. As an example, if one gogol was 0.6 hectares in size, a person who had a gogol was given 0.2 hectares of sawah land in each block, and the sugar cane factory was given the right to rent one of the blocks of sawah land.

Every year during one of the village meetings, a lottery was conducted to determine which resident would receive which location where he could grow rice. Each field was long and narrow so that a person would have a field which was both near to and far from the source of irrigation water. The purpose of this was to give everyone a field which was both well-watered and poorly-watered, the ostensible objective of the lottery being to randomly assign the land to the gogolan farmers in as impartial a manner as possible.

All regulations regarding the use of the communal land were in accordance with village decisions and covered such topics as how use rights could be acquired, how rights could be inherited, and how the rights could be taken away from a resident.

Each person with a gogol had specific duties to the village. Residents who did not have gogol rights were called angguran, which in the Javanese language, means "a person who does not have a job" and, in this context means that they did not have specific duties to the village.

The village administrative system usually diffentiated among classes of gogol and labeled them gogol class I, gogol class II, and gogol class III. Gogol class I consisted of persons who had the right to own a house and garden and to use the communal irrigated field. In other regions of Java, class I would be called Kuli Kenceng. Gogol class II (or kuli kendo) consisted of people who had a right to own a house and garden but did not have a right to use the communal land. Gogol class III (or tlosor) was comprised of people who did not have any land rights whatsoever except for being able to borrow (numpang) land held by someone else.

According to the oldest resident (86 years old) in the village, the gogolan system was fairer than a system of private ownership. He felt that because the communal land was opened by the village ancestors all residents should be allowed access to the land rather than limiting ownership to a single individual.

Neither in the village records nor in the recollection of the older informants was there any information on when the gogolan system was first established in Sumokembangsri. As already mentioned, however, it is generally believed that the gogolan system was created by the Dutch colonial regime to assist Dutch enterprises in growing industrial crops. Support for this belief is found in the fact that the system is found only in Java, where the Dutch had their longest period of control, and primarily in sugar cane areas of East and Central Java.

Gogolan land in other areas of Java was called norowito land or kasikepan land and was usually established in irrigated areas (sawah). The system was also usually found in areas traditionally devoted to sugar cane cultivation and where sugar cane factories had the right to annually plant cane on 1/5 to 1/3 of the village's irrigated fields. Most areas following the system were fertile and had good irrigation facilities. The sawah fields in Sumokembangsri received water from a branch of the Brantas River and from a dam built thereon by the Dutch in 1857.

Existing village archives mention only land problems dating back to 1902. Unfortunately, the village records are not complete because some information has been destroyed or lost and new records of dubious reliability have replaced the old. For example, Sumokembangsri village was formed by a consolidation of three villages, and some of the records were lost at the time of consolidation. The most complete records were found in Kampung K.

There were only 18 people living in Kampung K in 1915, who had gogol rights. The remaining areas of land were called bengkok, which was reserved for village leaders as compensation for their services, and sanggan (a type of titisara), which was reserved as a site for

village administration and for the generation of income to cover the expenses of village guests.

A newly appointed gogol holder had to satisfy certain requirements before his status became official. These requirements included, among others, married status, ownership of a house and garden, and being considered reliable enough to perform certain village duties. The reliability of the candidate was usually tested by requiring him to perform his duties for one year before he could officially receive a gogol.

Between 1915 and 1939, the number of people possessing a gogol fluctuated. The total number of holders was not known, although it has been ascertained from village records that the average size of one gogol before 1939 was .93 hectares. Land was redistributed in 1939 to allow more people to secure gogol rights. Thus, according to one informant, after redistribution, Kampung K had 41 people with gogol rights, with one gogol being on the average 0.73 hectares in size.

Several informants explained the reasons for acceptance of the 1939 redistribution. The major reason mentioned was that the duties associated with the gogol rights were too burdensome, requiring a holder to perform duties both to the village and to the national government. A second reason for the redistribution and for the increase in the number of holders was that several holders had died, which increased the burden on remaining holders to fulfill the village duties. The duties of a holder were quite extensive. They included guarding the village at night, repairing roads, maintaining and repairing irrigation facilities, taking care of village burial grounds, constructing village buildings, etc. In addition, each holder was required to work two days each year, without pay except for meals, for the village leader. The Dutch government also required holders to work on irrigation projects

and road construction and to perform other miscellaneous jobs. At that time, all village officials (pamong desa) were not required to perform these duties since each already had specific duties as officials of the village.

Between 1939 and 1950, war and revolution created conditions of instability within the social system. As a result, Kampung K did not appoint new gogol holders, despite a significant decline in their number occasioned in pant by deaths from forced Japanese labor conditions (Romusha) and during the war against the Dutch. Following this period, in 1951, new gogol holders were recruited to replace the many that had died and to resume those social activities that had been ignored during the years of war.

In 1952, the long-time village leader died and an election was held to appoint a new leader. The village succeeded in electing the old leader's son, who was then one of the village officials (carik). This change in leadership was associated with the advent of new ideas regarding the criteria for recruitment of new gogol holders--an innovation which the new leader had promised to introduce. In order to implement this promise, all village land, except bengkok, was converted into the gogolan system.

New gogol holders were recruited until 1955 when the total number in Kampung K was 71 and the area of one gogol had been reduced from 0.93 hectares in 1939 to an average size of 0.46 hectares in 1955. The duties of the holders remained the same as in 1939, the only difference being that the village leader now had to pay wages and provide food for work performed for him by gogol holders. At that time, the village meeting records were written in Latin script rather than Javanese script, although still in the Javanese language.

After 1955, a major change in the village administration occurred by way of the conduct of and means of recording village meetings. Beginning in 1935, village records were written in Indonesian. However, the village residents who were affiliated with the Communist Party refused to acknowledge the village decisions, arguing that they were a legacy of the colonial period and primarily served the benefit of the village leader. Since that time, consequently, none of the decisions at these meetings were unanimously accepted; rather, social dissent began to replace the traditionally peaceful meeting procedure of arriving at unanimous agreement (murafat) on all meeting matters.

Since 1955, the annual village meetings have invariably failed to reach consensus and have periodically not been held at all except to review decisions related to the village development budget.

Some changes which grew out of the 1952 conversion of all land to the gogolan system were not officially observed until 1955. For instance, in 1955, village officials who then possessed a gogol were required to perform the same duties as other holders and to pay wages for the work performed for them. Further, the commissions on the sale of cattle and land, etc., which had previously been paid by the village residents to the village officials, were, after 1953, paid into the village treasury. However, there was no longer unanimous agreement on village meeting decisions, even though, as the above examples indicate, several changes had occurred before 1955 to improve the system. Thus, for example, the redistribution of land among gogols to accommodate new holders was not approved in a village meeting. Rather, the actual entity which made the decision seemed to be immaterial, so long as every powerful family received a sizable share of land.

Beginning in 1958, as the time for implementation (in 1960) of the the new Land Reform (UUPA) and Sharecropping Reform (UUPBH) laws was approaching, the village political situation became potentially explosive due in particular to the instigation by Communist Party members who sought to dominate the land reform committee. The conflicts which occurred among competing groups (Communist, Nationalist, and religious parties), however, were more related to national political problems than to local issues. Soon the conflicts spread to meetings of the various organizations as well as to formal meetings sponsored by village officials. On one occasion, a physical clash between Communist and Nationalist groups erupted at a village cultural event sponsored by the government (Nasakom). The fight was triggered when the Communists began to heckle a speaker of the opposing party.

The implementation of the land and shrecropping reform laws, per se, did not create any new problems in Sumokembangsri village. Agricultural land was very limited and since no one owned more than 5 hectares there was no land available for redistribution under the Land Reform Law. The Share ropping Law was not applicable, either, because there was very little sharecropping in the village. The conflicts that did occur arose out of the requirement that farmers lease sawah land to the sugar cane factory. The Indonesian Farmers Union (BTI), having an affiliation with the Communist Party, refused to conform to the rule. Often there were demonstrations against village leaders demanding that the requirement be eliminated and pressing for the firing of some village officials (pamong-pamong). These political conflicts reached a peak around 1964-65 when a fight occurred at the Kecamatan office between a village leader from a nearby village and a BTI member who lived in Sumokembangsri. Subsequently in

September 1965, the attempt by the Communists to overthrow the national government failed and its members in the village arrested.

Because of the 1960 land reform, the villagers had their gogol rights converted to individual ownership. Before this, there were conflicts over land and the villagers accepted the reform in order to lessen these conflicts. The reasons for this are illustrated by the following example. A gogol was held by a stepbrother of one of the village's extended families. Under the traditional gogol system, the stepbrother could not alienate his gogol interest to another family member unless he had received official approval to do so before his death. Thus, in 1963, the family chose to sell the land and divide the inheritance among the stepbrother's heirs rather than seeking to resolve, through traditional means, the inevitable question of who had the right to the gogol land. This problem would not arise if land is individually owned.

It should be noted that in Sumokembangsri even though the land reform laws converted the communal ownership of sawah into private ownership, most of the traditional gogol regulations relating to land continued to be enforced at the village level. As an example, landowners were still required to perform specific duties for the village. Also, the land owned by a gogol holder was without specific location and each year a lottery determined who was to receive which field in the three blocks of gogol land. Divergence from gogol rules did occur, however. For instance, the sale of sawah land in the gogol system increased over time. The 1972 census indicates that some villagers owned more than one gogol and, in some cases, up to four gogols. Before the land reform, a villager was allowed to have only one gogol. Furthermore, the partial census of 1978 revealed that the frequency of multiple ownerships had increased to the point where in on case, a person owned five gogols. Based on these two censuses,

there are strong indications that agricultural land is being concentrated in fewer hands and that the class of landless people is growing rapidly in Sumokembangsri.

Several conclusions can be drawn from this brief history of land ownership and use in Sumokembangsri. First, the 1960 land reform created an impetus for land ownership to be concentrated in the hands of a few individuals. Secondly, the sugar cane industry significantly affected village land use patterns during the last century and continues to play a major role in determining the activities of the current land market. Finally, it is clear that political problems and the instability of the national government in the 1960's had a significant impact on the village land market.

History of Land Ownership and Use in Gemarang Village

The history of land in Gemarang village is very different from that of Sumokembangsri village; however; their varying histories produced very similar phenomena. The present village is a consolidation of six kampongs (pedukuhan); the land area of three of these kampongs, located on land which until 1940 was a Dutch rice estate (Erfpacht) comprises 85% of present village area. One of these kampongs borders a highway and another is located along the Solo River.

Gemarang village has 976 hectares of irrigated fields (sawah), 210 hectares on non-irrigated land (tegalan) and several housegardens. 810 hectares of the irrigated fields are located on former Erfpacht land and the remaining 160 hectares are either communal (gogolan) or privately-owned land of the other three kampongs. 120 hectares of the non-irrigated land in the village are former Erfpacht parcels, which before 1945 had been reserved for the estate managers' houses and buildings.

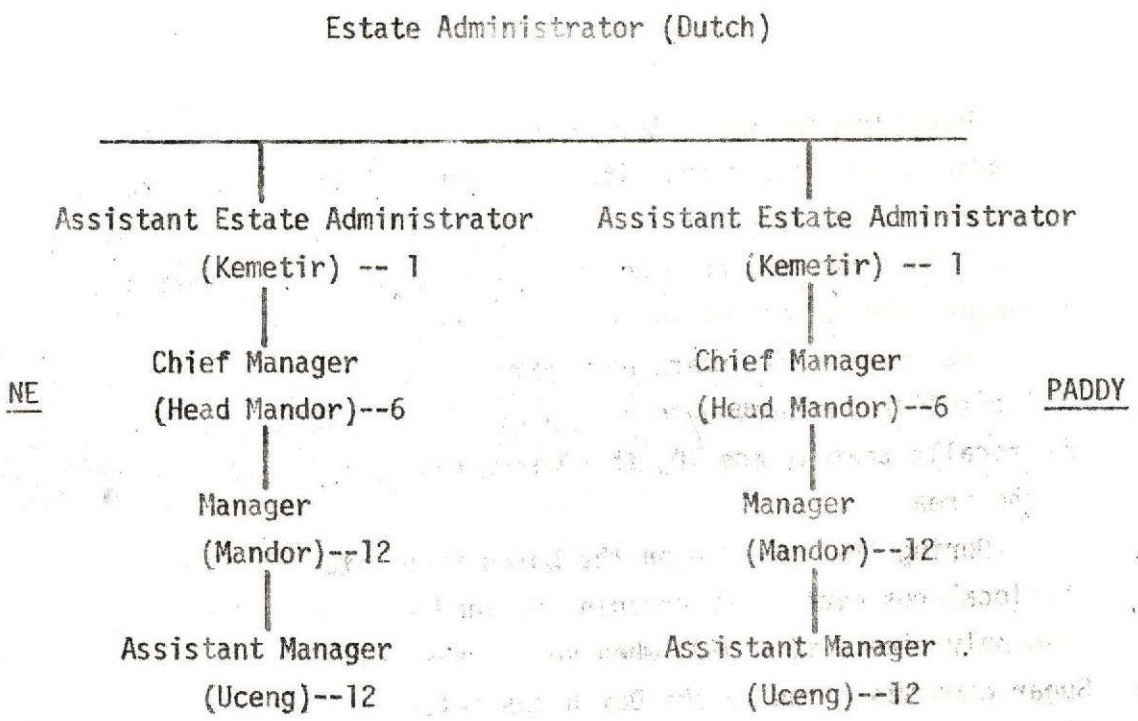
According to one of the older informants, who based his information on discussions with his father, this estate land was originally owned by Chinese rice farmers who sold the land to the Dutch. The land in a neighboring village was also predominantly Erfpacht and was cultivated by the Chinese until 1945.

The Dutch rice estate had apprently been in operation from at least 1918, according to a 72-year old village leader (kamituwo), who recalls that at age 10, the Dutch were already cultivating rice in the area.

During the period when the Dutch rice estate was in operation, the local residents sharecropped the land for the Dutch. The estate grew only rice until 1930, when sugar cane cultivation was initiated. Sugar cane was grown by the Dutch themselves and, by 1940, approximately 30% of the estate area was devoted to cane.

Irrigation facilities in the village were very good. According to an Indonesian ex-assistant manager of the Dutch estate, however, the village irrigation system in 1976 had only then become comparable in quality to the system existing during the Dutch period. Despite the high quality of the Dutch irrigation system, however, not all of the estate land was opened for rice cultivation due to a shortage of workers.

In order to manage the estate, two Dutch managers were assisted by a number of Indonesian assistant managers. The organization was run according to the following structure:



These Indonesian staff members were paid a monthly wage and were given the opportunity to sharecrop the land, consequently, they eventually became the largest sharecroppers on the estate.

All of the estate's activities were managed by the staff. Rice seed was provided to the sharecroppers, but not chemical fertilizers. At harvest time, the farmers reported to the assistant manager and the harvested paddy was dried in the field. When the manager ordered the paddy to be delivered to the estate warehouse (godown) each farmer arranged to have this done. The paddy was shared 50-50 between the sharecroppers and the estate, after the cost of rice seed and harvest expenses (bawon) were deducted. The share croppers had to repay their debts to the estate in the form of paddy before taking their share of the paddy home.

Before the Japanese invasion in 1943, almost all (90%) of the households in Gemarang village sharecropped estate land and, because of a shortage of labor, many people came from outside the village to participate in the sharecropping. Each farmer sharecropped from .7 hectares to 8.4 hectares, and as mentioned previously, those farmers cultivating larger areas were the Indonesian managers of the estate. The number of hectares a person was allowed to sharecrop was determined by the Dutch manager on the basis of his evaluation of the farmer's ability as determined by the number of water buffalo owned by the farmer.

In 1943, the Japanese took over the estate but retained two Dutchman until mid-1944 to manage the operations for them. During this period, the estate's sugar cane factory was seriously damaged and attempts to repair the factory were unsuccessful. Although now forced to process the cane into red sugar (gula mangkok) by traditional methods, farmers were still required to share their crops with the Japanese. Eventually, the area devoted to cane was cut down in order to open more land for rice. Each farmer was given between 0.3 and 2.0 hectares. The share percentages were altered from 50-50 to the Japanese taking only a 1/3 share but the sharecroppers now having to pay all Japanese and their Indonesian assistants. The assistant managers continued to work for the estate and their salaries were paid in kind rather than in cash.

During the 1944-45 wet season harvest, the Japanese were forced to withdraw from this area because of ensuing guerilla warfare, followed by the declaration of Indonesian independence on August 17, 1945. At the time of the Japanese withdrawal, some farmers had already paid their paddy share to the Japanese; these farmers tore down the warehouse to reclaim their rice and sugar. Those who had not yet paid took all of their harvest home.

After independence, the Erfpacht land was taken over by the provincial government (Dewan Perusahaan Daerah), which continued to use the

sharecropping arrangement initiated by the Japanese.

The number of households in the village, by this time, was much larger than before the war because of births and in-migration from other regions so that by 1950, approximately 30% of the households in Gemarang were unable to sharecrop because land had become so scarce. As a result of this situation, some of the sharecroppers rented land to other farmers and called the arrangements "cultivation borrowing" (pinjam garapan).

At the same time, a number of organizations were formed in Gemarang, among them being the Union of Erfpacht Estate Workers (Serikat Buruh Persil Erfpacht) and the Indonesian Farmers Association (Barisan Tani Indonesia, or BTI), which proceeded to exert some influence over sharecropping activities in the village. These organizations demanded that the ex-estate lands be given to the people for a fee. Boycotts were launched by sharecroppers, who were members of the BTI and who did not want to pay the 1/3 share to the regional government. The 1948 Communist uprising in Madiun also affected the village when some of the villagers, who had joined the insurrection, were captured after the revolt failed.

The confusion and civil disturbances of the period produced some significant results. In 1955, the regional government decided to give the land to the people. Redistribution of the sharecropped land was implemented under the following rules: Long-time sharecroppers were given 1.5 hectares, well-established sharecroppers were given 1.0 hectares, and candidates were given 0.5 hectares. For a fee, farmers were given red cards to indicate that they had the right to cultivate their land.

When this redistribution policy was announced, there was an immediate village uprising sponsored by the BTI. At that time, almost 90% of the villagers were members and thus, supposedly, Communists.

They protested and refused to accept the red card system for the following reasons:

1. They demanded that they be given ownership rights to the land without having to pay a fee to the government.
2. They objected to the distribution, which they believed favored only existing sharecroppers.
3. They were not satisfied with assurances that the government intended to actually given them the land even if they had paid their fees.

Because many of the BTI members did not want to accept the red cards, the cards were given to other people who were willing to pay the required fee. Many BTI members who purchased the cards eventually sold them to others because the BTI promised that it would return the land to its members when the Communist Party took over the national government.

Soon after the red cards had been distributed, a fight between the old sharecroppers, who were members of the BTI, and the new farmers who had bought the red cards, broke out when the new farmers attempted to take over the land. Despite government intervention in 1956, local activities continued to obstruct the change. At one point, for instance, three female members of the communist organization, Gerwani, stood naked in the field in order to prevent soldiers from giving their land to the new farmers. Several informants stated that the three women were large landholders of 5-6 hectares and that during the Dutch period they had each sharecropped 8.5 hectares of land. One can speculate, therefore, that some BTI members were actually wealthy villagers using political means to maintain their control over the village land.

The following year (1957), the land was finally redistributed and the sharecroppers given actual ownership rights. The classes of owners

and the amount of land received by each member were as follows:

1. Ex-staff of the Dutch estate .80 hectares
2. Long-time sharecroppers .55 hectares
3. New cultivators .35 hectares
4. Candidates .25 hectares

The redistribution was relatively well-managed. Those persons who had sold their red cards were given land according to the above criteria. Those who had received the land from the government were given one year to pay their fees for the land. More than 50% of the land was acquired in this manner by people from other villages, other kabupatens, and urban areas. Most of the sawah land sold to outsiders, however, took place in 1958 after the sellers were assured by the Communists that their land would never be taken over by the buyers, but would be returned to the sellers after a national Communist takeover.

Several farmers, with the assistance of village officials, rented their land to a sugar cane factory and in this way were able to pay their fees to the government; thus, sugar cane once again was planted in Gemarang. In 1963, one of the ex-assistant managers experimented with growing ratooned cane on his land and eventually succeeded in processing the cane to make red sugar. Following his example, planting and ratooning cane greatly expanded in 1971 when a Chinese enterprise rented land for this purpose from farmers. Then, in 1978, Chinese from Madiun rented 80 hectares of the village to grow sugar cane, and paid the owners Rp 180,000 per hectare.

During the period of national political instability before 1965, and especially between 1955 and 1965, social unrest permeated every aspect of life in the village. The Communist farmer's union (BTI), for example, refused to join the voluntary labor (gotong royong) activities of the village. Also, in 1963, when the long-time village leader (lurah) was

relieved of his position, a Communist party member was elected to fill the vacancy. However, after the attempted national coup in 1965, the new leader was arrested and sent to the government detention center at Buru Island.

The 1965 coup greatly affected the village in other ways. Sixty villagers were taken away and have never returned. The village leadership was given to a caretaker, who held the post until 1968 when he was replaced by an ex-commandant of the military (Koramil) from the local kecamatan (county).

Sales of land became frequent in the 1958-60 period and after 1970. A village official estimated that by 1958, 40% of the sawah land was owned by outsiders and that by 1960, the figure had risen to approximately 50%. Purchases by outsiders encouranged in-migration of new residents. Some government civil servants, for example, who purchased village land, retired and made the village their new home.

After the 1957 redistribution, the largest holding was 0.8 hectares in size and the smallest was .25 hectares. Thereafter, as the sales of land increased, a marked tendency developed for land ownership to be concentrated in the hands of a few. Based on the partial census carried out by the 1978 Rural Dynamics Study, there had been a concentration of both ownership as well as renting and sharecropping of sawah land. Almost 65% of the village households did not own land and 10% of the households owned 61% of the sawah land in the village. The large land owners were, primarily, the ex-assistant managers of the Dutch estate and government officials, who had purchased sawah land, retired, and moved to the village.

This brief review of Gemarang's history reveals that, like Sumokembangsri village, the land market in Gemarang was greatly influenced by past political events, and especially the government's attempts to redistribute the village land.

Although it is impossible to state how representative the two villages are, they do indicate what occurred in East Javanese villages and are clearly representative of a wide area.

In the next section, the current land owners will be studied to show how the transfer of temporary land rights functions to increase the polarization of land ownership.

DISTRIBUTION OF CONTROL (OWNED, RENTED, SHARECROPPED) OF LAND.

Distribution of Land Ownership

According to the law, land ownership is the most secure of all land rights. By contrast, leases, sharecropping and "gadai" (pawned) are only temporary rights. Land ownership can be obtained in various ways, such as through purchase, inheritance, or government allotment. Similarly, land ownership may be withdrawn through sale, inheritance, or government action.

In rural areas, land is the most important factor of production because the majority of people make their living from agricultural endeavors. Even though land is the most important source of livelihood, many people for various reasons are not able to own land. The transfer of rights to land makes it possible to change the pattern of land distribution over time. Table 1 and Table 2 show land ownership distributions in the selected East Java villages. For purposes of this analysis, bengkok land is considered to be an ownership right.[9/] In Table 3 the distribution of total agricultural land is distinguished from so-called major crop use of the land areas; nevertheless, the two classifications produce similar Gini ratios.

Tables 1 and 2 indicate that completely landless households in Gemarang, Sumokembangsri and Sungunlegowo ranged from 27 to 46%, while those who did not own irrigated rice fields (sawah) or dry land areas (tegalan) ranged from 38 to 64%. In Petung and Tamansari, landless households were relatively few--only 1 to 6%. Both villages are located in hilly or mountainous areas and their farming is classified as predominantly upland. Gemarang, Sumokembangsri, Sukosari and Kraton are located in lowland areas, while Sungunlegowo is a coastal area where tambak (brackish water) fish farming dominates.

9/ Bengkok land is village land that is loaned to the leaders who then can farm the land and the proceeds are their payment for holding a leadership position, and is only theirs as long as they hold the position.

Table 1. - Land Ownership Distribution of the Total Agricultural Area in Six East Java Villages in 1978.[a/]

Area owned (Ha)	Gemarang[1]		Sumo-kembangsri[3]		Sukosari[1]		Kraton[2]		Petung[1]		Tamansari[1]		Sungunlegowo[1]	
	HH %	Area %	HH %	Area %	HH %	Area %	HH %	Area %	HH %	Area %	HH %	Area %	HH %	Area %
0	27	0	9	0	39	0	37	0	1	0	6	0	46	0
0.01 - 0.24	33	6	37	4	33	15	19	5	18	5	9	1	4	0[b/]
0.25 - 0.49	16	15	3	3	16	22	14	10	34	20	16	7	4	1
0.50 - 0.99	16	27	42	61	6	13	15	23	29	32	37	31	3	1
1.00 - 1.99	6	20	8	24	4	20	10	31	15	30	28	46	7	4
2.00 +	2	32	1	8	2	30	5	31	3	13	4	15	36	94
Total (%)	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total house-holds	494		493		502		497		516		353		524	
Total area (ha)		178.		216.		135.		209.		310.		290.		1168.

Note: a/ Total agricultural land consists of irrigated fields (sawah), uplands and brackish water ponds (tambak). There is only upland farming in Tamansari.

b/ Less than 0.5%

Source: 1) Sri Hartoyo dan Soentoro "Penggunaan Sumberdaya, Lembaga Pelayanan Dan Pembangunan di Daerah Persawahan, Pegunungan, Dan Daerah Pantai, Jawa Timur", Rural Dynamics Survey, East Java Series No.5, tabel III.2, 1980.

2) Kliwon Hidayat "Penata Sosial Pada Usahatani Padi di Desa Kraton", Sarjana Thesis (unpublished), Brawijaya University, Malang, Indonesia, 1979.

3) Soentoro "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi Di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

Table 2. - Distribution of Land Holding Size of Major Land Area Types in Five East Java Villages in 1978.[a/]

Size of land holding (Ha)	Gemarang[1]		Sumokembangsri[2]		Sukosari[1]		Petung[1]		Sungunlegowo[1]	
	HH %	Area %	HH %	Area %	HH %	Area %	HH %	Area %	HH %	Area %
0	64	0	38	0	54	0	1	0	47	0
0.01 - 0.24	3	2	-	-	24	18	29	9	0	0
0.25 - 0.49	14	15	19	14	13	23	34	23	0	0*
0.50 - 0.99	15	32	36	54	5	17	22	29	1	0*
1.00 - 1.99	2	13	6	25	3	19	11	25	7	4
2.00 +	2	38	1	7	1	23	3	14	45	96
Total (%)	100	100	100	100	100	100	100	100	100	100
Total households	494		487		502		516		524	
Total area (Ha)		132.		183.		92		252.		101.

a/ Major land use type in Gemarang, Sumokembangsri, and Sukosari is irrigated rice fields(sawah), in petung it is upland non irrigated fields and in Sungunlegowo, it is brackish water pond (tambak) fish farming.

* = Less than 0.5% HH = Household

Source:1)Sri Hartoyo and Soentoro, "Penggunaan Sumberdaya, Lembaga Pelayanan Dan Pembangunan di Daerah Persawahan, Pegunungan, dan Daerah Pantai, Jawa Timur", Rural Dynamics Survey, East Java Series No.5, 1980.

2)Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

It should be noted that in the lowland villages of Gemarang, Sumokembangsri, Sukosari and Kraton, the number of households owning agricultural land of 2 or more hectares in size was quite small, i.e. 2-5%, and only 1-2% of sawah land. However, the percentage of the total village area controlled by a few individuals is considerable, ranging from 8-32% of the village's agricultural land and 7-38% of land devoted to sawah. In Sungunlegowo, a tambak village, the number of households owning more than 10 hectares of agricultural land is 4%. In mountainous villages (Petung and Tamansari), the landless households and households owning more than 2 hectares are relatively rare, and, accordingly, the area owned by this group is relatively small (13-15%).

It is also demonstrated that where landless households are great in number, the average size of landholdings tends to be large. Land productivity appears to be high where average size of landholdings is large and the distribution of landholdings is unequal. Another way to look at land distribution is through the Gini Index shown in Table 3. We see that inequity is prominent in Gemarang, Sumokembangsri, Sukosari and Sungunlegowo; in Petung and Tamansari, the observed inequity can be considered moderate.

Research conducted by Soentoro in Gemarang and Sumokembangsri shows that in both villages the historical processes leading to individual land ownership differ.[10/] The lowland area in Gemarang originated from Erfpacht (a land right given to Dutch plantations, usually for a period of 75 years), which in 1958 was redistributed to farmers. In Sumokembangsri, the lowland areas originated from gogolan, which, due to the absence of land reform, was converted in 1960 to individual ownership. Although the land has been converted into individual ownership, certain aspects of the gogolan system have been preserved by the village, including, among others, the rule that land may be sold only to other people of the village.

10/ Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", (The influence of land control on the social economics situation in rural areas: A case study of two villages in East Java), M.Sc. Thesis (unpublished), Bogor Agricultural University, 1980, 222 p.

Table 3. - 1978 Gini Index for Land Holding Distribution in the East Java villages sampled.

Village (Desa)	Gini index for land holdings	
	Total land area	Major land area type
Gemarang[1]	0.72	0.76
Sumokembangsri[2]	0.56	0.57
Sukosari[1]	0.74	0.76
Petung[1]	0.40	0.43
Tamansari[1]	0.40	0.40
Sungunlegowo	0.74	0.75

Source: 1) Sri Hartoyo and Soentoro, "Penggunaan Sumberdaya, Lembaga Pelayanan Dan Pembangunan di Daerah Persawahan, Pegunungan, Dan Daerah Pantai, Jawa Timur", Rural Dynamics Survey, East Java Series No.5.

2) Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi Di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

The Origin of Individual Ownership

In order to look for the causes of inequity in land distribution, the historical processes by which existing land ownership rights originated must be examined. Unfortunately, in the case of only two villages in this report--Gemarang and Sumokembangsri--were records of these historical processes available. Primarily for this reason, this study shall be limited to examining the origin of ownership rights only in lowland areas.

Table 4 indicates a possible relationship between the size of landholding and how the family obtained their ownership of the land. Landholdings below one hectare in size generally originated through government allotment, e.g., by the distribution of Erfpacht land to farmers in 1956 in Gemarang. Larger landholdings usually were acquired by purchase.

The redistribution of land in Gemarang occurred fairly recently, between 1955 and 1958. Most of the holdings, however, were not acquired directly from redistribution but rather from purchases made at the time of redistribution when many farmers were unable to pay the government fees.

In Sumokembangsri, about half of the privately owned land originated from the gogolan system and inheritance accounts for 28% of the cases. The eldest man in the village told the interviewers that the appointment of new gogolan holders occurred in 1951, 1939, 1950, 1954, and 1955. Thus, the gogolan system was effectively followed prior to the conversion in 1960. Most of the land has now either been inherited by the new generation or sold.

The acquisition of land through purchase is rather conspicuous in the case of large (more than one hectare) landowners in Sumokembangsri. Bengkok land is also extensive in this village, constituting of about 24% of the total area.

Comparing various processes leading to the concentration of land, we see that land purchase appears to play the most important role. This is particularly true when we examine the process of acquisition by farmers with landholdings of one or more hectares.

Table 4. - Percentage of Rice Land Owners by Size of Holding and Source of Ownership in Gemarang and Sumokembangsri (December 1978).

Specification	Size of land holding (Ha)				
	0.01-0.49	0.50-0.99	1.00-1.99	2.00+	Total
Gemarang					
1. Number of samples	86	66	11	9	172
2. Average area per household (Ha)	0.253	0.584	1.393	5.022	0.702
3. Area obtained through:					
a. Inheritance (%)	16	8	8	1	7
b. Government allotment (%)	56	72	31	12	41
c. Purchase (%)	28	19	44	83	48
d. Bengkok (%)	0	1	17	4	4
Sumokembangsri					
1. Number of samples	91	175	30	5	301
2. Average area per household (Ha)	0.270	0.567	1.534	2.971	0.614
3. Area obtained through:					
a. Inheritance (%)	36	32	22	7	28
b. Gogolan (%)	59	60	29	29	50
c. Purchase (%)	5	7	25	40	14
d. Bengkok (%)	0	1	23	24	8

Source: Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

Land Distribution

Data for land distribution are available for only two villages, Gemarang and Sumokembangsri, and only in regard to the lowland areas of the villages.

In 1978, out of 293 landless households in Gemarang, 82 had formerly owned some land. Table 5 shows the changes in ownership of land among these 82 landless households which increased annually from 1955 to 1978. As an illustration, in 1955 only 6(7%) of the present 82 landless households were landless. By 1978 all of them had sold their land for various reasons.

In Sumokembangsri there were 56 households in 1955 who had no land and this increased to 219 households in 1978 (Table 6). During this period the population of the village increased from 363 to 487 households. This table demonstrates that in Sumokembangsri over time the percentage of landless had greatly increased during recent years. From 1955 to 1960 the increase in landless households was due to the increase in population both newcomers and the formation of new families by children of the residents. From 1960 to 1975 the increase in landless households was caused by the increase in population (60 households) and the sale of land by 27 households, From 1975 to 1978 the increase was caused by 20 new households in the village and 15 households who sold their farm land.

When there are sellers there must be buyers. In this report, the process of sawah land concentration is examined by looking at people who own one hectare of land or more. Table 7 shows that the number of owners from 1959 through 1978 did not greatly increase. (In the category of 1.00-1.99 hectares, only two people lost their land.) However, although the number of owners increased only slightly, the area of land that they owned increased by 136% for those owning more than two hectares and by 54% for the class owning between 1.00 and 1.99 hectares. This can also be seen from the trend of change in average size of holdings. The increase in holding size occurred principally between 1974 and 1978. This is particularly true for the parcels over two hectares in size.

Table 5. - Percentage of the Eighty Two Landless Households (1978) Who Owned Land between 1955 and 1978 by Size of Holding in Gemarang, 1978.

Size of landholding (Ha)	Percentage of rice landowners					
	1955	1959	1964	1969	1974	1978
0	7	52	74	87	89	100
0.01 - 0.49	33	18	13	7	7	0
0.50 - 0.99	59	27	11	6	4	0
1.00 - 1.99	1	1	0	0	0	0
2.00 +	0	1	1	0	0	0
Total (%)	100	100	100	100	100	100

a/ This information is from the 82 households who were interviewed and did not have any agricultural land.

Source: Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi Di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

Table 6. - Landless Households and Total Number of Households by Years in Sumokembangsri Village, 1978.

Year	Total number of households in the village	Households with no agricultural land	
		Number of households	% of total
1955	363	56	15.4
1960	394	87	22.1
1973	454	184	40.5
1978	487	219	45.0

Source: Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

Table 7. - Trend of Change in Rice Land Holding Size for Households Owning One or More Hectares in Gemarang, 1978.

Year	Landholdings more than two ha in size			Landholdings 1.00-1.99 ha i size		
	Number of holders	Total area owned (Ha)	Average holding (Ha/HH)	Number of holders	Total area owned (Ha)	Average holding (Ha/HH)
1959	7	19.860	2.84	9	9.950	1.11
1964	8	26.555	3.32	10	13.175	1.32
1969	9	30.055	3.34	10	14.425	1.44
1974	9	34.605	3.85	10	14.375	1.44
1978	9	46.905	5.20	11	15.325	1.53

Source: Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

The size of landholding seems to be related to income and purchasing power. Investment in land is probably perceived by the wealthier people in the village as more lucrative than other forms of investment. The likelihood of a rise in social status may also help to explain the rush to purchase more land.

In Sumokembangsri, the trend toward changes in land distribution can be analyzed further by looking at the number of households possessing gogolan rights. The sale or purchase of gogolan rights must be carried out only in units of a gogol, i.e., 0.486 hectares. A household is prohibited to sell or buy in fractions of gogol because the gogol right is connected to specific social duties to be performed by the gogol holders.

Table 8 shows that up to 1960, a household could not have rights to more than one gogol unit. By 1973, however, several households owned more than one unit due to changes in the nature of the gogol right in 1960.[11/] These changes seem to have generated more liquidity in the land market, which in turn facilitated the process of land concentration by a few individuals. Increases in the rate of population growth is also one of the basic factors determining the increase in the number of landless households. These processes seem to support the contention that land distribution tends to become increasingly inequitable over time and is associated with a stronger degree of polarity between the rich and the poor.

Size Distribution of Farm Operations for One Year

When every landholder is the manager of his land, and of only his land, the size distribution of farm operations is identical to that of the land distribution. However, since the residents of these villages

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11/ This change was due to the land reform of 1960 (UUPA 1960) which essentially converted communal control over the land in the gogolan system to individual ownership right.

Table 8. - Trend of Change in Number of Households Possessing Gogolan Rights in Sumokembangsri by Years.

Number of gogolan owned	Number of households			
	1955	1960	1973	1978
0	56	87	184	219
0.5	0	0	0	2
1	307	307	244	239
2	0	0	18	19
3	0	0	5	5
4	0	0	3	2
5	0	0	0	1

Source: Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

were involved in renting and sharecropping, the distributions are examined in greater detail.

Also in this study, farm operation size was examined within a one-year production cycle. In the case of rice fields and tambak, both of which have two harvests per year, farm operation size is twice the area of the land. The farm operation size for upland farming is regarded as the same as the land area, consistent with the fact that most of the land is cultivated only once a year. Perennial crops are not specifically considered as this research deals primarily with annual food crop production and associated land rights.

In Table 9 and 10, the distribution of farm operations in Gemarang, Sumokembangsri, Sukosari and Sungunlegowo is very unequal for total agricultural land of the villages, as well as for only sawah land. The number of households having no farm operations ranged from 26% to 41% and 53% to 62% for irrigated fields (sawah) throughout the four villages. Large farmers (managing more than two hectares) operated 4% to 47% of the total area of agricultural land. In the case of operations on sawah land, the situation becomes more skewed: 4% to 54% of the households appear to manage 14% to 100% of the sawah land in the villages.

In Petung and Tamansari, the inequity in farm operation size distributions, both for the total agricultural area and for irrigated land, is considered moderate. 97% of the households operated some land. Households having more than two hectares in operation constituted only 4% to 6% of the total area of agricultural land in each village, and only 3% of sawah area in Petung. This class also managed 13% to 14% of the total village area under farm operation. In general the degree of inequity of the distribution of operated area is almost identical to the degree of inequity in the distribution of owned land. However, in Sumokembangsri the land ownership distribution was more equally distributed than the land operated because of the gogolan system, the requirement

Table 9. - Distribution of Farm Operation Size for Agricultural Land in Six East Java Villages (1978).

Area under farm operation (Ha)	Gemarang		Sumokembangsri		Sukosari		Petung		Tamansari		Sungunlegowo	
	HH %	Area %	HH %	Area %	HH %	Area %	HH %	Area %	HH %	Area %	HH %	Area %
0	26	0	8	0	39	0	1	0	3	0	41	0
0.01 - 0.24	28	3	37	6	18	3	14	3	8	1	4	0[a/]
0.25 - 0.49	11	6	15	10	16	10	23	12	15	5	2	0[a/]
0.50 - 0.99	15	16	26	34	12	15	36	33	39	22	4	1
1.00 - 1.99	14	27	10	25	7	16	22	38	29	59	2	1
2.00 +	6	48	4	25	8	56	4	14	6	13	47	98
Total (%)	100	100	100	100	100	100	100	100	100	100	100	100
Total Households	494		493		502		516		355		524	
Total Area (Ha)		335.8		271.		289.		375.		322.		1941.
Gini Index for operated area	0.74		0.67		0.75		0.39		0.38		0.69	
Gini Index for owned area	.72		0.56		.74		.40		0.40		0.74	

a/ Less than 0.5%

Source: Sri Hartoyo and Soentoro, "Penggunaan Sumberdaya, Lembaga Pelayanan Dan Pembangunan di Daerah Persawahan, Pegunungan, dan Daerah Pantai, Jawa Timur", Rural Dynamics Survey, East Java Series No.5, 1980.

Table 10. - Distribution of Farm Operation Size by Major Agricultural Land Type in Five East Java Villages (1980).a/

Area under farm operation (Ha)	Gemarang b/		Sumokembangsri c/		Sukosari b/		Petung b/		Sungunlegowo b/	
	HH e/ %	Area %	HH %	Area %	HH %	Area %	HH %	Area %	HH %	Area %
0	62	0	30	0	54	0	1	0	53	0
0.01 - 0.24	1	0 d/	20	6	6	2	28	8	0	0
0.25 - 0.49	6	3	13	10	15	10	32	21	0	0
0.50 - 0.99	13	14	25	35	13	18	25	32	0	0
1.00 - 1.99	13	29	8	24	5	16	11	25	1	0 d/
2.00 +	5	54	4	25	6	54	3	14	46	100
Total (%)	100	100	100	100	100	100	100	100	100	100
Total households	494		493		502		516		425	
Total area (Ha)		282		235		253		263		1833

a/ Major agricultural land in Gemarang, Sumokembangsri, and Sukosari is irrigated fields (sawah); in Petung, it is upland; in Sungunlegowo, it is brackish water ponds (tambak).

b/ Sri Hartoyo and Soentoro, "Penggunaan Sumberdaya, Lembaga Pelayanan dan Pembangunan di Daerah Persawahan, Pegunungan, dan Daerah Pantai, Jawa Timur", Rural Dynamics Survey, East Java Series No.5, 1980.

c/ Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

d/ Less than 0.5%

e/ Households.

that one-third of the farmer's land had to be in sugar cane, and there is no sharecropping in Sumokembangsri.

Distribution of Farm Operations by Status

As stated in the previous section, the right to operate a farm or access to land can originate from actual ownership of the land, from rentals, or from sharecropping. Combinations of these operation statuses is possible and was verified by this study, which observed the following seven classes of farm operators: (1) owner-operator, (2) renter, (3) sharecropper, (4) owner-renter, (5) renter-sharecropper, (6) owner-sharecropper, and (7) owner-renter-sharecropper.

In Table 11 it is shown that in Gemarang, many cases of the temporary transfer of land rights were observed. This can be seen from the low percentage of households having the status of owner-operator, i.e., 48%. In Sumokembangsri, on the other hand, the number of temporary transfers of land rights was lower, as indicated by the fact that of the 296 households, 71% were owner-operators.

Sharecropping and renting occurred frequently in Gemarang. Of 186 households, 27% rented some land, which constituted a total area of 32.8 hectares (or 28% of the total operated area); 28% sharecropped the land, which constituted an area of 33.8 hectares or 29% of the total area operated.

In Sumokembangsri, renting occurred more frequently than sharecropping. About 27% of the households rented 26% of the total operated area, or 29.9 hectares. Only 2% of the households sharecropped an area of 3.4 hectares, or 3% of the operated area.

From the previous discussion, it is clear that in Gemarang, the transfer of land operation rights from owner to farm-operator occurred through two channels--renting and sharecropping. In Sumokembangsri, renting was more predominant. The land in Gemarang is not necessarily owned by Gemarang people; in fact, it is estimated that up to 50% of the owners in the village are in absentia. Many of these owners prefer

Table 11. - Number and Percentage of Rice Farm Operators, Farm Operation Size, and Percentage of Rice Land Area Based on Operator Status, 1977-78 Wet Season, in Gemarang and Sumokembangsri Villages.

Status of farm operation	Operator		Farm operation size		Percentage of area by status (%)		
	Number	%	Average	%	Owned	Rented	Share-cropped
Gemarang							
1. Owner-operator	89	48	0.460	35	100	0	0
2. Renter	30	16	0.339	9	0	100	0
3. Sharecropper	40	22	0.592	20	0	0	100
4. Owner-renter	14	8	0.898	1	62	38	0
5. Owner-sharecropper	6	3	1.065	6	42	0	58
6. Renter-sharecropper	5	2	0.725	3	0	41	59
7. Owner-renter-sharecropper	2	1	15.418	26	21	65	14
Total	186	100	0.689	100	45	29	26
Sumokembangsri							
1. Owner-operator	210	71	0.280	51	100	0	0
2. Renter	37	13	0.237	8	0	100	0
3. Sharecropper	4	1	0.359	1	0	0	100
4. Owner-renter	40	14	0.562	37	53	47	0
5. Owner-sharecropper	4	1	0.435	1	36	0	64
6. Renter-sharecropper	0	0	0	0	0	0	0
7. Owner-renter-sharecropper	1	0	2.702	2	26	41	33
Total	296	100	0.392	100	71	26	3

Source: Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

to operate their land through renting or sharecropping. The fact that land concentration is most obvious in Gemarang helps explain the more frequent occurrence of renting and sharecropping. In Sumokembangsri, the largest landholding is three hectares and this is also true for bengkok land. Absentee ownership and concentration of land area are among the causal factors determining the extent of sharecropping and renting.

The problem of land distribution acquires a different dimension when sharecropping and renting are taken into consideration. In fact, although the issue is becoming more complex, it is also probably becoming more meaningful in interpreting the nature of social processes. The average size of landholdings is 0.27 hectares and 0.78 hectares for Gemarang and Sumokembangsri, respectively, while the average farm operation size in the 1977-78 wet season was only 0.28 hectares and 0.24 hectares, respectively.

In Table 12 a majority of the large landholders operated a smaller amount of land than they owned and only a few of these large landholders operate more land than they own. In Sumokembangsri, we see another interesting feature: the distribution of farm operations size if greater compared to the distribution of landholding size. This was made possible by the fact that land is scarce and a significant amount of the area was rented to a sugar cane factory.

Table 12. - Distribution of Households Based on Landholding Size and Size of Rice Farm Area in Operation in Gemarang and Sumokembangsri Villages, 1977-78 Wet Season.

Landholding size (Ha)	Number of households based on size of area in operation:					
	0	0.01-0.49	0.50-0.99	1.00-1.99	2.00 +	Total
Gemarang						
0	230	31	20	10	0	291
0.01 - 0.49	23	59	4	0	0	86
0.50 - 0.99	20	11	29	3	1	64
1.00 - 1.99	2	0	3	6	0	11
2.00 +	0	2	1	2	4	9
Total	275	103	57	21	5	463
Sumokembangsri						
0	154	29	3	0	0	186
0.01 - 0.49	8	78	3	2	0	91
0.50 - 0.99	27	126	16	6	0	175
1.00 - 1.99	1	4	15	7	3	30
2.00 +	0	1	0	1	2	4
Total	190	238	37	16	5	486

Source: Soentoro, "Pengaruh Penguasaan Tanah Terhadap Keadaan Sosial Ekonomi di Pedesaan: Studi Kasus Dua Desa di Jawa Timur", M.Sc. thesis (unpublished), Bogor Agricultural University, 1980.

RENTING OF AGRICULTURAL LAND: FROM THE POOR TO THE RICH

A major theme that will be interwoven into this discussion of one part of the land market is that the renting of agricultural land primarily functions to transfer the control over land from poor, marginal farmers to relatively wealthy, fairly efficient farmers. Then, in the next section the theme will be that sharecropping does the opposite and transfers control of the operations from the larger farmers to the poorer farmers who may or may not have some land. When these two forces are combined with the accelerating shift from sharecropping to renting of land in East Java, then one can postulate that rural land markets are enhancing the concentration of land use in the hands of fewer people and are further accelerating the polarization of the rural villages between those who have access to land which means they are involved in the land market and those who have no access to land and therefore excluded from the land market.

Renting was studied primarily in three of the villages covered in this study. A rather simple definition of renting is the transfer of control over agricultural land to a person who pays in advance to cultivate the land for a specific period. The owner does not provide any inputs when he transfers control, he receives none of the yields, and does not suffer any risks of harvest failure. One characteristic of this rental market is that the poor, marginal farmer who wants to rent his land must look for a person who has enough money to rent his land. The capital market has a great influence on renting because in general the farmers who rent in land hanve access to capital, and the poorer, small landowners have no access to capital and therefore must go to these wealthier villagers who have capital, either their own or borrowed and who rent in land from the small landholders. Since the number of

villagers who want to rent out their land is much greater than those who have capital for renting, this tends to depress the rental rates to the poorer villagers. Obviously, the capital market is operating in association with the land market in this situation.

In Sumokembangsri and Gemarang villages there were actually three inter-linked land rental markets, one market involved farmers who rent to each other and grew rice, one market dominated by the sugar cane factory having the authority backed up by the government to rent in land to cultivate sugar cane, and the third with either outsiders or wealthy villagers who rent in land to produce sugar cane by ratooning or planting cane. They sometimes rent in a field that had a crop of cane cultivated by the factory, the land was returned to the farmer, and they then rent out the field to someone who wanted to cultivate the ratooned cane. Each of these markets had varying degrees of freedom, with the market among farmers for land to cultivate rice being the most free and the rental market of the sugar cane factory being completely controlled by the government. Each village must rent a certain portion of the land to sugar cane producers since the Government requires that 1/3 to 1/2 of the land be used for sugar cane cultivation.

To begin the discussion of this rather complex land rental market of sawah land, the land that was "rented in" and "rented out" according to amount of land owned by the farmers is shown in Table 13. This table has both those village residents who rented out to the sugar cane producers and to other rice farmers. In Gemarang village the amount of irrigated land (sawah) that is shown in the table was only for those respondents who live in the village and were interviewed in the census of households. As mentioned previously 45% of the sawah land in Gemarang was owned by outsiders which subdivides the land rental market among owners and farmers into one market among respondents and one market between outsiders and residents and therefore responds to different

Table 13. - Renting of Irrigated Land (sawah) in Gemarang and Sumokembangsri Villages in the Wet Season 1977/78 and Kraton Village in the Wet Season 1978/79.

Village and area of sawah land owned (ha)	Total number of respondents in each size class	Rented in Land			Rented out Land		
		Number of farmers who rented in land	Percentage who rented (%)	Average size of rented land (%)	Number of farmers who rented out land	Percentage who rented (%)	Average size of rented land (%)
Gemarang village							
0.	291	25	9.	.36	0	0	0
.01 - .49	86	14	16.	.21	32	37.	.30
.50 - .99	66	8	12.	.36	30	45.	.59
1.00 - 1.99	11	2	18.	.69	5	45.	.95
2.00 +	9	3	33.	7.03	8	80.	1.37
Total	463	46	10.	.81	75	16.	.58
Sumokembangsri village							
0.	186	32	17.	.22	0	0	0
.01 - .49	91	9	10.	.49	45	49.	.29
.50 - .99	175	21	12.	.43	171	98.	.23
1.00 - 1.90	30	11	37.	.51	30	100.	.40
2.00 +	5	3	67.	1.83	5	100.	.59
Total	487	76	16.	.41	251	52.	.27
Kraton village							
0.	186	20	11.	.17	0	0	0
.01 - .49	160	14	9.	.19	36	23.	.16
.50 - .99	77	11	14.	.27	14	18.	.31
1.00 +	74	9	12.	1.31	15	20.	.48
Total	447	54	11.	.39	65	13.	.26

Source: Partial census in the three villages.

incentives. Some of the land rented in may have been from these outside owners, but none of the rented out land would be from the outsiders. Only residents of the villages were included in this study for a very practical reason, it was almost impossible to locate the outsiders. Yet, the information available appears to partially support the propositon that the poor landwoners rent to the wealthy or large landowners. Sixty two villagers in the .01-.49 and .50-.99 landownership category in Gemarang village rented out land, and only 13 of these as shown in Table 14 had to rent to sugar cane producers. Those who rented out sawah land in these two size categories were 37% and 45% of the total number of villagers in these two categories in Gemarang village. Also, the larger landowners were primarily renting to sugar cane producers (Tables 13 and 14). As is shown in Table 13 some of the landless and marginal farmers also rented in land in Gemarang village, but this was a much smaller percentage (9%, 16%, and 12%) of the size categories which this time includes 25 landless (9%) villagers who rented land. Unfortunately, this study did not examine how they were able to finance this rental, nor if they had access to the capital market in the village. For the respondents in Gemarang village, 75 of the owners who rented out land, 62 of them could be considered poorer farmers, and the total amount of land they (75) rented out was 43.5 ha (Table 13). Forty six of the respondents rented in land though only five could be considered large farmers yet they rented 22.5 ha of sawah which was 61% of the total amount of land rented in by the respondents. In this table it is difficult to state whether or not the landowners in the .50-.99 ha category were poor farmers or rich farmers. They were an in-between group, and would have to be examined individually to determine their income status.

In Sumokembangsri village the situation was in one way more complicated because a larger proportion of the farmers were forced to

Table 14. - Renting Out of Irrigated Rice Fields (sawah) to Sugar Cane Factories and Rice Farmers in Gemarang Village and Sumokembangsri Village in East Java in 1978.

Village and area of sawah owned (ha)	Total number of respondents in each size class	Sawah rented out to sugar cane producers			Sawah rented out to rice farmers		
		Number of respondents renting out	Average size rented out (ha)	Percentage rented of total area rented (%)	Number of respondents renting out	Average size rented out (ha)	Percentage rented of total area rented (%)
Gemarang village							
.10 - .49	85	5	.41	21.	29	.26	79.
.50 - .99	65	8	.75	34.	25	.47	66.
1.00 - 1.99	11	2	1.03	43.	3	.90	57.
2.00 +	9	5	1.25	57.	3	2.30	43.
Total	172	20	.82	36.	60	.48	54.
Sumokembangsri village							
.10 - .49	91	44	.20	67.	20	.22	23.
.50 - .99	175	171	.10	42.	85	.27	58.
1.00 - 1.99	30	30	.25	63.	9	.50	37.
2.00 +	5	5	.28	47.	1	1.54	53.
Total	301	250	.14	51.	115	.29	49.

Source: Partial Census in the two villages.

rent some of their land to sugar cane producers and they may have rented out land to other farmers also, but less complicated in another way since there were no outsiders owning land in the village. Of the 301 villagers who owned sawah, 250 had to rent to sugar cane producers because of the gogolan system and the government's requirement that 1/3 of the village's land had to be in sugar cane (Table 14). Yet, 115 of the 251 renters (Table 13), also rented out land to rice farmers. In the .10 to .49 ha size category 20 owners rented out land to farmers and in the .50-.99 ha size category 85 owners rented out land to farmers (Table 14). They were 22% and 49% of the respondents in each of these categories. Of the land rented out to farmers, these two categories accounted for 82% of the sawah land area rented out to rice farmers which was in the voluntary land rental market as opposed to the government enforced land rental market. Thirty two of the 186 landless villagers in Sumokembangsri rented in an average of .22 ha of sawah. Only 14 larger farmers (40% of total in the two largest size categories) rented in land, though it was 35% of the sawah land rented in by all of the 487 respondents (Table 13).

Kraton village was less complicated since only 35% of their sawah land was owned by outsiders and sugar cane was not grown in the village at the time of the surveys, though in May 1979 a sugar cane factory rented 200 ha of sawah land to cultivate sugar cane. Thirty six villagers in the .01-.49 size category which were the small marginal landowners rented out land which was 34% of the total area of sawah land rented out. The land rented in by the farmers with 1.0 or more of owned land was 56% of all of the rented in land of the 497 respondents. Although it is not absolutely clear, the information in Table 13 and Table 14 does somewhat conform to the proposition that the land rental market encourages concentration of control over land among the wealthier farmers.

The respondents in each of the three villages were asked about their motives for renting out land. Table 15 gives their reasons for renting out their sawah land in Gemarang and Sumokembangsri villages. Of those who answered the largest proportion stated (32% and 42%) to pay their living expenses. In Gemarang 24% also stated they were required by the Government to rent out their land for sugar cane cultivation. Only a very few (5% and 4%) rented out land to pay their farm production expenses, almost all of the rest can be classified as basic living expenses. Therefore, one can possibly conclude that most of the small landowners had to rent out their land in order to support their families. It may be that the low number of responses in Sumokembangsri village was due to the large number (250) who had to rent to the sugar cane producers. In Kraton village the reasons for renting supported the proposition on renting of land influencing land concentration. This is shown by the fact that eighty five percent of the respondents rented in sawah land to enlarge the size of their farm operation in order to improve their income. While on the other hand 50% of those who rented out sawah land did this to purchase food and medicine, and only 21% gave a reason that they rented out for economically productive reasons (Table 16).

Examining the land rental market in Kraton village in more depth in Table 17, the transfer from the poor to the wealthier farmers appears to have occurred though some poor farmers also rented in sawah land. In the .01-.49 ha size category 20 of the 36 small land owners did not cultivate any of their sawah rather they rented the land out while 16 of these small land owners cultivated only an average of .15 ha. Of the total sawah land rented out in this market, 34% of the total area of sawah land rented was from these very small land owners. While for the 1.00+ size category which were the wealthier farmers who rented in sawah land, they rented 56% of the total area of land rented in by all of the respondents in this land rental market.

Table 15. - Reasons for Renting Out Irrigated Rice Fields (sawah) to other Farmers in Gemarang and Sumokembangsri Villages in 1978.

Reason for renting out	Gemarang village		Sumokembangsri village	
	Number of respondents who gave a reason	(%)	Number of respondents who gave a reason	(%)
1. To pay for food and other household necessities	24	32.	47	42.
2. To buy medicine and pay for funerals	6	8.	20	18.
3. To have a festival (selamatan / hajat)	6	8.	17	15.
4. To pay debts	4	5.	6	5.
5. To pay school expenses	6	8.	3	3.
6. To improve the house	3	4.	12	11.
7. To pay farm expenses	4	5.	4	4.
8. Required by the Government	18	24.	0	0.
9. Others	3	4.	4	4.
	74	100.	113	100.

Source: Partial Census in December 1978.

Table 16. - Reasons for Renting of Land in Kraton Village in the Wet Season 1978/1979.

Reasons	Percentage of the respondents (%)
Renting in of sawah land (20 respondents) a/	
1. To increase farm income	85.
2. To invest in farm land	10.
3. Others	5.
Renting out of sawah land (12 respondents)	
1. To buy food for the family	43.
2. To have money to build a house	14.
3. To pay wives medical bills	7.
4. To pay the costs of the religious trip to Mecca	7.
5. To pay for costs of producing cane	7.
6. To have money to buy sawah	7.
7. To purchase ducks	7.
	100.

Source: Interview survey of sample respondents in March, 1979.

a/ The small number of respondents is because this question was notasked in the partial census, rather only when the selected sample responedents were interviewed.

Obviously, as is shown in Table 17, some landless villagers rented land to cultivate rice. Besides this, some large farmers also rented out their sawahs which does not agree with the proposition. This indicates that there were various reasons for these villagers to participate in this rental market, though the evidence also indicated that a very prominent trend was the transfer of land from the small marginal farmers to the wealthier farmers.

One situation that occurred once in a while in these complicated land markets was that a small farmer would rent out his land to another farmer, and then he would sharecrop in someone else' sawah land. Renting was to get money for subsistence and production costs, then he would sharecrop in land to cultivate rice. Sometimes, the person who would rent out his sawah land to a larger farmer would do it with the understanding that the larger farmer would then sharecrop the land back to the same owner. The owner of the land got the money and the renter did not have to provide labor to cultivate the land, rather the owner who sharecropped his own land provided the labor. Later in this paper, it will be demonstrated that in this situation the larger farmer gains on the low rental rate and the high sharecropping payment to him. However, the poor farmer also gains by having access to credit (the rent payment) and can then have sufficient funds to sharecrop and grow rice. If he had not rented out his land, then he would not have sufficient credit to cultivate rice. Consequently, this land rental market has significant credit aspects that tend to indicate that one of the major problems is access to adequate credit in the capital market.

In the land rental markets in the two villages, the length of the rental contract varies from one season to 10 years. Between one and two years appeared to be the most frequent length of time as shown in Table 18. In Kraton village the rental contracts were from 1 to 2 years and the average was 5.8 years. In Gemarang village there seemed to be a difference in the respondents answers between those who rented in and those who rented out sawah. Probably, the difference has to do with the villagers who had rented land from the outsiders.

Table 17. - Number of Households and Average Size of Operations in the Rental Market in Kraton Village by Size Distribution in the Wet Season 1978/79.

Size distribution of sawah ownership	Owners who rented out sawah				Renters of sawah			
	Rented out		Owners own farm operation		Rented in		Renters farm operation	
	Number of households	Average size (ha)	Number of households	Average size (ha)	Number of households	Average size (ha)	Number of households	Average size (ha)
0	0	0	0	0	20	.17	20	.17
.01 - .49	36	.16	16	.15	14	.19	14	.39
.50 - .99	14	.31	12	.29	11	.27	11	.88
1.00 +	15	.48	15	.84	9	1.31	9	2.81
Total	65	.28	43	.43	54	.39	54	.81

Source: Partial census in two hamlets (kampong) in February 1979.

Renting to sugar cane factories is not included in Table 18. Both the sugar cane land rental markets and the outsiders land rental markets had much different characteristics than the rental markets among only the villagers. The explanation for the very long contracts is that the small landowner needed to support his family and the practice of renting for a one or two period. After a season or two the person who rented out the land still needed money and extended the length of his contract even though the previous contract had not yet expired. If he did this each season, then after a few seasons he had rented out his land for many years in advance. In Table 18, there are farmers who had rented out their fields from 2 to more than 5 years and in Kraton the longest time was 12 years. One of the propositions in this paper is that as the length of the rental contract is extended at lower and lower rental rates the owner is eventually compelled to sell the land to the renter who holds this long contract, and at a low price. Yet this has not been proven in this study. In Sumokembangsri village those residents who had rented sawah for only one season were primarily renting land that had already been scheduled to be planted in sugarcane after one rice season and therefore were prevented from negotiating a longer contract.

Another difference in the rental markets was that in Sumokembangsri village there was no renting of land to individuals to grow sugar cane or to ratoon cane that had been harvested. In Gemarang village they did rent land to individuals for both of these activities, in fact one Chinese private company from Madiun had rented 80 ha from the farmers in this village to produce sugar cane. Some of the Gemarang farmers complained that they were forced to rent out their sawah by the village officials to individuals who wanted land for sugar cane. These village officials (pamong desa) determined what areas of the village's land had to be rented for sugar cane. The rental rate for sawah land paid by the sugar cane factory was

Table 18. - Length of Rental Contracts Among the Farmers in Gemarang Village and Sumokembangsri Village in East Java, December 1978.

Length of rentral contract in a season or years	Gemarang village				Sumokembangsri village			
	Renters who stated		Owners who stated		Renters who stated		Owners who stated	
	No.	%	No.	%	No.	%	No.	%
One season	4	8.	0	0.	20	33.	28	25.
One year	24	45.	26	44.	33	54.	43	39.
Two years	12	23.	20	36.	6	10.	37	33.
Three years	4	8.	4	7.	0	0.	0	0
Four years	3	6.	2	4.	1	2.	2	2.
Five years	2	5.	1	2.	1	2.	1	1.
More than five years	4	8.	4	7.	0	0.	0	0.
Total	53	100.	57	100.	61	100.	111	100.

Source: Census of households by the Agro Economic Survey's Rural Dynamics Team, December 1978.

Rp265,000 per ha for 16 months. In contrast the private individuals who rented sawah land that had the sugar cane stumps for the ratoon crop paid Rp190,000 per ha for 12 months. The ratoon requires only 12 months while the original crop takes 16 months to produce a crop of sugar cane. However, the rate in the rental market among the farmers was only between Rp90,000 and Rp140,000 per ha per year in Gemarang village. Thus, a farmer who rented one ha of land to a person for cane, could conceivable use that money to rent 1½ ha of sawah for rice cultivation.

Actually, the rental market has two components, first those villagers who have relatively large amounts of land and second those who have small holdings of sawah, both of whom were renting out their land. Most of the large farmers were renting their sawah to the sugar cane factory or to individuals who would then ratoon the cane. Whereas the small farmers were the ones who rented to the larger farmers, and at the lower rate of between Rp90,000 to Rp140,000 in Gemarang. Consequently, the rental rate for the smaller land owner farmers was much lower than for the larger farmers who were renting more often to the factory or the private companies. In fact these rates made it possible for the larger farmers to rent out their sawah for sugar cane, and then turn-around and rent in land from the poorer farmers, and at such a lower rate that they could rent in 1½ ha with the money they rented out 1 ha. The reason for this was that the poorer farmers were in a weak bargaining position because of their need to support their families. They must look for someone with capital to rent their fields, even to the point of having to go to the wealthier person's house to enquire if they want to rent their fields. Obviously, this contributes to concentration of land control and polarization in these villages. The areas rented for cane were in blocks determined by the village leaders though not for the ratoon crop which meant that only if a small farmer is in that block did he receive a higher rent. Yet, the

returns to cultivating rice were much higher than these rental rates. Table 19 compares the returns for both renting and sharecropping. If the farmer rented the land he paid an average of Rp46,300 per ha per season and if he sharecropped he paid Rp128,000 per ha per season. The hired labor and other inputs were about the same cost for both systems (Table 19). The return to management is actually the net return to the family that covers family labor, management, and any interest on the invested capital. As shown in Table 19, the larger farmers paid a rental of 1/2 that of the poorer farmers and their net return perha was more than twice the return of the sharecroppers. Also, this return of Rp199,700 per ha per season was much higher than the rental rates paid by the sugar cane factory. The comparison was Rp199,700 per ha per season (6 months) return on the rented land producing rice and Rp265,000 per ha for 16 months for sugar cane. Besides this, it was the poorer farmers who were renting out on an average of Rp64,300 per ha per season and the wealthier farmers who were sharecropping out at returns that average Rp128,000 per ha per season. Of course, the interest that would have been earned if the large landowner had instead rented out his field and invested the proceeds needs to be though of as being part of his earnings from sharecropping out this land. In other words the poorer farmers rent out at low rental rates and sharecrop in at high share rates. The wealthy farmers rent in at low rates and sharecrop out to get high share returns. Comparing the twotenure situations, the net return per ha per season for the wealthy farmerswho rented in land was much higher (Rp199,700) than the poorer farmers net return (Rp87,100) who sharecrops in sawah land to cultivate rice (Table 19). Why did this occur? Primarily, it was due to the smaller land owner who did not have sufficient money to provide for his family and therefore had to rent his land at a low rate. The farmer who sharecropped out his

land was usually a wealthy farmer who was not pressed for money and therefore had a much greater bargaining power in determining his share, more able to risk low yields, and not in need of cash which would force him to rent the land. Also, the number of farmers who rented out their land was many more than the wealthy farmers who rented in the land. While this was just the opposite in the sharecropping market where there were only a few who shared out and many who wanted to sharecrop in the sawah land. Demand and supply clearly influenced the rental and sharecropping rates in these markets.

A substantial number of the villagers who rented out their land gave the reason that they had to buy medicine or pay the costs of a burial. Usually, they were farmers who had a very small area of sawah land. Medical expenses were relatively high for these villagers. Some of the villagers' gave as the reason for renting out their land that they had to pay the expenses for a circumcision party or a wedding party (hajatan). They would invite many people to the party with the hope that these guests would give money and other goods as gifts. Sometimes they used their land as colateral on a loan for the party. If they could not repay the loan then they were forced to rent out their land to cover the debt.

In Kraton village there were three different types of rental agreements. The first type was that the rental payment was paid by the renter to the landowner not long before or after the renter began cultivating the land and the payment was either in cash or in goods. When goods were used to pay the rental it was because the landowner needed these goods which were such things as rice (paid in installments to the land owner), radio, tape recorder, or motor cycle. The larger owners wanted the motor cycles, radios, etc., and the smaller owners nedded the rice for their families.

The second type of rental contract was similar to the first

Table 19. - Average Production Costs of Rice in the Wet Season 1977/1978 by Tenure Status in Gemarang Village, East Java.

Item		Renting in	Sharecropping in	
	Cost	Percentage of total cost (%)	Cost	Percentage of total cost (%)
No. of respondents	9		10	
Ave size of operation (ha)	.26		.77	
Land (sawah) a/ (Rp/Ha)	64,300	17.	128,600	39.
Hired Labor b/ (Rp/Ha)	72,900	19.	77,000	23.
Inputs c/ (Rp/Ha)	48,800	12.	38,700	12.
Returns to management d/ (Rp/Ha)	199,700	52.	87,100	26.
Total (Rp/Ha)	385,700	100.	331,400	100.

Source: Census by Agro Economic Surveys' Rural Dynamics Study team in December, 1978.

a/ This is the amount they had to either pay in rent or give in kind to the owner of the irrigated agricultural land (sawah).

b/ This is the cost of only hired labor. Family labor was not given a rupiah value.

c/ This includes the cost of the seed, fertilizer, and pesticides.

d/ The return to management is the net return to the operator once the rent (or share), hired labor, and other inputs have been deducted. It is a return to capital, management, interest, and family labor.

one but before the end of the contract period the contract was extended for a longer period. At the time it was extended the owner would receive an additional rental payment for the next time period, but at a lower rental rate since the first contract had not yet expired. For one of the respondents this extension occurred up to four times with one of the owners. It was usually the owner who initiated this extension of the rental agreement.

The third type of rental contract in Kraton village was the agreement and payment were made long before the renter began cultivating the sawah land. A variation of this type was a person who loaned money to the land owner and he gave the person the right to cultivate his land in the future. This rental contract was always initiated by the landowner because of a pressing need for money, yet someone else had already rented his land. Therefore, the second renter of his land might have to wait a season or a year or two before gaining control of the land thus he would get a low rental payment from the second renter.

Because of these different types of contracts, the varying quality of the land, and the sugar cane factory, the rental rates greatly varied in this village. In 1978 the sugar cane factory paid a rent of Rp250,000 per ha for 18 months, or Rp167,000 per year. The rent paid by a rice farmer was only an average of Rp114,700 per year. According to the respondents these price differences were caused by who needed the land, the renter or the land owner. In the case of the factory, they needed the land for cultivating cane. In the case of the renting out to the rice farmer, the land owner needed the money for his subsistence expenses. Table 20 illustrates the increase in rental rates between 1974 and 1978 based on information from a few of the respondents in Kraton village.

Table 20. - Average Rental Rate of Irrigated Land (sawah) by the Farmers and the Factory, Kraton village, Wet Season 1978/1979.

Year and to whom		Number of observations	Average rental rate for a year (Rp.)
1974	Rice farmer	2	56,600
1977	Rice farmer	3	101,700
1978	Rice farmer	5	114,700
1978	Factory	1	166,700

Source: Interview of randomly selected respondents in March 1979.

To summarize the land rental markets in the three villages, the very small farmer rents out his land because (1) his field may be too small to cultivate rice, (2) he may not have sufficient capital to pay for the production expenses, (3) he needs money for an emergency. The very small farmers and landless residents become sharecroppers because (1) they have an assured income from rice cultivation, (2) they share the production expenses with the landowner, and (3) they have rice for their families.

The large farmers rent in because of their access to capital and the high returns they can get from either cultivating the land themselves or sharecropping out the land. The large farmers rent-out land because of the Government's requirement of a certain share of the villages land should be in sugar cane and of the high rent paid by individuals' who want to ratoon the sugar cane crop.

SHARECROPPING AND KEDOKAN: FROM THE RICH TO THE POOR

The second major theme in this chapter is that the sharecropping land market acts to transfer control of land from the larger, wealthier farmers to the poor, marginal farmers. Yet, as shown in the previous discussion, the wealthy landowner who shares out his land will receive a higher return than if he had rented out the land. Consequently, this sharecropping market still contributes to a poor distribution of income because of the relatively high share rate to the landowner and the relatively low net income to the sharecropper though it does help them to overcome a lack of credit for purchasing inputs.

Included in this analysis will be the kedokan system (in West Java it is called Ceblokan) which can be considered either as a crude form of sharecropping or a higher form of labor contract. In this system the landowner provides all of the cash inputs and manages the cultivation of the crop. The laborer or he can be called the sharecropper provides only his labor without pay to plant, weed, and sometimes plow and harrow the sawah field. His pay is a larger share of the harvest and his right is only that he is allowed to harvest that portion of the field which he has cultivated. In this way he is assured of a larger share than if he were only a laborer who participates in the harvest, but he must wait for 4 to 6 months before he is paid for his labor. Thus, a farmer who uses this kedokan system does not need cash to pay his laborers and these laborers are assured of a plot of rice field that only they have the right to harvest, and at a higher share of the amount harvested. In this study the kedokan system will be assumed to be a form of sharecropping.

Besides this crude form there are at least four other types of sharecropping contracts and the choice depends partly on the quality of the land and the crop being cultivated. These four types are shown in Table 21. As an example all of the sharecropping contracts in Gemarang

Table 21. - Sharecropping Contracts in Java.

Name of contract	Sharing of harvest		Person who pays the cultivation costs
	Owner	Sharecropper	
1. Maro	1/2	1/2	Labor by the sharecropper Other inputs: 50-50
2. Mertelu	2/3	1/3	Labor by the sharecropper Seed and fertilizer by the owner
3. Merapat	3/4	1/4	Labor by the sharecropper Other inputs by the owner
4. Maro miring	3/5	2/5	Labor by the sharecropper Other inputs by the owner

village were maro which meant that they first subtracted the seed, fertilizer, insecticides, and harvest cost, then they would divide the rest of the harvest on a 50-50 share basis between the owner and sharecropper. Another aspect of these contracts is that sometimes the sharecropper will have to make an advance payment (Iromo) to the owner to acquire the right to cultivate his land in the future. The length of the contract varies from one season to continuous year after year contracts, though it usually is for two years, then they have to plant sugar cane. Sometimes after the sugar cane, the same person will again sharecrop the land from the same landowner.

Sharecropping was an important part of the land market in Gemarang village and not in Sumokembangsri village. Twenty two percent of the farmers in the partial census in Gemarang were pure sharecroppers which covered 19% of the sawah land, three percent of these farmers were owner sharecroppers and one percent were a combination of owners-renters-sharecroppers. In Sumokembangsri village there were very few sharecroppers, and those who did have this type of contract were primarily family members sharing out land to their close relatives. In Kraton village almost all of the farmers were involved in the kedokan sharecropping contract. Table 22 indicates the number of the villagers who were participating in the sharecropping land market by the amount of land they own. Judging by the distribution of sharecroppers in Gemarang and Kraton villages by landownership, our proposition is partially confirmed. There were 40 landless villagers in Gemarang and 147 landless villagers in Kraton who "sharecropped in" or "kedokan in" land to cultivate rice. In Kraton 87 marginal (.01-.49 ha) farmers also had kedokan contracts which made it possible for them to cultivate their own sawah land and to sharecrop in and expand their operations. Also, in both villages it was primarily the larger landowners who shared out their land. Some of these larger landowners sharecropped in sawah which obviously does not fit in with the proposition. In Gemarang a substantial number of the outsiders who owned land also sharecropped out to the villagers, yet this does not

Table 22. - Sharecropping and Kedokan by Size of Owned Irrigated Land (sawah) in Gemarang and Sumokembangsri Villages in the Wet Season 1977/78 and in Kraton Village in the Wet Season 1978/79.

Size distribution of irrigated land owned (Ha)	Gemarang village				Sumokembangsrivillage				Kraton village			
	Share out		Share in		Share out		Share in		Share out (Kedok-out)		Share in (kedok in)	
	Number of respondents	Ave. size shared out (Ha)	Number of respondents	Ave. size shared in (Ha)	Number of respondents	Ave. size shared out (Ha)	Number of respondents	Ave. size shared in (Ha)	Number of respondents	Ave. size shared out (Ha)	Number of respondents	Ave. size shared in (Ha)
0	0	-	40	.62	0	-	0	-	9[a/]	.19	147	.20
0.01 - 0.49	3	.24	4	.42	0	-	0	-	36	.22	87	.18
0.50 - 0.99	2	.63	9	.59	0	-	8	-	42	.38	17	.15
1.00 - 1.99	0	-	0	-	1	-	2	-	58[b/]	1.03	6	.17
2.00 +	2	5.15	3	2.14	1		0					
Total	7	.176	55	.69	2		10		145	.59	257	.19

Source: Census of households in Gemarang and Sumokembangsri villages in December 1978 and Kraton village in February 1979.

a/ These 9 farmers who kedokan out land rented the land they cultivated and did not own any land.

b/ In Kraton village the 1.00-1.99 and the 2.00+ categories have been combined into one category.

show up in Table 22 because of not being able to interview these outsiders. In Kraton village a total of 145 farmers "kedok out" their sawah land and 257 of the villagers "kedok in" sawah land. Nine of these respondents who "kedok out" had no land but they "rented in" sawah and then "kedok out" although the average size of their cultivated land was only .20 ha.

To examine in more detail who were the villagers in the kedokan system in Kraton village, Table 23 gives the average area of kedokan and the distribution by size of sawah ownership. The types of tenure arrangements were also examined in Table 23. In the partial census in Kraton village there were 65 landowners who cultivated their own land and also rented out some of their sawah land, 84 landowners who cultivated and also kedok out their sawah land, 54 renters who owned some sawah land and also who rented in sawah to increase their size of operation, 203 pengedok (sharecroppers) who owned sawah but had sharecropped (kedokan) in land. The number of respondents in each tenure type have been distributed in the table by the amount of sawah land they owned. Not all of the respondents were involved in kedokan which is the reason that the total number of respondents was not the same as the number of farmers in kedokan.

The trends in Table 23, indicate that in Kraton village the landless and marginal farmers were the ones who "kedok in" and the larger landowners were the ones who "kedok out" their sawah.

Although most of the farmers were involved in kedokan there were differences in the kedokan contracts. In Kraton village there were five different forms of kedokan which differ primarily by the cultivation activities that the pengedok was required to perform, their share of the harvest, and the additional wage as shown in Table 24. In general, a pengedok (person who has "kedok in" land) had to plow the fields, pull and plant the rice seedlings and weed the rice. In payment he received a 1/4 share of the rice harvest. As shown in the table, the two major

Table 23. Average Area and Number of People Involved in Kedokan by Tenure Status in Kraton Village in the Wet Season 1978/1979.

Size distribution by irrigated land owned (Ha)	Owners who cultivated and rented out sawah (65 respondents)		Owner cultivators who kedokan out sawah (84 respondents)		Renters (54 respondents)		Pengedok (persons who kedok in) (203 respondents)		Total	
	Kedok in	Kedok out	Kedok in	Kedok out	Kedok in	Kedok out	Kedok in	Kedok out	Kedok in	Kedok out
1. 0.										
Number of respondents	0	0	0	0	12	0	135	0	147	0
Ave. area in kedokan	-	-	-	-	.19	.19	.29	-	.20	.10
2. 0.01 - 0.49										
Number of respondents	22	4	0	19	7	5	58	8	87	35
Ave. area in kedokan	.15	.10	-	.14	.20	.18	.19	.15	.18	.15
3. 0.50 - 0.99										
Number of respondents	7	5	0	28	3	7	7	2	17	42
Ave. area in kedokan	.16	.25	-	.35	.19	.59	.13	.29	.15	.38
4. 1.00 - 1.99										
Number of respondents	3	11	0	37	0	8	3	2	6	58
Ave. area in kedokan	.26	.71	-	1.06	-	1.40	.06	.83	.17	1.03
5. Total										
Number of respondents	32	20	0	84	22	29	203	12	257	145
Ave. area in kedokan	.17	.49	-	.62	.20	.59	.19	.22	.19	.57

Source: Partial census in February, 1979.

Table 24. - Five Types of Kedokan and the Area Covered by Each one in Kraton village, East Java, in the Wet Season 1978/79.

Kedokan type	Percentage of sawah covered by kedokan type (%)	Responsibilities of the pengedok	Size of the share (bawon)		Additional wage payment	
			Kedokan	Harvester (penderep)	Time of payment	Amount of wage
1. a/	42.	1. Plowing 2. Pulling seedlings 3. Planting seedlings 4. Weeding	3:1	15:1	None	None
2. b/	29.	1. Plowing 2. Pulling seedlings 3. Planting seedlings 4. Weeding	3:1	15:1	At time of harvest	1½ to 12½ kg gabah
3. c/	24.	1. Plowing 2. Pulling seedlings 3. Planting seedlings 4. Weeding	3:1	15:1	After finishing the plowing	Rp100 to Rp300
4. d/	4.	1. Repairing bunds 2. Pulling seedlings 3. Planting seedlings 4. Weeding	3:1	15:1	None	None
5. e/	1.	1. Plowing 2. Pulling seedlings 3. Planting seedlings 4. Weeding	5:2	13:1	None	None

Source: Interview of sample respondents in March 1979.

Table 24. - (cont.)

a/ In the first system the pengedok (laborer who carries out the operation has to prepare the field (pengolahan tanah dengan cangkul maupun bajak), transplanting which is both pulling and planting the rice seedlings, and weeding. The pengedok does not get a wage for preparing the field (plowing). The pengedok will get a 1/4 share of the harvest which is his responsibility to do the harvesting.

b/ The second kedokan system is the same as the first one, except a wage is paid to the pengedok for plowing (mencangkul) at the time of the harvest. This wage is paid in rice and ranges between 1/2 to 12½ kg of rough rice (gabah) and is plowing an area of from .07 to 15 ha.

c/ The third kedokan system requires the pengedok to prepare the field (plow) transplant and weed. For this plowing (mencangkul) of an area from .07 to .11 ha the pengedok is given a wage varying from Rp100 to Rp300 and it is paid after he is finished with the plowing. Besides this, most of the pengedok are given one meal during each operation. In the harvest they will receive a 1/4 share (bawon) and the pengedok will give his harvester's a 1/4 share. The distribution of the shares is 12:3:1 which is 12/16 for the owner, 3/16 for the pengedok and 1/16 share for the harvesters.

d/ In the fourth system of kedokan the pengedok (laborer) has less responsibilities which are repairing the bunds (memopok pematang) transplanting (mencabut bibit dan menanam), and weeding (menyiang). The shares are 3:1, or 1/4 of the harvest for the pengedok. This system is found in the irrigated fields (sawah) where the soil is plowed with carabou (bajak).

e/ In the fifth system of kedokan the pengedok's (laborer) responsibilities are the same as in the first system, but the harvest is shared 5:2 to the pengedok, which means the pengedok received 2/7's of the harvest. Apparently, the landowner felt that the plowing (mencangkul) should not be part of the pengedok's work, therefore he felt he should give a larger share of the harvest to the pengedok. The pengedok's harvesters were given 1/4 share of what they invested. Therefore the distribution of the share for the owner : pengedok : harvester (penderep) is 10 : 3 : 1. In other words the owner gets 10/14, the pengedok 3/14, and the harvesters 1/14 of the harvest.

types of kedokan varied by whether or not an additional wage payment was paid at harvest to the pengedok (sharecropper). The third form of kedokan was similar except that an additional wage was paid after pengedok would also have harvesters who would receive 1/16 of what they harvested. When they "kedok in" sawah they must also harvest the field eventhough they did not have enough family members for the job. Consequently, they would ask specific persons to assist in the harvest and give them a 1/16 share.

Based on the information in the previous tables in the three villages, the sharecropping land market did function to transfer the use of land from the larger landowners to the poorer villagers. The kedokan system in Kraton village effectively distributed the rights to cultivate the land to a large number of landless and marginal farmers. However, kedokan had a close relationship to the labor market and it was difficult to decide if it was primarily part of the land market or of the labor market. For the purposes of this study, kedokan was considered to be part of the land market. In gemarang village a majority of the people who "sharecropped in" land were landless villagers which indicated a dispension of land control. A significant number of the owners who were "sharecropping out" land in Gemarang village were those owners who lived outside of the village. The reason these outsiders sharecropped was that they can better maintain control over their holdings if they sharecrop out to the residents of this village.

In Gemarang village the number of villagers who wanted to "sharecrop in" land greatly outnumbered those owners who wanted to "sharecrop out" sawah land. Other factors also influenced this land market besides just supply and demand. Family relationships played an important role in this market, and appeared to be more important in the sharecropping market than in the renting market. Table 25 shows that 34% of the sharecropping contracts in Gemarang and 56% in Sumokembangsri

Table 25. - Relationship between the Owner and the Sharecropper in Gemarang and Sumokembangsri Villages in the Wet Season 1977/1978.

Relationship	Gemarang village		Sumokembangsri village	
	Number of respondents	%	Number of respondents	%
1. Child or grandchild	14	16.	4	25.
2. Family	16	18.	5	31.
3. Farmer who rented the land sharing out to the person who owns the land.	4	5.	4	25.
4. Permanent laborer for the owner.	3	3.	1	6.
5. No relationship with the other person	51	58.	2	13.
Total	88	100.	16	100.

Source: Partial census in Gemarang and Sumokembangsri villages in December, 1978.

were among members of the same family. Yet, the majority of the sharecroppers in Gemarang village were not family members which may be the land that was owned by the outsiders who sharecrop out to the villagers. Confirming this family influence on the sharecropping and kedokan market, in Kraton village 48% of the respondents were family members and 25% were neighbors. In contrast, 69% of the renters in Kraton village were not family or neighbors which clearly indicated that family and neighborhood ties were more important in the sharecropping (kedokan) market than in the rental market (Table 26).

Based on observations in the Gemarang and Sumokembangsri villages, the sharecropping contract was more stable and enduring than was the rental-contract. The sharecropper continued to cultivate the land for a number of seasons, and the person who rented a piece of land was often changed. The family relationship in sharecropping influenced this situation. Besides the family relationship, the other motives of those people involved in sharecropping (kedokan) in Kraton village ranged from a sense of pity for the poor by the owner to earning more income by the sharecropper as shown in Table 27. These reasons conform to the proposition in this study that sharecropping is from the rich to the poor.

Although, the study did not carefully distinguish between kedokan and sharecropping in Kraton village, there is a difference as has already been explained. In Kraton village there was only one family in the partial census who sharecropped out sawah land using the normal contract system and not kedokan. The reason was that the landowner gets a higher return from kedokan than they did in sharecropping. In the kedokan system the landowner pays the non-labor inputs and gives only a 1/4 share to the pengedok cultivator who provides only his labor. A major difference between these two systems was that in sharecropping they will divide the cost of the harvest while in kedokan the pengedok

Table 26. - Relationships between the Landowners and the Renters and the Sharecroppers (Kedokan) in Kraton village in the Wet Season 1978. a/

Relationship between owner and cultivator	Renting		Kedokan	
	Number of respondents	%	Number of respondents	%
Family	10	31.	37	48.
Neighbor	0	0.	19	25.
Other person	22	69.	21	27.
	32	100.	77	100.

Source: Interview of the randomly selected respondents in March 1979.

a/ These answers are based on the interviews of the renters and pengedok and not the landowners.

Table 27. - Motives of the Owners and Cultivators in the Sharecropping (kedokan) System in Kraton village in the Wet Season '978/79.

Motives	Percentage of the respondents (%)
Respondents who kedok out.[a/]	
1. Pity for the poor[b/]	59.
2. To reduce the cash payments for rice cultivation	35.
3. Too old to cultivate	6.
	100.
Respondents who kedok in.[c/]	
1. To get a larger share of the rice harvest	68.
2. Increase their income	15.
3. Repay a debt	10.
4. To help parents	8.
	100.

Source: Interviews of the randomly selected respondents in March, 1979.

a/ There were 17 respondents who answered this question.

b/ In Indonesian this was belas kasihan.

c/ There were 14 respondents who answered this question.

(cultivator) has to pay all of the harvest costs as shown in the previous table on kedokan. The other major difference is that in sharecropping the sharecropper is the manager but in kedokan the landowner retains the management function. Thus, the pengedok does not make any cultivation decisions.

Besides the kedokan system in Kraton, there was also another system which was perhaps part of the labor market. This was the santri system which assures the farmers of a semi-permanent labor force. In the past a santri was a student in a village religious school (pondok pesantren) who was invited to work for a farmer. However, at the present time there is no longer a religious connotation to the term, at least in Kraton village. The santri's work responsibilities were to manage the irrigation water in the farmer's field, fertilize and apply pesticides in the field, guard the farmer's house and fields at night, manage the rice harvest, give the harvest shares to the sharecropper (kedokan), carry the harvested rice (gabah) from the field to the farmer's house, sun dry and clean the rice. His pay for all these activities was 1/10 of the farmer's rice harvest, though some receive a slightly smaller 2/25 share. These permanent laborers (santri) worked only for the larger farmers, and sometimes they would also be a sharecropper (kedokan) of the farmer. This complicated system of santri's who were also sharecroppers may be one way that the larger farmers' use to find laborers to do the various odd jobs around the owner's house and farm. The santri also functioned as a manager of the large landowner's sawah land. From the santri's viewpoint this system would provide credit to him by his gaining access to land and production inputs.

Harvesting rice in Kraton village has experienced major changes since the 1950's when the harvest share to the women who used the hand-held rice knife (ani-ani) changed from a 1/10 to 1/15 share. In the early 1970's in association with the adoption of the high yielding rice varieties the farmers switched from the hand-held knife to the sickle in the rice harvest which speeded up the harvest and used less labor.

The use of the sickle made it possible for the sharecropper (kedokan) to employ only his family in the rice harvest and to greatly limit the use of outside harvesters. Since this occurrance, it has been difficult for harvesters who had no sharecropping rights to find work in the rice harvest. If the owner, renter, or sharecropper does not have enough family laborers to harvest the rice, then they would, right before the harvest, invite a few carefully choosen non-family laborers to join their rice harvest. Since these harvesters have difficulties finding employment, this closing of the harvest increased the demand by the landless to sharecrop land using the kedokan system.

Another difference between renting and sharecropping (kedokan) was that the landowner would usually only rent out to one person while the landowner will kedok out to a number of people in the village. The number of people to whom he kedok's out land depended on the amount of land he owned, the level of commercialization of the owner, and his ability to pay wages to the laborers. The landowner may also cultivate a portion of his sawah himself as well as kedok out these cultivation activities. He will do this because he wants to do some of the work himself and to give his family members an opportunity to work. The area he cultivated himself depended on the size of his family. Thus, the larger his landholding the more people to whom he gave kedokan rights on his land. Besides this, if the landowner had enough cash to pay the wages of the laborers, he preferred to cultivate the land himself rather than "kedok out" the sawah land. In this situation the larger share of his land he cultivated himself and a smaller share of his land he would "kedok out" to his family and close neighbors.

In Kraton a landowner would "kedok out" his sawah to from one to thirteen pengedok (those who kedok-in), while a pengedok family would kedok in sawah land from one to six farmers (an average of 2). However, a renter of sawah land "rented in" land from one to six landowners,

though it depended on how much capital he had for renting land. The length of the contract was different for these renting and sharecropping land markets. In the land rental market the length of time was relatively clear and short, ranging from 1 to 12 years total time and the average was 5.8 years. However, this was not one long contract, rather it was for a year or two at a time with renegotiated terms before the end of the contract period and therefore extended until the average was almost a 6 years period that the land had been rented. In the sharecropping (kedokan) market the range in time was from one year to 29 years with an average of 11 years the same person had sharecropped (kedok in) the same sawah land. Consequently, the sharecropper (pengedok) had an informal contract for a long period of time to help cultivate the same farmer's land.

As with other institutions in Java, the kedokan system has undergone change over time that required more work from the pengedok cultivator. In the past kedokan did not include plowing the field as it was required by the landowners at the time of this survey. However, the reason for this change was not clear, though it may have been either because of the increasing number of landless wanting to sharecrop or because of the higher yields from the improved rice varieties. Also, since the adoption of the high yielding varieties 6 years ago, they have discontinued giving additional payments in money or in kind besides the harvest share.

A final analysis of the effect of sharecropping on polarization is to compare the net returns of sharecropping, renting, and owner cultivating rice in order to determine which tenure type benefited what people in the villages. In Kraton village the comparison is between renters, owner operators who kedok out their sawah land, and the sharecropper (kedok in). In Table 28 average costs and returns of the three tenure types is presented.

The renters in Kraton who cultivated rice had a net return of Rp70,200 per ha, and the cost of production was an average of Rp132,000 per ha. This cost included a rent of Rp57,400 per ha. The average

Table 28. - Average Costs and Returns per Ha of Rice Production by Tenure Status in Kraton Village, East Java in the Wet Season 1978/1979.

I t e m s	Pengedok (kedok in sawah)	Renters	Owner operator who "kedok out"	Owner operator
Number of respondents	40	20	17	17
Size of operation (ha)		0.50	0.64	0.51
Cost of production (Rp/Ha)				
Hired labor[a/]		46,900	50,500	36,300
Other inputs		23,400	18,000	20,600
Others[b/]		4,300	8,400	7,700
Land		57,400	0	0
Total cost		132,000	76,900	64,600
Yield in rough rice (gabah ton/ha)		2.66	2.09	2.18
Value (Rp/Ha)		202,200	158,500	165,400
Net Return (Rp/ha)	39,300[c/]	70,200	81,600	100,800

Source: Interview of sample respondents in March 1979.

a/ Includes cost of harvesters, kedokan cost, contract labor and hired labor costs.

b/ Includes taxes, irrigation charge, etc.

c/ This is the pengedok's (cultivator) average share from sharecropping in sawah.

yields as shown in Table 28 was 2.66 tons of gabah (rough rice) per ha. In comparison the owners who had the pengedok (sharecropped) plow his field, transplant, weed, and harvest the rice had an average net return of Rp81,600 per ha and an average cost of production of Rp76,900. The major difference was the lower yields of the owners and the much lower average cost of production because of no charge for land. The owner operator who used hired labor had an average cost of production of Rp64,600 and an average net return of Rp100,800 per ha. Shown in the table, the average return of the pengedok (sharecropper) for cultivating the sawah land was Rp39,300 per ha based on a sample of 40 respondents. If the pengedok had worked as a hired laborer cultivating rice, his wages for the same amount of work would have been an estimated Rp38,000 per ha. Although slightly less, if he worked as a hired laborer he would have been paid each day for his labor but as a pengedok he has to wait four months before receiving his share of the harvest. Yet, they want to be pengedok because they are assumed of a share of the harvest and assured of an income, which would not be the case if they were hired laborers searching for work. Apparently, the assurance of an income is more important than trying to find work each day. Based on this information the owner operators earned Rp100,800 per ha, the owner who kedoks out Rp81,600 the renter Rp70,200., and the pengedok (sharecropper) Rp39,300 per ha. Those net returns in Table 28 are actually the return to the family's labor for the sharecropper (pengedok), the return to family labor and interest (opportunity cost of rent payments) for the renters, the return to land and interest for the owner who "kedok out", and a return to land, management, family labor, and interest for the owner operator. Consequently, in this analysis the study did not examine how this would change if the opportunity costs of the rent payments was included. The reason was that these small farmers do not include a hypothetical interest on their capital in their calculations.

Since there were owner operators, renters, and normal sharecroppers in Gemarang village, the comparison of average returns provides

Table 29. - Average Costs of Production and Net Returns for Rice and Soybeans Production by Tenure Status in Gemarang Village in 1978.

I t e m s	Tenure status		
	Owner operator	Pure share-cropper	Pure Renter
Rice in the first planting season			
Number of respondents	19	10	9
Size of operation (Ha)	1.01	.77	.26
Cost of production (Rp/Ha)	67,800	185,400[a/]	105,600[b/]
Yield (ton stalk paddy/Ha)	6.04	5.27	6.65
Harvester share (Kg/Ha)	540	510	630
Net return (Rp/Ha)	177,200	76,300	210,800
Rice in second planting season			
Number of respondents	16	8	11
Size of operation (Ha)	.98	.77	.25
Cost of production (Rp/Ha)	67,300	171,500[a/]	98,200[b/]
Yield (ton stalk paddy/Ha)	4.32	4.09	5.00
Harvesters share (Kg/Ha)	440	410	443
Net return (Rp/Ha)	172,300	56,100	153,000
Soybeans in the third planting season			
Number of respondents	14	10	6
Size of operation (Ha)	.64	.71	.24
Cost of production (Rp/Ha)	28,000	60,700[a/]	47,000[b/]
Yield (ton/Ha)	.45	.40	.47
Net return (Rp/Ha)	45,400	9,700	31,700

Source: Interviews of the sample respondents in 1978.

a/ This includes the share they must pay for using the land.

b/ This includes the rent they must pay for using the land.

a picture of who benefits the most in this situation. The sharecroppers had the lowest net returns per ha of Rp76,300 per ha in the first cropping season and Rp56,100 per ha in the second cropping season (Table 29). Because of their higher average yields, the "renters in" of sawah land had the highest returns for the first season, though their costs of production were much higher than the owner operators but lower than the sharecroppers. As mentioned earlier the renters paid a much lower rent than the share paid by the sharecropper, though the opportunity cost of the rent payment for the four month period is not included. In other words the wealthy farmers who rent in land had much higher net returns than the poorer farmers who sharecrop in sawah land. Obviously, it was much better to "rent in" than to "sharecrop in" land, but as was shown previously the sharecroppers were the poorer farmers and the renters were the larger wealthier farmers. One can argue that this is a credit market rather than a land market since what has occurred is that those with capital "rent in" land and those without capital "sharecrop in" land.

SALE OF LAND: CONCENTRATION OF LAND OWNERSHIP IN THE RURAL VILLAGES

Interrelated with the rental and sharecropping markets that perform to transfer control but not ownership is the land market which does transfer the actual title to the land. In a rather substantial number of cases the small landowner farmers would first rent their land for a number of years, then they eventually would sell the land because they had lost effective control over their land for a long period of time. Thus, the link between the rental market and land sales market was rather obvious. The link between sharecropping and the land sale market was also rather clear since as the wealthier people purchased land they turn around and sharecrop this land to the villagers, sometimes the previous owner included in the sales contract an understanding that he could sharecrop this land which he sold. As more land is accumulated into fewer hands, the amount of land in the sharecropping market perhaps will increase, and the amount in the rental market will decrease though this is obviously still an untested hypothesis.

In order to understand the present landownership distribution in the two villages, it is essential to examine the operations of the land sales markets over a long period of time. The number of the respondents in the census who had at one time sold sawah land until December 1978 was 100 households in Gemarang village and 39 in Sumokembangsri village (Table 30). In the landless category in Table 30, eighty six households in Gemarang and 28 in Sumokembangsri had sawah land and sold this land, thereby becoming landless. These 86 landless people in Gemarang had in the past sold a total of 44.6 ha of sawah. Rather surprisingly, even a few of the large landowners in the two

Table 30. - Sales in the Land (sawah) Markets in Gemarang and Sumokembangsri Villages by Size of Land Owned until December 1978.

Land size categories	Gemarang village			Sumokembangsri village		
	Number of respondents in each category	Number of respondents who have sold land	Total area of land sold (ha)	Number of respondents in each category	Number of respondents who have sold land	Total area of land sold (ha)
0	291	86	44.6	186	28	7.4
.01 - .49	86	16	5.5	91	2	.9
.50 - .99	66	4	2.9	175	5	2.9
1.00 - 1.99	11	2	1.1	30	2	1.1
2.00 +	9	1	.4	5	2	1.0

Source: Census of households, December 1978.

villages also sold sawah land, yet most of the sales were by the respondents who were landless at the time of the census.

Because of the historical situation, in Gemarang village the most sales of land occurred between 1955-1958 while in Sumokembangsri it was primarily after the 1960 land reform (Table 31) One of the propositions in this paper is that this land reform (U.U.P.A.) made it much easier to sell land by converting the "gogolan" system from communal lands to privately owned lands. In East Java, the "gogolan" system was widespread in the lowland, rice and sugar cane areas. In contrast to this, the situation in Gemarang village was equally interesting because once the land was redistributed the farmers obtained individual ownership but not through the 1960 land reform rather the redistribution of Dutch owned estate lands. Yet, in both of these situations where there was in one village communal control and in the other village private ownership after redistribution, polarization through transfer of sawah in the land sales market occurred.

The land sales market in Sumokembangsri village was closed to outsiders and only residents of the village until 1980, were allowed to purchase land. In Gemarang village the land sales market was open and outsiders were allowed to purchase sawah land. The effect of this was reflected in the sales prices of land between 1965 and 1978 in the two villages. The free or open land sales market in Gemarang village had an average sales price of Rp1,467,000 per ha in 1978 while at the same time in Sumokembangsri village the sales price was only Rp743,200 per ha (Table 32).[12/] The actual sales price for 1965 to 1978 had increased in Gemarang village from Rp101,800 to Rp1,467,000 per ha. Yet, if this is deflated, the sales price has not greatly increased. Obviously, the effect of a free market or a closed land

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12/ The exhange rate in 1978 was (US) $1.00 = Rp620.

Table 31. - Past Sales of Land by Persons who were Landless in December 1978 in Gemarang and Sumokembangsri Villages.

Year of sale	Gemarang village		Sumokembangsri village	
	Number of landless repondents who sold land	Total area sold (ha)	Number of landless repondents who sold land	Total area sold (ha)
Before 1950	0	0	1	.54
1950 - 1959	51	23.98	2	.76
1960 - 1969	24	13.43	6	1.37
1970 - 1978	14	5.65	11	4.40

Source: Census of household, December 1978.

Table 38. - The Actual and Deflated Sales Price (Rp/ha) a/ of Irrigated Land (sawah) in Gemarang and Sumokembangsri Villages by Years.

Year	Surabaya cost of living index	Gemarang village		Sumokembangsri village	
		Actual price of sawah (Rp/ha)	Deflated price of sawah (Rp/ha)	Actual price of sawah (Rp/ha)	Deflated price of sawah (Rp/ha)
1965	n.a.	101,800		52,800	
1966	72	114,900	1,310,200	57,400	654,100
1967	193	187,000	795,500	82,100	349,400
1968	490	456,800	761,500	202,700	339,552
1969	598	510,000	700,300	243,800	334,700
1970	733	618,200	692,400	292,400	327,500
1971	821	600,000	600,000	320,800	320,800
1972	894	641,500	589,200	369,500	339,300
1973	1170	970,300	685,800	439,200	303,200
1974	1499	965,500	528,800	469,200	257,000
1975	1788	994,400	456,600	567,500	260,600
1976	2084	1,187,200	467,700	619,000	243,800
1977		1,424,900		653,900	
1978		1,467,000		743,200	

Source: Interviews and records in the villages

a/ The price was deflated using the following formula:

$$\frac{\text{Actual Price}}{\text{Cost of Living Index}} \times \text{Cost of Living Index for 1971}$$

market on the villages economy was significant as reflected by the price of land. In the closed market the village at least retained some control since the owners reside in the village, yet the price of land to the wealthy villagers was held quite low. In the open market the village lost substantial control over the land when outsiders bought land, but the marginal farmers received a much higher price for their land. In the closed land sales market outsiders were prevented from buying land, the marginal landowners received a very low price for their land, the wealthier farmers in the village were able to expand their farm operations at a lower cost, and the village retained some control over the villages' land since all the landowners were residents of the village. In the open land sales market almost one half of the village's sawah land was owned by people who are not residents, the village lost a considerable amount of control over their village lands when the owners lived elsewhere and were not subject to social persuasion for the good of the village society, the marginal landowners received a competitive and high price for their land, and the resident farmers had to pay a much higher price for land if they wanted to expand their operations.

To understand the marginal landowners motives for selling, those who sold land were asked why they gave up their ownership rights to the land, they provided a number of reasons as shown in Table 33. The 35% who could not pay the compensation in Gemarang village were involved in what occurred at the time of the land redistribution when the local government set a deadline for paying compensation for the land in 1958. The major reasons in both villages were the need to purchase food for the household, to buy medicines, and to pay off debts. The other important reason was when inherited land was sold and the proceeds divided among the heirs. This usually happened when none of the heirs had enough capital to purchase the land from the

Table 33. - Reasons for Selling Agricultural Land (sawah) by the Respondents in the Villages, December 1978.

Items	Gemarang village		Sumokembangsri village	
	Number of respondents	%	Number of respondents	%
1. Unable to pay compensation for the land	37	35.	-	-
2. Needed money to purchase food and other households needs	17	16.	15	29.
3. Needed money to pay for medical expenses	17	16.	5	10.
4. To purchase and improve house	9	8.	2	4.
5. To pay for a festival (selamatan)	8	7.	0	0
6. To acquire working capital	6	6.	5	10.
7. To pay off debts	5	5.	10	20.
8. Inherited land sold to divide the inheritance	4	4.	11	22.
9. Others	4	4.	3	6.
Total responding	107	100.	51	100.

Source: Census of households, December 1978.

other heirs and the land holding was too small to be subdivided. Also, in Sumokembangsri the village regulation stated that they were not supposed to subdivide the "gogol" land. If these poor households have to sell land for their survival, then they should be selling their land in a free or open land sales market because they can at least get more money for consumption. Yet, this does not solve their problem but only postpones the time when they must find more employment in the labor market, either inside or outside their village.

The sale of the land to others is only part of this land market and the other part is, of course, the buying of land by the villagers. In contrast to the large number of respondents who sold land, a somewhat smaller group purchased sawah in the land sales markets in the two villages. As shown in Table 34, the 87 respondents in Gemarang village and 98 in Sumokembangsri village purchased sawah land. One must remember that only the residents of the villages were interviewed which meant that the outsiders who owned sawah in Gemarang village were not asked about their participation in the land market. In both villages a few landless households at one time purchased land then sold the sawah land at a later date. In Gemarang village the 9 respondents who owned more than 2.0 ha of sawah purchased land from an amazing total of 96 households which very clearly indicates that polarization of sawah land ownership had occurred in the village. The largest size ownership group in Sumokembangsri village had 4 respondents who bought land from 16 households. Even in the intermediate size groups, fewer people bought land than the number selling land. Summarizing these land market transactions, 87 households bought sawah land from 210 households in Gemarang village and 98 households purchased land from 161 households in Sumokembangsri village. Those buying land were primarily the larger landowners in each village. Unfortunately,

Table 34. - Land Market Transactions in Gemarang and Sumokembangsri Villages until December 1978.

Size of sawah land owned in 1978 (ha)	Respondents who have at one time purchased sawah land		Average area of agricultural land purchased (ha)	Number of people who sold sawah land to the respondents
	Number	Percentage of respondents in the category (%)		
Gemarang village				
0	18	6.	.46	25
.01 - .49	31	36.	.33	37
.50 - .99	23	35.	.48	41
1.00 - 1.99	6	55.	1.78	11
2.00 +	9	100.	4.46	96
	87			210
Sumokembangsri village				
0	7	4.	.09	7
.01 - .49	15	16.	.21	18
.50 - .99	52	30.	.27	73
1.00 - 1.99	20	67.	.69	47
2.00 +	4	80.	1.04	16
	98			161

Source: Census of households, December 1978.

not be subdivided in the sale (Table 35). Consequently, only beginning after the 1960 land reform was the communal land sold in Sumokembangsri village. In 1955 there were 307 households who each had one gogol land right and 56 households were landless in Sumokembangsri (Table 36). By 1973 the number of households who had one gogol of sawah land had declined to 244 and 26 of these households had more than one gogol because they had purchased the gogol from the other respondents who then became landless. In 1978 the number had further declined to 239 with one gogol and 27 of these households had more than one gogol and one household had accumulated 5 gogols (Table 36). Also, one gogol had been divided between two brothers, though it was not officially recognized by the village. One gogol in 1978 was .486 ha of sawah land. Based on this information, the landownership in the village had polarized during the 25 years, and this transfer of land from the poorer households to the richer households was substantially accelerated by the 1960 land reform.

This polarization can also be illustrated in Gemarang village by examining, over time, the increase in sawah land owned by a few wealthy people in the larger land-size categories as presented in Table 37. Between 1959 and 1978 the number of larger landowners in the two categories remained about the same only increasing by 2 households in each group to become 9 households in the 2.0 + ha category and 11 households in the 1.0-1.99 ha category. Yet, the total amount of sawah land owned by these households in each category greatly expanded from a total of 19.9 ha in 1959 to 46.9 ha in 1978 in the first category and from 10.0 ha in 1959 to 15.3 ha in 1978 (Table 37). For each period (1959, 1964, 1969, 1974, and 1978) in the table, the amount of land owned by these households steadily increased though the biggest increase came after 1960. Based on this steady progression, the large landowners are continuously purchasing land in small amounts to expand their farm operations or to rent out

Table 35. Area of Irrigated Agricultural Land (sawah) Purchased and the Number of Sellers in the Land Markets by Years in Gemarang and Sumokembangsri Villages until December 1978. a/

Year land purchased	Gemarang village		Sumokembangsri village	
	Area of land in the transactions (ha)	Number of sellers	Area of land in the transactions (ha)	Number of sellers
Before 1940	4.6	12	4.0	21
1940 - 1949	.6	4	.7	7
1950 - 1959	35.4	78	5.0	28
1960 - 1969	22.8	58	11.0	45
1970 - 1978	17.0	61	15.0	55
Total	80.4	213	35.7	156

Source: Census of households, December 1978.

a/ This information was based on information from the buyers of the land.

Table 36. - Gogolan Land (sawah) Market Operations From 1955 to December 1978 in Sumokembangsri Village.

Number of gogol's owned by the households in the village	Number of people who have gogolan land sawah rights or were landless			
	1955 a/	1960 a/	1973 b/	1978 c/
0	56	87	184	219
1/2	0	0	0	2
1	307	307	244	239
2	0	0	18	19
3	0	0	5	5
4	0	0	3	2
5	0	0	0	1

Source: a/ Village records
b/ Household census 1973
c/ Household census 1978

Table 37. - Increase in Sawah Land Ownership by the Larger Landowners in Gemarang Village, December 1978.

Year	Households that owned more than 2.00 ha of sawah land			Households that owned between 1.00-1.99 ha of sawah land		
	Number of owners	Total area of sawah land owned (ha)	Average size of owned land (ha)	Number of owners	Total area of sawah land owned (ha)	Average size of owned land (ha)
1959	7	19.9	2.8	9	10.0	1.1
1964	8	26.6	3.2	10	13.2	1.3
1969	9	30.1	3.3	10	14.4	1.4
1974	9	34.6	3.9	10	14.4	1.4
1978	9	46.9	5.2	11	15.3	1.5

Source: Census of households, December 1978.

and share out land. The increase in number of households in the 2.0 + category was caused by two outsiders purchasing land in Gemarang village and moving permanently to the village.

In contrast to what occurred in Western countries where marginal farmers sold their land and migrated to cities where they found work, in Java the situation is much different. In the two selected villages in East Java these marginal farmers did not sell their land because opportunities were better in the cities, rather they had to sell their land to pay off debts and to support their families. Once they sold their land, they usually remained in the village and became landless laborers working on other peoples' land. Their status declined from that of marginal farmers to poor, landless laborers. A very few households sold land to increase their capital resources but their number was not significant. Also, in the villages some landless people were either government civil servants (pegawai) or traders, both of whom had capital. Those who had land, and continued to increase their holding were also able to greatly increase their wealth which was one of the incentives to purchase sawah land. The returns to irrigated land in the two villages is presented in Table 38 which shows that the return to the invested capital in land was between 15% to 31% per year in Gemarang village and 14% to 32% in Sumokembangsri village. Obviously, the more sawah land they owned the more quickly they became wealthier people in their villages which adds to polarization based on the ownership of land and the levels of income of the villagers.

Normally, in order to estimate the returns to the money invested in land, all of the production factors must be included in the analysis. Yet, in one sense this distorts what a farm family actually receives from their farm activity. To understand the rental, sharecropping, and land sale markets in the villages, a comparison of

Table 38. - Returns to Irrigated Land (sawah) by Various Tenure Arrangements in the Two Villages for 12 Months, 1978.

Item	Gemarang village		Sumokembangsri village	
	Income (Rp/ha /year)	Percentage of income to capital invested in land. a/ (%)	Income (Rp/ha /year)	Percentage of income to capital invested in land. b/ (%)
1. Net Returns to food crop cultivation by the owners	389,400	27. c/	528,000 f/	70.
2. Net returns to food crop cultivation by sharecroppers	144,600	10. d/	174,200 g/	12.
3. Net returns to food crop cultivation by renters	409,900	28. e/	399,400 h/	53.
4. Net returns to cultivation of sugar cane by the owners	450,000	31.	243,750	32.
5. Sharecropped out to another farmer	257,000	18.		
6. Rented out to another farmer	153,400	11.	106,200	14.
7. Rented to sugar cane factory	224,200	15.	224,200	29.

Source: Interviewed respondents, 1979.

a/ The return to capital invested in land in Gemarang village was based on a value of Rp1,450,000 per ha for the land in 1977 and 1978.

Table 38 . - (cont.)

b/ The return to capital invested in land in Sumokembangsri village was based on a value of Rp750,000 per ha for the land in 1977 and 1978.

c/ This is a crop rotation of rice-rice-soybeans from Tables 51 and 52.

d/ These are farmers who have sharecropped in the sawah land (Tables51&52) and had a rotation of rice-rice-soybeans.

e/ The farmers who have rented in the sawah land (Tables 51 and 52) had a rotation rice-rice-soybeans.

f/ This estimate is bas-d on information in Tables 51 and 52 and assumed two crops of rice and the owner received the land cost and returns to management.

g/ This estimate is based on information from Table 52 and assumed two crops of rice and the return to management was the net returns.

h/ This estimate is from Table 52 and is assumed two crops of rice and the returns to management for the net return to the sharecropper.

the income for 12 months of the owners, renters, and sharecroppers is very interesting. Besides the total income, the percentage of this income to the value of the land gives a rough indication of what a farm family or landowner can earn on his investment. The results of this analysis are presented in Table 38. In Gemarang village the highest income for the 12 month period was Rp450,000 per ha achieved by the owner cultivators who produced sugar cane. Next, the renters of the sawah land who cultivated rice had the second highest income (Table 38). Following close behind the renters, the owner cultivators who produced rice had the third highest income in Gemarang. In Sumokembangsri village the results were similar, though the owner cultivator of rice had the highest income, followed by the renters. The income of the farmers who sharecropped in all of their sawah land was the lowest income in Gemarang and second to lowest in Sumokembangsri. If these incomes are divided by the value of the land, then the percentages give a rough indication of the returns to the families by tenure types. Both the total income and these percentages conform very closely to the propositions in this study and explain why the trends have occurred. The income that a landowner can make from his sawah land was relatively very high and partly explains the reason for the wealthier villagers and outsiders accelerating their purchases of land and the concentration of land ownership. Besides this, the high income of the renters of sawah land obviously explains the trend of the larger farmers "renting in" the land of the marginal landowner farmers. The moderately high return of Rp257,000 per ha of the land owners who sharecropped out to someone else explains why the large landowners prefer sharecropping out rather than renting out. What this does not explain is the reason for the low rental rates to the poor farmers nor the reasons for selling the land to wealthy people. In the next section, the role of political power in the land markets will be shown to be a major explanation.

POWER GROUPS: RURAL ELITES CONTROL OF THE LAND MARKETS

In both Gemarang and Sumokembangsri villages the predominant factor influencing these various land markets was the role of the village elites. These elite groups were based on landownership, family relationships, and political affiliations. Not always did these power groups work together in controlling the land markets, rather at times conflicts broke out between opposing power groups in the villages. The primary purpose of this section is to show that it is not primarily economic forces that have influenced the land markets but rather the groups based on wealth and political power. To show how these two forces affect the land markets, the situations in these two villages are a very good example of how the markets were manipulated by these rural elites. In Gemarang village the Government carried out a land redistribution to the villagers while in Sumokembangsri village the Government's land reform in 1960 changed the status of the sawah land from communal ownership to individual ownership. What happened in these two villages is fairly representative of the land markets in East Java during the last 25 years.

At the time the land was redistributed in Gemarang village in the 1955 to 1958 period, conflicts occurred among the various groups in the village. Political demonstrations were organized by the Farmers Union (B.T.I.) and the Women's Association (Gerwani) both of which were communist dominated organizations. They were protesting against the redistribution and insisting on the land being given to those who were tilling the land. The committee established to redistribute the land had representatives of various groups which were opposed to the communist organizations. All the informants in this study critized these communist organizations and the authors were unable to get a

balanced view of what occurred since the communist's leaders have disappeared. Also, the ex-members of the Farmers Association (B.T.I.) were afraid to discuss what occurred when asked by the interviewers in this study. Because of what happened in this struggle for the redistribution of land between the opposing forces, the Government still considered this a critical village (daerah rawan) due to the Government's impression that most of the villagers were influenced by the communists in the 1960's. Since 1966 the Government assigned a "caretaker" leader for the village who from 1966 to 1978 was a member of the police (anggota kepolisian) and from 1978 to present the caretaker village leader was from the military (bekas komandan Koramil). In Gemarang village it was difficult to determine what the family relationships were of the ruling elite primarily because the village leader since independence has been an outsider. Before 1965 the village leader was the head of the Kabupaten's Farmers Association (B.T.I.) and can be assumed to have had communist affiliations. Complicating the family relationship was that in Gemarang village the residents were migrants to this area and sharecropped the estate land that eventually was redistributed.

The larger landowners in Gemarang were first one of the village officials (pamong desa) who during the Dutch period was the Indonesian manager (mandor) of the Dutch Estate, second a retired Government official (Camat) of a county (Kecamatan), third a retired Government assistant leader (Wedana) in a Kabupaten, a police commander (Komandan Polisi), a military official (Koramil), the school teacher (Kepala Sekolah) who was a past village official, and the son of a Government official (Bupati). Obviously, the large landowners in Ngawi village were primarily people with political power based on their connections with organizations at a higher level outside the village. Most of these retired officials had bought land and some received land at the time of the redistribution of land in 1958. These large landowners

resident in the village are the primary power structure in the village and were leaders of the various Government sponsored organizations and institutions in the village. They have been able to purchase land because of their capital assets and their positions of power. Most of these largest owners were from outside the village, though they have retired and moved to this village.

The situation was much different in Sumokembangsri village because it has been in existance for hundreds of years and had a long established power structure based on the families resident in the village. Sumokembangsri's village leader (Lurah) was first elected in 1952 and has remained the village leader to the present time (1980) through a number of elections. The present leader was the son of the previous leader who held the position for 12 years.

In this village conflicts have occurred between competing power groups over the cooperative's funds, village treasury (Kas Desa) money, and sugar cane funds for renting rice fields. The major conflict before 1965 was between the village leadership and the minority of village residents who were affiliated with the communist party (PKI). Once this group even tried to displace the village leader but were unsuccessful.

Elections were held at various times in the village and the present village leader won each of these elections. After an election he then would appoint the other village officials (Pamong Desa) which were important positionsbecause these officials received use rights to village sawah land (bengkok) as their salary. Since an official will receive a hectare or more of land, it was important to the leader (Lurah) to be able to reward residents for their patronage or to buy off his opponents. In Table 39 the relationships between the leader (Lurah) of Sumokembangsri village and his village officials are presented by various years from 1950 to 1978. The main relationships determining who was appointed as an official were close family members and supporters of the leader in the elections (Table 39). The next in

Table 39. - The Relationships Between the Village Leader (Lurah) and the Other Village Officials (Pamong Desa) from 1950 to 1978 in Sumokembangsri village.

Relationship	Village officials by relationship with the leader				
	1950	1955	1960	1970	1978
1. Close family	3	4	4	4	4
2. Other family	1	1	1	1	2
3. Supporters of the leader in the elections	4	4	5	3	-
4. Opponent of the leader in the elections	2	1	1	2	3
5. Political opponents	-	-	1	-	-
6. Family of the previous leader	2	2	-	1	2
7. Election results	-	-	-	1	2
	12	12	13	13	13

Source: Village informants.

importance was the opponents of the Lurah who were also given these village positions, perhaps in an attempt to maintain stability in the village. However, all of these positions went to the powerful families in the village, either linked directly to the leader or opposed to the leader.

In order to demonstrate how political control of the village affects the land market, the example of the acceptance of new "gogol" holders in the 1950 to 1955 period is very informative. In the gogolan system at times new members were accepted and given gogol use rights to the land. When this occurred, the size of a gogol was decreased thereby reducing the amount of sawah land of the holders all of whom had the same size of use rights (gogol) to the sawah land. In the 1950 to 1955 period one gogol was approximately .55 ha and 31 new "gogol" holders were approved and accepted in kampong K which was the only kampong in the village (desa) that was carefully examined because of sufficient data. Since the village's sawah land was limited, some of the leaders' bengkok or salary land, and other non-gogol village land (sawah untuk tamu, sawah sanggan) was added to the total gogolan land in the village in order not to decrease the size of a gogol too drastically. In Table 40 are the relationships between the village leader and the new "gogol" holders. Of the 81 new gogol's for the entire village, nine were family members of the leader (Lurah), six were supporters of the leader in the election, nine were either political opponents or election opponents, and only six of the 31 did not have a clear relationship with the leader. After 1955 there were no additional redistributions of the land to create new gogol holders. According to the village informants after the acceptance of the new gogol holders in the 1950-1955 period, the conflicts among the villagers declined. The reason was that the three competing groups all were able to nominate new "gogol" holders. These three groups were those villagers related to the leader (Lurah), his political opponents based on relations with political parties at the national level, and his electoral opponents based on the local level power groups.

Table 40. - Persons Who Were Given Gogol Rights in Sumokembangsri in the 1950-1955 Period and Their Relationship with the Village Leader.

Relationship	The number of people getting a new gogol	%
1. Family	9	30.
2. Supporters of the leader in the elections	6	20.
3. Opponents of the leader in the elections	3	9.
4. Children of the village officials	3	9.
5. Ex-gogol holder who relinquished his right to a gogol in the past	1	3.
6. Political opponents	3	9.
7. Others with no clear relationship to the village leader	6	20.
	31	100.

Source: Village informants.

At first glance one would assume that in the past this gogolan system was used to give use rights for land to new members of the village and perhaps to the poorer landless villagers. Yet, in the 1950-1955 period the new gogol holders were not from the landless group but in reality were members of the competing, powerful village families. The reason that the old "gogol" holders were willing to accept new holders was that all of these new members had close family relations with the old "gogol" holders. The three competiting groups were able to nominate the new "gogol" holders, and therefore none of the poorer villagers were allowed access to the new use rights for the sawah land.

Even though they accept a new "gogol" holder, he still has to pay for this gogol land use right. He must work the land for one year without receiving compensation and has to pay a fee to the village treasury (kas desa).

According to the informants the reason that the leader (Lurah) who was a member of the Indonesian National Party (P.N.I.) gave "gogol" rights to his political opponents who were members of the Nahdatul Ulama Party (an Islamic party) was to combine their forces to oppose the communist party in the village.

Based on the land redistribution in Gemarang village and the acceptance of new "gogol" holders in Sumokembangsri village, it was relatively clear that political forces, national politics, and wealthy villagers have a major influence on the land markets in these villages. The ownership of the village land then affects the renting and sharecropping markets that were also dominated by the power groups. The low rental rates and the high returns to owners who sharecrop out were not accidental, but purposely set of favor the large landowners through the land markets.

SUGAR CANE PRODUCTION: GOVERNMENT INFLUENCE ON THE LAND MARKETS

The land markets in Java are significantly affected by the actions of the Government, especially, by the 1950 land reform which accelerated the sale of irrigated fields (sawah) in these land markets as was already discusses. Sugar cane production is another example of how the Government's concern about production of sugar has adversely affected the smaller landowners which will be studies in this section since cane was produced in Gemarang and Sumokembangsri villages.[13/] Sugar cane has been grown in Sumokembangsri village for at least 100 years and probably longer, while in Gemarang village it was a rather recent development. What occurred in Sumokembangsri village is a typical example of the history of sugar cane and colonial past in Java. During the Dutch colonial period, one-third of the village land was always assigned for cane and the farmers were forced to rent out one-third of their land to the sugar factory. The cane was rotated between the sawah blocks using the gogolan system in Sumokembangsri village as was previously described.

From independence until 1975 the Indonesian Government also used this colonial system to assure sufficient land for the nationalize sugar cane factories. In 1975 the Government launched a new program

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13/ After the field surveys were finished in Kraton village, a sugar factory rented 200 ha of sawah for cane which was planted in May 1979. This was the first time that a factory rented land in this village, though it occurred after the village surveys.

that was intended to help the farmers produce cane themselves rather than renting their sawah land to the factory. Yet, at the same time the Government continued the program of renting the farmers' sawah land to the factory as well as encouraging private individuals to rent sawah land for sugar cane. All three systems were found in Gemarang village, but only factory renting of land in Sumokembangsri village at the time of the interview surveys.

Since December 1978 there have been three systems of cane production in Gemarang village which are: (1) the land rented to the factory (tebu pabrik), (2) the sugar cane grown by the farmers as smallholder cane producers (tebu rakyat), (3) the production of sugar cane by private individuals and companies (tebu swasta). Even though by the description of these three systems it sounds as if the land market was free, in reality the Government still determined the area in each of the lowland rice villages located in the sugar cane areas that had to be planted in sugar cane. Consequently, the sugar cane land rental market was not free and had to respond to the targets set by the Government for each village. However, this occurs primarily in East and Central Java where sugar cane has traditionally been grown and where the sugar factories are located. Both Gemarang village and Sumokembangsri village are in these designated sugar cane producing areas, and therefore must plant a specific area in cane. Obviously, forcing the cultivation of cane had a major impact on the village's land markets.

In Java the sugar cane has traditionally been grown for only one crop (Ungaran) which is 16 to 18 months but in recent years they have had a small percentage of the area in sugar cane that has been ratooned (keprasan) for a second crop which is for 12 months. This ratooning of sugar cane is a normal procedure in most other sugar cane producing countries. As an example, in Hawaii the cane is always

ratooned for a second crop but rarely for a third ratoon crop.

In the past when the sawah land was rented to the sugar factory, then the factory managed and cultivated the cane. This sawah land was used to grow a cane crop and to produce seedlings for the factory and the smallholder producers. In 1977/78 the factory paid a rent of Rp265,000 per ha for a 15 month period, and a rent of Rp185,000 per ha for 11 months for the seedbeds that produced the cane seedlings in the two villages.

The smallholder sugar cane cultivation system was supposedly carried out by the farmers themselves, though it was separated into the Intensive Smallholder Program (Tebu Rakyat Intensifikasi or TRI) and the Traditional Smallholder Program (Tebu Rakyat Tradisional). The difference between these two was that the intensive program was managed by a group of farmers and the traditional program had individual management by the farmer cultivator. Besides this, in the traditional program there were two methods of production, one was the single crop and the other was the ratooned second crop which included both the main crop and the ratoon. In Gemarang village the traditional smallholder production of cane in the village was located outside of the land that was designated by the Government for sugar cane.

The intensive program (TRI) which cultivated the cane by a group of farmers was the substitute for the sugar cane factory program that in the past rented the land from the landowners and was supposedly being phased out over a five to ten year period. Yet, the land was still planted according to the cane planting schedule (glebakan) as was also done for the old system of the factory's sugar cane cultivation on the farmer's sawah land. Also, in this new program (TRI) almost all of the cultivation activities from soil preparation to harvesting was still managed and organized by the factory. Very few changes

actually occurred in the switch from the factory production system to the smallholder production system (TRI) in cultivation of the cane. The major impact was in the land market where this institutional change in cane cultivation was supposed to assist the farmers to produce cane on their own land, actually often introduced a middle man who would rent the land from the farmers and produce the cane himself in the TRI program.

The third type of sugar cane production was carried out by private enterprise (tebu swasta) which meant that an individual or a company rented sawah land from the landowners and then cultivated sugar cane on the sawah land. Usually, these private enterprises were producing cane from the ratooned (keprasan) crop after the land with the cane stumps was returned to the landowners. These enterprises have cultivated cane in Gemarang village since 1970 when two of them rented sawah land that had just been used for cane and they produced the second crop from the ratoon.

The national smallholder sugar cane program began in 1975 with a number of objectives: (1) the national goal for increasing production, (2) the factory goal for solving the problem of renting land which always arose when trying to find a new area; (3) the farmers who were trying to increase their income and the goal was to educate the farmers to become farm managers of the cane grown on their own land. As time passed there was supposed to be an increase in the area of smallholder cane (TRI), and a planned decrease in the area of land rented directly to the factory. This third type of sugar cane cultivation by private enterprises was only in Gemarang village of the three villages in this study where approximately 81 ha was planted by these private enterprises in the Wet Season 1978/79. From the beginning of this private cultivation until 1979 it was clear that enterprise produced cane has been increasing in area planted in Gemarang village,.though

primarily for the ratoon crop.

Before the smallholder cane (TRI) program, in the area of the factory's operations, almost routinely, the farmers in the two sample villages each year rented part of their sawah land to the factory for sugar cane. The farmers had no choice but to rent their land to the factory, and this was enforced by the Government. The amount of the villages' land that had to be rented was between 1/5 and 1/3 of the total area of sawah land in the village. These two types were called glebak 3 system for 1/3 of the land and the glebak 5 system for 1/5 of the village's sawah land which means there were either three rotation blocks or five rotation blocks for cane planting in the villages. Each year one of the blocks was assigned to the factory for planting cane. In Gemarang the glebakan system varied from 3 to 5 blocks depending on the kampong. If it was glebak 5, then one block was planted in cane every five years, while glebak 3, meant that cane was planted every three years in the same sawah land. However, in most villages there was overlap and at certain periods two blocks were in cane, one ready for harvesting and one just planted. In the area that had the glebak three system each year in April or May, one block was given to the factory for planting and one block was harvested in August. Thus, each year between April and August two blocks were planted in cane for four months each year and one block in rice during that period of overlap in the rotational blocks. After the implementation of the smallholder cane program (TRI) the glebakan rotation system by the factory was maintained. In Gemarang village the area of cane was increased because of the expanded sawah area that was in the smallholder cane program in 1978/79 in addition to the ratooned cane by the farmers and private companies.

Each sawah block in the glebakan system covers irrigated fields (sawah) of 30 to 80 farmers and therefore in the smallholder sugar cane

program one of these farmers was appointed as the group leader. In Gemarang village there were three group leaders and in Sumokembangsri there were 6 group leaders for the smallholder program. Soil preparation and cutting of the cane was managed by the factory staff as well as the technical management of the cane cultivation was by the factory staff. Actually, the cultivation of the smallholder cane was no different from the system of renting the land to the factory, only the receipt of the money for cultivation had to be approved by the group leader.

The smallholder program acted as a method for solving the problem of the rental rate for the sawah which in the past was set by the Government and under this new program (TRI) the cane was sold by the producers to the factory and thus the area in cane under this program increased. This increase was due to the smallholder program because the factories did not decrease the area they rented for cane production. Based on a Government report the reason why the factories did not decrease their rented sawah was they were uncertain if the smallholder program could supply them with sufficient cane for the factories production of sugar.

The smallholder program apparently assisted the factories because they did not have to supply a large amount of money to rent the land, thereby, not affecting their cash flow or costs of production. Also, the smallholder program meant they did not have to search for land to rent. However, the supply of sawah land for cane was still guaranteed by the smallholder program as was done in the past in the old geblakan system. The farmers whose land was included in the program (TRI) did not have any free choice, rather they had to participate.

In order to document how the intensified cane program (TRI) in both of the selected village was carried out, the following discussion will give the details in order to prove that it did not actually benefit

the smallholders. In implementing this program a group leader was selected who was responsible for cultivation of the cane in the block containing the group of farmers. The factory staff supported this leader with technical advice to the point that the actual cultivation was organized by the factory staff (mandor). In the actual management of the planted cane it was not clear who was the manager. This uncertainty was because the group manager knew only the total amount of seed used, the total number of laborers who had to be paid, and as the group leader only signed the receipts given to him by the factory staff (mandor). The decision concerning when to plant, apply fertilizer, and harvest the cane were almost all made by the factory staff. Even in the appropriate use of the credit from the smallholder program the factory staff played an important supervisory role. The group leader did not have the authority to make decision about specific cultivation tasks such as how much work had not been finished or the late arrival of the inputs which were both determined by the factory and influenced the yields and production costs. The mandors who were the lowest level managers in the sugar cane fields in TRI still felt they were part of the factory staff, responsible to the factory, and not responsible for the smallholder sugar cane program (TRI).

The technical cultivation of the cane was almost entirely in the control of the factory, and therefore a production decrease in the TRI program cause by cultivation practices should not occur because of factory management. Yet, the cane production in this program has this declined from the level when the factories rented the land. This lower cane production in the program (TRI) in Gemarang village was caused by poor work and late arrival of inputs, while the production excess were covered by credit in the Bimas program (Government's package input credit program).

The most common crop rotations in both Gemarang and Sumokembangsri villages were rice-rice-soybeans, rice-soybeans-peanuts, rice-rice corn, and rice-rice-rice. Cultivation of the first sugar cane crop (ungaran) began in either April or May which was the same as the first rice season, then during the next 16 months a farmer could plant two crops of wet season rice, one crop of dry season rice, and a secondary crop as compared with one crop of sugar cane. The average net returns for these different crop rotations for a 16 month period are shown in Table 30. The sugar cane smallholders's net return in Gemarang village was Rp454,450 for 16 months per ha which was comparable with the net returns of the other cropping systems (Table 41). Yet, in Sumokembangsri village the sugar cane net return (Rp245,870 per ha) was much lower than the returns from the other cropping systems in the same time period. The reason for this difference in net returns was that the yields and the rendement of the cane were lower in Sumokembangsri village. Based on data from the factories near the two villages, the sugar production for the Soedhana factory (Gemarang) is much more efficient than the Watutulis factory (Sumokembangsri). In both of the villages, the smallholder cane (TRI) was entirely managed by the factory, therefore, there was no reason for the lower yields to have been caused by the farmers and thus the smallholder cane program's (TRI) low returns could not be blamed on the farmers in Sumokembangsri village.

These net returns for the various crop rotations indicate that the renting of land in Gemarang for cane cultivation was a rational choice of crops, though the return was only slightly higher. Small farmers prefered food crops because of their families consumption but larger farmers who allocated their resources to sugar cane received a satisfactory return on their investment. As discussed previously, the private companies and individuals with capital want

Table 41. - Average Net Returns from Sugar Cane and the Alternative Cropping Systems during the Cane Season in Gemarang and Sumokembangsri Villages, December 1978.

Cropping system	Gemarang village		Sumokembangsri village
	Net return for the 16 months crop season 1/ (Rp/ha/year)	Net return for the 12 months crop season 2/ (Rp/ha/year)	Net return for the 16 months crop season (Rp/ha/year)
1. Sugar cane	454,460. 3/	446,110. 4/	245,870. 3/
2. Rice II - Soybeans - Rice I - Rice II	445,650.	423,970.	440,130.
3. Soybeans - Rice I - Rice II - Peanuts	436,540.	438,290.	-
4. Rice II - Corn - Rice I - Rice II	438,540.	414,170.	414,400.
5. Soybeans - Corn - Rice - Soybeans	-	-	271,200.
6. Soybeans - Peanuts - Rice - Soybeans	-	-	274,990.
7. Rice - Rice - Rice - Rice	-	-	473,420.

Source: Field Surveys in 1979.

1/ This is the 16 months required for the first crop (ungaran) of sugar cane which is planted in April/May and harvested in July/August of the following year.

2/ This is the 12 months required for the ratoon crop (keprasan) which is planted in September and harvested in August of the following year.

3/ This return is for the smallholder cane program that is controlled by the factory

4/ This is the smallholder cane program carried out by individuals and private companies.

to rent the harvested cane field to produce the ratooned cane crop. The return to the ratoon crop was Rp446,110 and was higher than the 12 months crop rotation. This explains why these companies invested in sugar cane cultivation (Table 41).

As is shown in Table 42, the management share in Gemarang village was much greater than in Sumokembangsri village. When there was an increase or decrease in the total income, the factor share for management was the one most affected by the decline in the gross returns. Usually, the manager was also the landowner which then makes it difficult to actually separate the shares for land and management. Also, the share for the ratooned crop was a higher percentage than for the 16 months crop.

Since the time periods in Gemarang are 16 months and 13 months, the return for the same length of time was relatively the same. The combined share for land and management for the 16 months crop was Rp454,460 per ha per year, while for the ratoon crop (12 months) the combined share was Rp446,100 per ha per year (Table 41). It is interesting to note that the yearly return to management was higher for the ratoon crop because the labor and capital costs were lower since they do not have to prepare the field or plant the seed (Table 41

Often one hears in discussions on sugar cane that the farmers were given a free choice between rice and cane, the cultivation of sugar cane would disappear. Yet, in Gemarang village many large farmers and private companies wanted to produce sugar cane. Since these companies were expanding the area they rented for cane, it indicated that this cultivation of cane still was profitable. However, they were primarily interested in producing the ratoon crop because the cost of production was lower, the time was only 12 months, and returns per ha were almost the same as cultivating other food crops

Table 42. - Factor Shares for Sugar Cane Cultivation in Gemarang and Sumokembangsri Villages in the Wet Season 1977/78.a/

Factor	Gemarang Village				Sumokembangsri village	
	First crop of sugar cane b/ (16 months)		Ratooned crop of sugar cane c/ (12 months)		First crop of sugar cane b/ (16 months)	
	Value (Rp/Ha)	%	Value (Rp/Ha)	%	Value (Rp/Ha)	%
1. Land (rent) d/	265,000	19.	160,000	18.	265,000	26.
2. Labor	355,800	25.	206,700	24.	331,500	32.
3. Current assets (other costs)	463,300	32	218,600	25.	376,000	36.
4. Operators surplus	340,400	24.	286,100	33.	62,800	6.
Gross return	1,425,100	100.	871,400	100.	1,035,300	100.

Source: Field surveys in the two villages.

a/ The factor shares have been estimated by using the accounting method.

b/ The land rent for the first crop of sugar cane has been calculated based on the rent paid by the sugar factory for a 16 month period and paid to the landowner two months before the land is cultivated for the cane.

c/ The land rent for the ratooned crop is based on the rent paid to the owners by the private individuals.

d/ The land factor share which is the rental rate has not included an interest charge on this amount for the 16 months. The prevailing interest rates in these villages was 5% per month which if included in this analysis would greatly change the shares.

Freely chosen cane cultivation by private individuals was generally by rich farmers or people with sufficient capital because they were not pressed for daily consumption needs. The small farmers were not interested in sugar cane cultivation because they had to satisfy their families food consumption needs. Food crop cultivation provided two to three crops during the same period of time for cane which was better able to fulfill their consumption requirements. These small farmers were sometimes forced to rent their land to someone else because of the designation of a block of sawah for cane or the decision by the village leader to rent land to a private company. Cultivation of sugar cane by these rich farmers and companies on land rented from the small farmers added to the tendency for polarization of control (penguasaaan) over land. Land polarization also caused the spreading gap in incomes between the wealthy and the poor.

In analyzing the expansion of the area in sugar cane in Gemarang village, the role of the private companies and individuals was very important. They were from the cities and cultivated cane in Gemarang village since 1971, though they only were involved in cultivating the ratoon crop. They rented sawah land that had just had a cane harvest by the factory or the landowners. Usually, they would rent this sawah land during the shortage (paceklik) period in the village or near the religious holiday (lebaran). Both of which are at a time when the farmers need money and are more vulnerable to inducements to rent out their land. In the Wet Season 1977/78 the village landowners and the cane factory cultivated 70 ha of land, the private companies and individuals from the cities cultivated 80 ha, the landowners themselves cultivated 30 ha of ratooned cane (Table 43).

In Sumokembangsri village there were no private companies or individuals from the cities who cultivated cane, but several city

people had purchased the cane crop in the field (ijon system) before the harvest. This type of purchase usually occurred 10 to 12 months before the harvest and only by outsiders in the wet season 1978/79. Before this season the cane was purchased (ijon) before the harvest but only by people resident in the village.

Consequently, cane cultivation by city people either through renting of the land or purchasing before the harvest causes a transfer of village income to the cities. The income transfered to the cities was estimated in Table 43, the net return per ha of cane was used in the estimates and it had all of the costs of production deducted and was therefore the return to the landowners and to the managers (cultivators). For the ratoon crop rented by the city people, the share for the village was the land rent and the share funneled to the cities was the management share or the net return. For the local landowners who cultivated cane, their land share and management share were both part of the village income from cane. As shown in Table 43, twenty five percent of the income from sugar cane cultivation in Gemarang village was channeled to the cities through the operation of the land market.

An important aspect of the land market in Sumokembangsri village was the selling (ijon) of the cane crop before the harvest, and can be considered as part of the capital market since it is a method for poor farmers to get money for their needs. Although, in some respects this ijon selling was not directly associated with the land market, yet it was caused by the government's role in the land market that forced farmers to cultivate cane. These farmers had to sell their crop for cash to purchase food. The ijon selling of the case occurred while the crop was still quite immature, usually 10 to 12 months before the harvest. In Gemarang village it also occurred but was not analyzed in this study because most of the cane farmers were not included in the study.

Table 43. - The Net Income of the Village and the Amount Transfered to the Cities, Gemarang Village, Wet Season 1977/1978.

Item	Area (ha)	Net income (Rp)	Income transfered to:	
			Village (Rp)	City (Rp)
First crop of cane by landowners and factory	70	42,416,200	42,416,200	0
Ratooned by companies and city people	80	35,688,700	12,800,000	22,888,700
Ratooned by local landowners	30	13,383,300	13,383,300	0
	180	91,488,200	68,599,500 (75%)	22,888,700 (25%)

Source: Calculations based on information from the field survey.

There were two forms of ijon selling in Sumokembangsri village: (1) sale based on unit of area and (2) sale based on unit of weight of sugar. The ijon selling price by unit of area in the wet season 1977/78 was Rp165,000 per ha and in the wet season 1978/79 was Rp200,000 per ha. The ijon selling by weight was Rp8,000 per quintal (100 kg) of sugar (the price of sugar at that time of harvest was Rp19,500 per quintal).

Only three villagers and no outsiders purchased cane through the ijon system in the wet season 1977/78, whereas in the wet season 1978/79 both resident villagers and outsiders from the cities bought the cane crop through the ijon system (Table 44). The sale of cane to the city people was not on an individual farmer basis. Rather, the sale was of three blocks of the sugar cane crop with a total of 10 ha, and was sold to three buyers. This sale of cane by groups of farmers in Sumokembangsri village, according to the group interviews, was caused by the following:

1. The famers personal estimate that their sugar cane yields in these blocks declined because of a lack of cultivation effort by the factory staff and the late arrival of the planting materials;

2. Their funds to pay for cultivation of the cane in the blocks were exhausted yet the crop still needed cultivating. The land preparation costs were quite high yet the yields were expected to decline;

3. Based on the farmers' experiences they felt that after the sugar cane was harvested, their returns would be low because of many taxes and charges;

4. With the money from selling (ijon) their sugar cane crops, they would have enough for their household consumption and perhaps enough to rent land to cultivate rice.

Table 44. - Buyers and Sellers of Sugar Cane Before the Harvest (Ijon System) by Residence, Sumokembangsri Village, Wet Season 1977/1978 and 1978/1979.

Residence of buyers	Wet Season 1977/1978		Wet Season 1978/1979	
	Number of buyers	Number of sellers	Number of buyers	Number of sellers
1. Village	3	30	4	57
2. City	0	0	3	134
	3	30	7	191

Source: Field survey in 1978.

Besides these above reasons for selling their cane crop in the field, the sale was accomplished at one time because it was organized by the officials who wanted a commission from the purchasers' of the sugar cane. Because of this ijon selling of the cane the farmers' income was channeled from the smallholder cane producers to the buyers (pengijon) and had an influence on income distribution in the village. As is shown in Table 45, the returns per month to the purchaser of the cane crop was 7.4% while by unit of weight the profit was 9.2% per month. If this is compared with the profit from buying paddy (ijon) in the field at Rp4000 per quintal, then the return was 14.3% per month. In comparison, the interest rate from a private money lender in the village was approximately 20% per month. It was not clear why the local village capital market gave a return of 20% per month, yet residents with capital still purchased the cane crop in the field and received only 7.4 to 9.2% return on their capital investment. In this situation the capital market and the land market operated to allocate funds to small farmers who had been forced to plant a relatively long growing period (16 months) crop in their sawah land. This benefited the money lenders or purchasers of the cane crop who received a return of 7.4% to 9.2% per month for a 10 month period which was almost a 100% return. This ijon selling of the crop in the land market perhaps benefited the small landowners who needed funds for households consumption, for hiring laborers to work in their rice fields (labor market), and to rent sawah land for rice cultivation.

Table 45. - Returns, Ijon Purchase Price, and Profits of the Ijon Buyers in the Wet Season 1977/1978 in Sumekembangsri Village.

I t e m	By unit of area (Rp/ha)	By unit of weight (Rp/quintal)	Ijon purchase of rice (paddy) (Rp/quintal)
Number of respondents	30	7	133
Net return (area) or price (weight)	327,831	19,500	6,000
Ijon price	160,000	8,000	4,000
Profit	167,831	11,500	2,000
Number of months before harvest	10	10	3
Percentage return per month	7.4	9.2	14.3

Source: Field survey in 1978.

RURAL LABOR MARKETS IN EAST JAVA

As was mentioned previously, since 1948 the land and labor markets in East Java have been influenced by economic and political pressures which have varied tremendously throughout this period. The labor market in the 1948-1965 period responded to the demands by landless laborers and marginal farmers by absorbing as many workers as possible in the agricultural sector of this market. In the 1968 to 1973 period, many changes occurred in agriculture in East Java. Evolution in the methods of rice production meant that traditional institutions declined and labor use was rationalized. Less labor was used in various operations in rice production per ha per crop. The effect on the labor market was dramatic because there were not sufficient off-farm jobs to absorb those hired laborers whowere denied access to employment in rice cultivation. This situation was even more severe during the 1973-1978 period when large areas of rice were heavily damaged by the brown planthopper infestation. Beginning in the 1978-1981 period the rural labor market appears to have further evolved. The rural, small scale enterprises and service industries appear for perhaps the first time to be a major new factor in the rural labor market in absorbing and perhaps drawing laborers from agricultural cultivation activities. The agricultural labor market has also evolved because of the farmers being able to plant an additional crop during the year. Labor per ha per crop has declined but the additional crop has been able to somewhat offset the decline and therefore the labor market for a 12 month period still is absorbing laborers though the work is spread more evenly throughout the year.

This study will only examine part of this rural labor market in East Java. Information is available from the selected villages only on the agricultural labor market and not on the non-farm labor market which has gained in importance since 1978. Also, this information which

was gathered by intensive interviews covers primarily the 1968 to 1978 period, though some were conducted in 1979. Consequently, the most recent changes in the rural labor market will not be adequately covered in this study.

Another aspect of this study is that the information needed to satisfactorily examine a rural labor market is much too vast and not available. In this research the information on the agricultural labor market will be (1) on labor use per ha per season for various crops, though primarily rice, over a one hundred year period, (2) on labor use per ha per year for specific cropping systems, some information (3) on wages for certain cultivation activities, and (4) on institutions that affect the agricultural labor market. Obviously, this is not sufficient to understand how a labor market functions nor adequate for a description of this market. Although there is not adequate data, another difficulty is that there are very few studies on labor markets that illustrate exactly what types of information are required and how it should be collected. Because of these constraints, this study will primarily examine labor use in rice cultivation as an indicator of what has occurred over time in the agricultural labor markets in the lowland, major rice producing regions in East Java.

Agricultural Involution or Evolution

To initiate this discussion of labor markets, it is useful to recall the study by Clifford Geertz who developed a proposition on how the Javanese labor market functioned in the 19th and early 20th century.

Because of Geertz's style of writing, it is rather difficult to explicitly state his proposition. Perhaps, his main definition is the following:

> Wet-rice cultivation, with it extraordinary ability to maintain levels of marginal labor productivity by always managing to work one more man in without a serious fall in per-capita income, soaked up almost the whole of the additional population that Western intrusion created, at least indirectly. It is this ultimately self-defeating process that I have proposed to call agricultural involution.14/

This definition implies that over a long period of time, rice production could absorb additional labor without a serious reduction in income per person to these laborers. In Geertz's view, the process of involution was most visibly apparent in rice growing with the movement toward double cropping, more careful regulation of irrigation water to the fields, careful weeding around the rice plants, selection of each rice grain to be harvested, and the use of hand-pounding in milling the rice.15/ Related to the land itself he described the growth of intricate sharecropping arrangements as another aspect of involution.16/

A major oversight on the part of Geertz is the fact that he apparently does not include off-farm labor by farmers in his analitical framework. In most of the recent studies on Javanese agricultural it has been definitely shown that the rice farmer secures a significant share of his income from other sources, and if this other income is included, then the average income per man may have increased rather than remained constant or decreased as Geertz speculated. In summarizing his work, van den Muijzenberg found the following:

14/ Clifford Geertz, Agricultural Involution, University of California Press, 1963, pp.80.

15/ Geertz, op.cit. p.101.

16/ Geertz, op.cit. p.100.

> Thus the third level at which we should consider the involution/evolution question requires consideration of all the resources both agricultural, local and non-local, available to the villagers. As long as a significant proportion of their income comes from outside the village these considerations must involve other terms than just the productivity per hectare of sawah. Geertz fails to adopt this approach even when he is dealing only with the sawah as a resource. His conclusions on involution in the Javanese sawah ecosystems are based solely on rice production and he does not include in his calculations even the yields from second crops (polowijo) let alone the land rent from and wages earned at the sugar mills using the sawah land. 17/

Another aspect of the problem when trying to clarify the Geertz proposition is that he never seems to mention that non-family labor in rice production is extremely important. As is shown in various tables in this paper, hired labor makes up between 40% to 90% of the total labor input per ha, even for small rice farms. Yet, Geertz apparently does not recognize this essential aspect of Javanese rice production.

In what may be the only time he specifically mentioned labor per unit of land, he stated that:

> This complex of systematic characteristics-settled stability, "medium" rather than "subtratum" nutrition, technical complexity and significant overhead labor investment - produce in turn what is perhaps the sociologically most critical feature of wet-rice agriculture: its marked tendency (and ability)

17/ Otto D. van den Muijzenberg, "Involution or Evolution in Central Luzon", in Cultural Anthropology in the Netherlands, edited by Peter Kloas and Henri J.M. Claessen, 1975, p.141.

> to respond to a rising population through intensification; that is, through absorbing increased numbers of cultivators on a unit of cultivated land. 18/

Consequently, he seems to be indicating that involution occurs both by intensification per unit of land and by extensification of the irrigation system. Yet, he states that the extensification was over a 1,400 year period.19/ It would seem that this means constructing these systems over hundreds of years and would therefore have very little effect on a farmers labor allocation and the labor market each season. Furthermore, he stated that "But the pattern of ecological pressure here increasingly encouraged the opposite practice: working old plots harder rather than establishing new ones".20/

In her penetrating study of rural Java, Margo Lyon portrayed the problem in the following way:

> But what do these trends -- admittedly involutional in one sense, but nevertheless true social and economic changes -- imply in terms of changes in village stratification? The cash economy and the processess described by Geertz may have allowed the village to absorb more people, but they also changed the relationship between people within the desa (village). It may be that most people had a niche in the system and that a situation of "shared poverty" prevailed, but increased poverty and hardship also accentuated relatively small differences in economic and social rank within the village. The "fine web of work rights and responsibilities" may not be to the point, for, given the rising level of conflict in village society in recent decades and the increase in the relative deprivation, what are minute changes in and of themselves are no longer minute in their larger

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18/ Geertz, op.cit. p.32

19/ Geertz, op.cit. p.36

20/ Geertz, op.cit. p.32

> context. Thus, accompanying the occurrence of involution is a process of social and economic differentiation, promoted by the increased divisions and involving changes in land use, ownership, and control. 21/

It is not the purpose of this study to test the various propositions by Clifford Geertz, though one of the authors of this study has published two papers on this topic.22/

Before examining this proposition on involution in detail, it is interesting to consider what Crawford had to say about labor in rice production in the 1811 to 1816 period:

> The high price of labor and extra ordinary demand for cultivators, is strikingly examplified in the wages paid to shearers, which in every part of Java is no less than one-sixth of the gross produce, a rate continued even in the most populous provincies of the island, where the competition for labour is necessarily small such among these peoples is the influence of the empire of custom. 23/

21/ Margo Lyons, The Basis of Conflict in Rural Java, Berkeley, University of California, Research Monograph No.3, Center for South and Southeast Asia Studies, 1970, p.27.

22/ These are :
William L. Collier, "Agricultural Evolution in Java", in Gary E. Hansen (ed.), Agricultural and Rural Development in Indonesia, Westview Press, 1981, pp.147-177.

William L. Collier, "Declining Labor Absorption (1878 to 1980) in Javanese Rice Production, Occasional Paper No.2, Agro Economic Survey, Bogor, Indonesia, 1979, 120 pp.

23/ As quoted in A.M.P.A. Scheltema, Deelbouw in Nederlandisch Indie, Ph.D. Dissertation, H. Veenman and Zonen publishers, Wageningen, Holland, 1931, p.213.

One wonders what Crawford would say if he knew that almost 170 years later in some areas the farmers still give a one-sixth share to the harvesters. Although, there are much smaller shares given to harvesters, yet the presence of a one-sixth share as in the early 1800's would indicate that at least the harvest cost in some instances has not greatly changed in 170 years which means labor use in the harvest per unit, at least for the one-sixth share, has remained the same. In Wiradi's study of harvesting in 20 villages in Java, he found five that still had harvesting shares of 1/6, 1/5, and 1/4.[24/] Obviously, this is a rather insubstantial evidence but it does indicate that in the period of supposed involution, there remained the same harvest share for those who cut the rice, at least in certain areas. Of course, more people join the harvest at present, and there has been a change from excess demand for harvesters to excess supply of harvesters and in the last two years there may have been a shortage in certain regions, yet the share and therefore the cost of the harvest remained the same. Also, the cost per kg of rice to harvest would also be the same in these areas where it remained at a 1/6 share.

Labor Use per Season in Rice Cultivation from 1875 to 1980.

To examine labor absorption in Javanese rice production and thus examining this labor market as an indicator of rural labor markets in Java, thus labor use must be first by season to determine if labor use per crop per season has increased or declined. The next step is to determine if the number of crops per year has increased and then determine if total labor absorption has increased or not. In this section labor use for each activity in rice cultivation per season will be examined to

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24/ Gunawan Wiradi, "Proses Panen Dan Alat-Alat yang Digunakan: Suatu Catatan", Memorandum No.2 (mimeo), Agro-Economic Survey, May 1974, p.22.

find out what has occurred during the last one hundred years. The information covers four periods:

1875 - 1878
1924 - 1930
1968 - 1969
1977 - 1980

The labor use information for the first period (1875-1878) comes from two Dutch agriculturists who lived in East Java in the 1870 to 1890's. They did not give information on how they collected the data nor the number of respondents. It may be that this is based on a group interview by either the writer or one of his assistants. In the second period (1924-1930) a group of Dutch and Indonesian agricultural economists carried out very detailed studies of rice based cropping systems in primarily East Java, Madura, and South Sulawesi. They had a sample of between 20 and 60 farmers who were practically followed day by day and their labor use recorded by research assistants who were present in the villages at each step in the cultivation of the rice, tobacco, and secondary crops. The information for the third period (1968-1969) is from rice production studies by the Agro Economic Survey. Thirty farmers in each village were interviewed five to seven times between 1969 and 1972. The study was carried out in 37 villages throughout Indonesia, but included in this analysis is only those villages in the lowland areas of Central and East Java. The final period (1977-1980) has information from an M.Sc. thesis and the work of the Agro Economic Survey in East Java. Both were very intensive studies of labor use and had between 25 and 60 respondents in each of the studies and the authors of this paper were involved in one way or another in that research.

The detailed information on the four periods and the sources are in Appendix Table 1. Because some of the studies did not have labor use estimates for one or two operations, the total columns in

this table at the bottom of each period were added together for the total labor use in each period. As an example, the 1889 hours per ha for 1875-1878 is the total of each average for the operations and not the average of the totals in column 8. On purpose the information for each village and operation is presented in the appendix so that one can see the great variation in labor use within each period.

In summary the results of the comparison of labor use in the four periods are presented in Table 46.

Obviously, labor use per ha during the last one hundred years has steadily declined. The greatest decline has been in the field preparation; yet in the selected villages they still use traditional methods and not padi tractors. Harvesting labor increased from 1875-78 to 1924-30, and then declined which seems quite logical. Unfortunately, the averages do not reflect what has occurred in harvbsting labor use between 1968 and 1980. This will be discussed in a later section.

Another important aspect of the labor market changes that are shown by labor absoption in rice cultivation and what has occurred in hired female labor use. Table 47 gives the percentages of family and hired labor use, and female and male labor use for the 1926-31 period, 1968-1969 period, and the 1978-80 period.

The percentage of family and hired labor was about the same in each period, though the 68/69 period the hired labor percentage was more than the other two periods. The reason may be that the sizes of rice farm operation are somewhat larger for this period and is due more to sampling procedures than an increase in size. The major change during this 50 year period in the labor market has been a shift from predominately female labor to male labor in rice production. The major operations in which women are primarily active are transplanting and harvesting. Both transplanting and harvesting have declined in the total work hours between 1924-30 and 1977-80. This decline has been in hired female labor. Although, hand pounding is not included, this has

Table 46. - Labor Use in Rice Cultivation (hours/ha) from 1875-1980.

Period	Seed-bed	Field prepar-ation	Trans-plant-ing	Fertil-izing and spraying	Weeding, Guarding, Water Management	Harvest-ing	Drying and Storing	Total
1875-78	93	573	233	-	466	390	134	1889
1924-30	51	267	386	-	220	531	68	1523
1968-69	66	276	224	41	346	260	59	1273
1977-80	58	184	212	22	334	294	48	1152

Source: Based on the data in Appendix Table 1.

Table 47. - Percentage Labor Use by Family and Hired Labor and by Female and Male Labor from 1926-1980 (%)

	Family	Hired	Female	Male
1926 - 31	40	60	66	34
1968 - 69	23	77	38	62
1978 - 80	45	55	39	61

Source: Based on information in Appendix 2.

almost completely disappeared, while before the early 70's it was a major operation, and many women in the village were able to provide their families with rice since they were paid 10% of what they hand pounded.

The major problem with these tables is that other factors not included in the analysis often affect this labor market that supplies workers for rice production. To try and hold as many of these factors constant, the Gemarang and Sukosari villages which were included in both the 1968/69 studies and the 77/78 studies have labor use estimates that can be compared for these time periods as shown in Table 48.

The labor market in Gemarang is very interesting because it clearly indicates the trends hinted at in Table 46. The labor use has drastically declined and since there have been a number of studies in Gemarang, one can conclude that it is due to institutional change that has drastically reduced labor use in the rice harvest. In the 1969 period any one could join the harvest but in 1978 there were contractor groups of males who harvested with sickles. Weeding has also declined and is partly due to the use of straight row planting and a rotary weeder in the 1977/78 period. Weeding was done by many women, but now they are being replaced by one or two men, pushing the rotary weeder in the rows. Transplanting has also declined and this greatly reduces the number of hired female labor. Gemarang can be considered as representative of lowland villages in major rice producing areas, but Sukosari is located in a hilly area where corn, cassava, and tobacco predominate. In this upland village labor use in rice production was quite low in both periods, though rather surprisingly harvest labor increased. Either Sukosari experienced the labor reducing changes in institutions before 1969, or these more upland villages have different characteristics than the lowland villages.

Table 48. - Average Labor Use (hours/ha) in Rice Cultivation in Gemarang and Sukosari Villages in East Java from 1969 to 1978.

Village and period	Seed-bed	Field prepar-ation	Trans-plant-ing	Fertil-izing and spraying	Weeding, Guarding, Water Management	Har-vest-ing	Drying and storing	Total
Gemarang:								
69 Local	69	393	303	53	518	647	49	2112
69 HYV	40	245	249	29	366	678	33	1640
77/78 HYV	32	197	169	n.a.	333	340	n.a.	1071
78 HYV	37	220	188	n.a.	285	326	n.a.	1056
Sukosari:								
69 Local	111	231	243	0	346	125	16	1072
69 HYV	143	257	202	35	354	83	50	1124
77/78 HYV	58	112	147	n.a.	228	185	n.a.	790
78 HYV	66	152	184	n.a.	337	216	n.a.	995

Source: Village Studies by the Agro Economic Survey which were carried out by the authors of this study.

Comparing the 1924-30 period with the 1977-80 period, Jatisari in Lumajang Kabupaten village which is part of an intensive study in East Java is the same village in both periods.[25/] The labor use for Jatisari is shown in Table 49. Jatisari also indicates that the major changes in labor use during the fifty year period were primarily in transplanting and harvesting which declined drastically and weeding and water management which increased.

Since the major change is in harvesting, in Table 50 there is a comparison of the rice harvests in three Javanese villages at different periods of time which in the earlier period they used the ani-ani hand held rice knife and in the later period used the sickle. Labor use declined substantially in these different periods in all of the three villages. The amount of rice a harvester could cut in an hour was much greater than when they used the ani-ani (Table 48). Besides the labor use, there was a substantial increase in yields in the three villages between the two period of time.

Consequently, based on the above information, one can rather confidently state that the decline in labor use per hectare has been primarily in hired female workers. This is substantiated by recent developments in the shift from female hand pounding of rice to power generated rice hullers which eliminated a substantial portion of female hired labor. The shift from the ani-ani hand held rice knife to the sickle in the harvest has also significantly reduced female labor in the last few years, and men have began to harvest rice. Both of these shift which eliminated female employment are indicators of major changes in the agricultural labor markets during the last 100 years.

25/ William L. Collier, Soentoro, Kliwon Hidayat, and Jajuk Juliati, "Labor Absorption in Javanese Rice Cultivation", Technical Meeting on Labour Absorption in Agriculture, on June 11-13, 1981 in Bogor, Indonesia, sponsored by the Bogor Agricultural University and the Asian Employment Program (ILO), (mimeo), p.21.

Table 49 - Average Labor Use (hours/ha) in Rice Cultivation for Jatisari (Djatisari 1930), Lumajang Kabupaten in 1929/30 and 1980.

Year	Seed-bed	Field prepar-ation	Trans-plant-ing	Fertil-izing and spraying	Weeding, Guarding, Water Management	Har-vest-ing	Drying and storing	Total
1929-30	39	223	258	-	290	501	68	1377
1980	38	172	165	24	425	220	58	1102

Source: The 1929/30 data is from:

J. van der Ploeg and Koesno Adirono, "Landbouwkundige Beschrijving van het Regentschap Loemajang (Oost-Java)", Landbouw, 1935/36, Buitenzorg, Indonesia, p.224 and 225.

The 1980 is from a study by the staff from Brawijaya University as reported in Collier, et.al., footnote # 22 in this study.

Table 50. - Comparison of Harvesting Tools, Yields and Wages in Three Villages in Central and East Java.

	Banyutowo, Central Java		Gemarang, East Java		Sumokembangsri, East Java	
	1969	1973	1969	1979	1972	1977/78
1. Harvesting tool used	ani-ani	sickle	ani-ani	sickle	ani-ani	sickle
2. Rice variety planted	Local, C4, IR5	HYV, C4	Local, HYV	HYV (VUTW)	Local, HYV	HYV
3. Ave. rice yield (ton gabah/ha)	3.22	4.83	3.16	5.78	3.44	5.47
4. Harvesters share (%)	10	8	10	9	20	20
5. Labor use in harvest (hours/ha)	422	321	647	340	670	431
6. Harvest labor productivity (kg/hour)	7.6	15.	4.9	17.	5.1	12.7
7. Harvesters wage (Rp/hour)	.76	1.20	.50	1.51	1.0	2.50

Source: Various studies by the Agro Economic Survey and the Rural Dynamics Study.

As mentioned previously the major proposition in the concept of agricultural involution is that rice production can continuously absorb additional labor without a significant drop in yields per unit of land. Although it is not adequate to conclusively test Geertz's proposition, in Table 46 and in the Appendix the labor use in hours per ha per crop does appear to have declined during the last 100 years. When considering these results, one must remember that these are hours per ha and not the number of people involved in the cultivation of rice. It is possible that more people worked fewer hours per person than in the past. Unfortunately, the data is not adequate to examine this aspect of labor use. These results are also the opposite of what we would have expected if we apply the agricultural involution concept to understand Javanese rice production. Consequently, we believe that Geertz's proposition is not valid for the last 100 years, at least for our rather limited test. Still, this is much more evidence on labor use in rice production than was presented in Geertz's book. At least in this test there has been estimates from the 1878's, 1920's and 1930's and the present period. Because the variation of the estimates in Appendix Table 1 is quite large, the most we can explicitly state for Javanese rice production is that labor use per ha has definitely not increased, probably has remained rather constant, and perhaps has declined during the 100 year period. This is at a time when population pressure in rural Java has drastically increased. Using the Geertz concept in this situation, we would have expected that labor use per ha per crop would have greatly increased. Obviously, it did not and the proposition of increasing labor absorption per ha per crop (season) is not an acceptable explanation of Javanese rice cultivation from the 1880's to the 1980's.

Labor Use for Twelve Month Cropping Systems

Although previously labor use per ha per crop was clearly proven to have declined still with the farmers being able to add an additional crop in their cropping systems for a 12 month period, the labor absorption may have increased per year. As indicated previously, the authors feel that especially in East Java there has been a major change in the number of crops the farmers can plant in a year's period or cycle since approximately 1978. It appears that these farmers in areas with reasonable water control have been able to add an additional crop to their yearly cropping cycle. In some cases it has been a shift from two crops of rice to three crops of rice in a 12 or 13 month period. In other villages they have been able to plant two crops of rice and after the mid-70's add a secondary crop. A few villages with poorer water control have gone from one rice and one secondary crop (palawija), to two rice crops, or to one rice crop and two secondary crops. With a major change in cropping patterns and labor use, one can expect that the rural labor market will have to make adjustments in order to respond to this new situation. Obviously, the first response should be reflected in the wage rates.

Confirming these observations on changing cropping patterns, Suparmoko in his research in the Pekalen Sampean irrigation project in East Java found that after rehabilitation the farmers were able to produce an additional crop in a twelve month period.[26/] He clearly demonstrated that almost all of the farmers in the selected tertiary Block representing high water flow discharge in both seasons had

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26/ Suparmoko, "The Impact of Irrigation Rehabilitation on Cropping Patterns, Labor Use, and Income Distribution in the Pekalen Sampean System of East Java", unpublished Ph.D. dissertation, Department of Agricultural Economics, University of Hawaii, 1980, p.134, 136, and 138.

rice-rice-rice cropping patterns in 1977 and 1978, but only a rice-palawija-palawija cropping pattern in 1972 and 1973 before the system was rehabilitated. In his selected Block of high water discharge only in the wet season and low in the dry season the cropping patterns changed from rice-palawija-palawija in 1972 and 1973 to rice-rice-palawija in 1977 and 1978. Rather amazingly, his selected village that represented an area (not in the system) that had a low water flow discharge in both wet and dry seasons, also experienced a major change in cropping patterns without any rehabilitation. In 1972 and 1973 they had a rice-palawija-palawija pattern and in 1977 and 1978 it had changed to a rice-rice-palawija pattern. Partially explaining this, as mentioned previously, the farmers in East Java felt that there has been more rainfall in the last couple of years beginning in 1978 or 1979.

To study the impact of these changing cropping patterns the Rural Dynamics Study and Brawijaya University in cooperation with the Agricultural Development Council, examined the labor use for cropping systems by estimating labor use in each of the three planting seasons in the 12 month period. Table 51 presents the estimates of labor use for each crop or commodity (tea, tobacco, fish in brackishwater ponds) by season in four of the selected villages and an additional three villages (Jatisari, Tempeh Tengah, and Madurejo which were in Lumajang Kabupaten in East Java). Petung and Sukosari are in hilly regions which can not be considered representative of lowland, well irrigated, major rice producing areas. Madurejo has a water problem and is unable to grow rice in the dry season but it is interesting because of the combinations of rice and secondary crops (Table 51). Sungunlegowo lies in a coastal area and has a major brackishwater pond area. Some of the farmers in this village have both rice and

fish but not competing for the same land. Never would rice be grown in a brackishwater pond, though they might use the pond to produce salt in the dry season. In the table the percentage of hired labor is also shown to give an indication of the absorption of hired labor which is clearly much greater than family labor for these Javanese rice farmers. Only in Petung is there a very low percentage of hired labor which is due to a traditional institution of exchange labor among the farmers that is still strong, partly because this village is rather isolated, in a limestone area, and on the Southern coast of East Java.

As is shown in Table 51, there are various cropping patterns by the farmers in these villages. Depending on the farmers location, water control, and credit, they choose various crop combinations in the three seasons. Table 52 presents the combinations and the estimated total labor used in hours per ha per year in these selected villages in East Java. The cropping pattern of rice-rice-rice in the villages of Gemarang, Sukosari, Jatisari, and Tempeh Tengah used the most labor per year (Table 52). In Gemarang the three rice crops used 13% more labor than the next highest pattern of rice-rice-soybeans in 1979. In Sukosari the rice-rice-rice pattern used 9% more labor per year than the next highest pattern of rice-rice-tobacco in 1979. The same held for the other villages with these cropping patterns.

To compare labor use per ha per year in the 1969 period and in the 1978 and 1979 periods (12 months) and the changing cropping patterns' effect on labor absorption, the two villages of Gemarang and Sukosari provide interesting and representative examples of a lowland rice village and a hilly area multicropping village. In 1969 the farmers could only grow two rice crops per year, yet in 1978 and 1979 period most of the farmers could cultivate rice three times per year (Tables 48 , 51 and 52).

Table 51. - Labor Use (Hours/Ha) by Commodity in Selected Villages in East Java for Three Planting Seasons in 1979 and in 1980.

Type of commodity	Total labor hours used per ha	Percentage of hired labor
Gemarang (n=90)		
1. Rice, WS 77-78 (first season)	1071	76
2. Rice, DS 78 (second season)	1056	74
3. Rice, DS 78 (third season)	894	84
4. Soybeans (third season)	500	72
Sukosari (n=90)		
1. Rice, WS 77-78 (first season)	790[a/]	91
2. Rice, DS 78 (second season)	955	93
3. Rice, DS 78 (third season)	1026	94
4. Corn (third season)	462	74
5. Tobacco (second season	783	87
Sungunlegowo (n=90)		
1. Rice, WS 77-78 (first season)	1154	67
2. Rice, DS 78 (second season)	1280	72
3. Tambak fish, WS 77-78 (first season)	693	13
4. Tambak fish, DS 78 (second season)	655	7
Petung (n=75)		
1. Rice, WS 77-78 (first season)	1197	16
2. Rice, DS 78 (second season)	1209	12
3. Cassava (1 year)	1089	14

Table 51 (cont.)

Type of commodity	Total labor hours used per ha	Percenatage of hired labor
Jatisari (n=24) 1980		
1. Rice (first season	1102	58
2. Rice (second season)	1131	63
3. Rice (third season)	1080	66
4. Corn (second season)	776	18
5. Corn (third season)	807	65
6. Soybeans (second season)	389	82
7. Soybeans (third season)	516	91
Tempeh Tengah (n=10) 1980		
1. Rice (first season)	1153	91
2. Rice (second season)	1106	91
3. Rice (third season)	1254	89
4. Corn (second season)	410	80
5. Corn (third season)	639	79
6. Soybeans (second season)	439	95
7. Soybeans (third season)	301	97
8. Peanuts (third season)	238	100
Madurejo (n=20) 1980		
1. Rice (first season)	1156	89
2. Corn (first season)	504	84
3. Tobacco (first season)	1638	35
4. Corn (second season)	561	79

Table 51 (cont.)

Type of commodity	Total labor hours used per ha	Percentage of hired labor
5. Soybeans (second season)	600	98
6. Peanuts (second season)	325	21
7. Corn (third season)	589	79
8. Peanuts (third season)	148	50

Source: Field studies carried out by the Agro Economic Survey and Brawijaya University in 1979 and 1980. The authors participated in these studies.

a/ The crop was destroyed by rats is the reason the labor use is low.

n = is the number of respondents interviewed in the study

WS = Wet Season DS = Dry Season.

Table 52. - Labor Utilization by Type of Land and Cropping Sequence (one year production cycle) in the Selected Villages in East Java, 1979 and 1980.

Type of land and cropping sequence	Total labor hours per ha per year						
	Gemarang	Sukosari	Petung	Sungun-legowo	Jatisari	Tempeh Tengah	Madurejo
A. Sawah							
1. Rice-rice	2132	1745	2406	2434	2233	2259	-
2. Rice-rice-soybeans	2632	-	-	-	2749	2560	-
3. Rice-rice-corn	-	2207	-	-	3040	2898	-
4. Rice-tobacco-corn	-	2035	-	-	-	-	-
5. Rice-rice-tobacco	-	2528	-	-	-	-	-
6. Rice-rice-rice	3021	2771	-	-	3313	3513	-
7. Rice-corn-corn	-	-	-	-	2685	2202	2306
8. Rice-soybeans-soybeans	-	-	-	-	-	1893	-
9. Tobacco-corn-corn	-	-	-	-	-	-	2788
10. Rice-corn-peanuts	-	-	-	-	-	-	1865
B. Upland							
1. Cassava (one year)	-	-	1089	-	-	-	-
C. Brackish Water Ponds (Tambak)							
1. Wet and Dry Seasons	-	-	-	1348	-	-	-

Therefore, labor absorption for a 12 month period in these two villages was the following:

	Wet Season[27]	Dry Season	Total Hours/Ha
Gemarang: 1958 and 1969	Rice (Local) 1681	Rice (Local) 2112	3793
1968 and 1969	Rice (HYV) 1744	Rice (Local) 1640	3384
Gemarang: 1978 and 1979	Rice (HYV) - 1071	Rice (HYV) - Rice (HYV) 1056 894	3021
Sukosari: 1968 and 1969	Rice (Local) 1072	Rice (Local 1072	2144
	Rice(HYV)[28] 1124	Rice (HYV) 1124	2248
Sukosari: 1978 and 1979	Rice (HYV) - 790	Rice (HYV) - Rice (HYV) 955 1026	2771

In Gemarang which was selected as representative of lowland, rice producing, Javanese villages, the labor absorption in rice cultivation declined even though the farmers added a third rice crop in the 12 month period in 1978 and 1979. The decline was 20% if comparing the cropping pattern of rice (local variety) - rice (local variety) in 1968 and 1969. If high yielding rice varieties in 1968 and 1969 are compared with the 1978 and 1979, then the labor use in rice cultivation for a 12 month period declined by 12%. Although the total labor use in this labor market declined, it was only by a relatively small amount since there was an additional crop in 1978/79.

27/ Appendix Table 1 has estimates for the Wet Season but without harvest labor. This estimate plus the harvest labor from the Dry Season is assumed to be the estimated labor use in the 1968/69 Wet Season.

28/ Since there was not an estimate for the first season, the one estimate was used for both seasons.

In Sukosari which is in a hilly region, the labor use for the 12 months increased during the 10 year period by 23% if comparing local varieties and high yielding varieties (HYV's), and by 19% if comparing HYV's in both periods. Since this village is not located in the major rice producing, lowland plain in East Java, the labor market does not behave as does the market in the densely populated irrigated, rice producing areas in the river valleys and lowland plains in East Java.

Obviously, this information is not complete enough to make generalizations about Javanese rice production during the last 10 years. However, it does provide an indication that labor use per ha per crop has declined in lowland villages though in areas where they can now produce three crops, this decline has been offset by the change in cropping patterns.

Real Wages from 1968 to 1980.

The best single indicator of what is occurring in the agricultural labor market is the wage level paid to the hired laborers, especially in rice cultivation. Using information from the various studies in which the authors have participated, the real wage over a 12 year period for spading (memacul) labor was estimated (Table 52). The spading wage was considered the most representative labor activity in rice cultivation for this analysis. To overcome the problem of inflation and a monetary devaluation, the wage rate for spading has been converted into the amount of rice (beras) the wage could purchase at those specific times. This conversion then provides us with a real wage which can be compared for various time periods. However, the changes in the price of rice (beras) at the village level have been

more rapid than the wage level. Increased price of rice was not immediately followed by an increased wage in the labor market, but requires several months before the influences of the price of rice affects the wage level. Also, decreases in the price of rice at the village level are not followed by a decline in the wage because these declines in the wage only occur for a brief period.

The real wage data presented in Table 53 indicates that the wage rate for spading (memacul) per day (7 hours) is the equivalent of 2 kg or rice (beras), and this has remained relatively stable during the last 12 years. If it is true that the number of laborers has increased in the rural areas during the last 12 years, and if job opportunities have not greatly expanded then this relatively stable wage rate indicates that there are other forces besides strictly supply and demand that are regulating the wages in this labor market. A different explanation would be that demand and supply have remained in equilibrium during this period, and the wage for spading in real terms remained constant.

Actually, it is very difficult to use the daily wage rates in the villages to examine the functioning of the labor market and relative wage levels in rural areas. The reason is that there are emerging many new labor institutions that greatly affect this labor market. An example was the emergence of gepyokan in Gemarang village after the share of the harvest declined from 10% to 7%. In Sumokembangsri there emerged the kedokan institution which made it possible for the laborers to gain a larger share or wage. This kedokan institution in Sumokembangsri's function was primarily to protect the laborers and their families.

This is rather constant real wage does not support the proposition that labor in the agricultural sector is being pulled into the service and small scale industries surrounding the towns and cities in East Java. However, in the past many researchers, including the authors of this study, believed and proved through their research

Table 53. - Real Wages in the Wet Season for Spading (Memacul) in Kg of Rice (Beras) per Day (7 Hours) from 1968 to 1980 in Seven Villages in East Java. a/

Wet Season and year	Ngawi Kabupaten		Sidoarjo Kabupaten			Jember Kabupaten	
	Gemarang Kg rice/ day	Geneng Kg rice/ day	Simomulyo Kg rice/ day	Janti Kg rice/ day	Sumokembangsri Kg/rice day	Sukosari Kg rice/ day	Tanggulwetan Kg rice/ day
WS 68/69 b/	2.00	1.56	2.00	2.00	-	1.80	2.14
WS 69/79 b/	2.06	1.76	1.76	1.94	-	1.66	1.66
WS 70/71 b/	2.26	1.70	2.00	2.10	-	1.58	2.10
WS 71/72 b/	1.86	1.63	2.04	2.04	2.04	2.28	1.82
WS 77/78 c/	1.85	-	-	1	2.13	1.85	-
WS 78/79 d/	2.02	-	-	-	2.11	1.92	-
WS 79/80 a/	1.96	-	-	-	-	1.95	-

Source of data: a/ This wage does not include a meal in several of the villages. The actual wage was converted to a real wage by equating it with the amount of rice (beras) that could be purchased. One day of spading is seven hours.

b/ From report by Makali, Memorandum Survey, Agro Economic Survey, 1974.

c/ Information from Rural Dynamics Study's field research in the selected villages.

d/ Information from wage monitoring by the Rural Dynamics Study in East Java.

WS = Wet Season.

in the past that the real wage in agricultural was declining. This present study may be the first indication that rural real wages in these labor markets are no longer declining and may be ready to increase in the future.

Yields per Ha and Returns per Person Increasing Over Time

Built into the involution concept is the proposition that the yields per ha would increase over time due to increasing use of labor. In Table 54 are the estimated rice yields in rough rice (gabah) per ha in the three time periods based on the case studies.[29/] The averages were 2.39 ton/ha in 1925 to 1930, 3.02 ton/ha in the Dry Season 1969, 4.35 ton/ha in the Wet Season 1969/70 period, and 2.83 ton/ha in the 1975 to 1979 period which is partly due to the brown plant hopper infestation during this period. Obviously, these do not represent Java, only the villages that were studied. However, based on this information which greatly varies it appears that for these villages during the 50 year period, the yields per ha have increased. Besides this the average yield of three Javanese farmers in 1886/87 was 1.7 ton/ha which gives a slight indication from the 1880's that yields have also increased during the last 100 years.[30/] This does agree with the Geertz's proposition on rice yields per unit. Since this increase is accompanied by declining labor use per ha per crop it does not agree with the concept of agricultural involution.

29/ During the 1800's and 1900's under the Dutch Administration there are good statistics on rice yields. However, we feel that it is important to use village case studies of both yields and labor use.

30/ William L. Collier, "Declining Labor Absorption (1878-1980) in Javanese Rice Production", Kajian Ekonomi Malaysia, Journal of the Malaysian Economic Association, Vol.XVI, nos.1 and 2, June/December 1979, pp.102-137.

As we have suggested part of the involution concept is the proposition that returns per person will decline as labor is absorbed in rice cultivation. Although Geertz did not clearly define returns, we will assume that the returns are only the gross yield in rough rice divided by the total labor hours per ha. As indicated in footnote e and f in Table 54, we have made several rather rough assumptions for the estimates that did not include harvest labor and those in workdays per ha. Based on these estimates in Table 54, the average gross returns per labor hour to the farm operators in the case studies were 1.1 kg/hour for farmers in 1887, 1.7 kg/hour in the 1925/30, 2.6 kg/hour in the 1969/1970 period, and 2.2 kg/hour in the 1975 to 1979 period. As mentioned previously this final period is the one when harvesters were affected by the brown plant hopper. Unfortunately, the final period 1978-81 was not included in this analysis because of insufficient information. Yet, in several surveys the farmers were reporting yields of 4 to 6 tons/ha (gabah) which would be a substantial increase. Once again this is only a few village studies, yet it does, in this instance, disprove Geertz's proposition that returns per unit per crop would decline over time as labor was absorbed due to agricultural involution. Once again it should be explained that this is per hour but assuming this to be returns to the family while ignoring the hired labor which was not in the involution proposition.

The Influence of Agricultural Institutions on Rural Labor Markets

Population pressure, economics, and power groups have been shown to have an effect on the functioning of the rural labor markets in East Java. Yet, agricultural institutions play the strongest role in influencing this labor market. Published studies by the authors report research on these institutions over the last 15 years (1968-1982) illustrate the role of institutions in agricultural and labor

Table 54. - Average Rice Yields (Rough Rice)[a/] in Tons per Hectare and Kg per Labor Hour for Java in the 1925-1930 Period and 1970-1980 Period.

Location	Date	Yields of rough rice (ton/ha)	Rough rice in Kg per labor hour
1925-1930			
Sawo village, Ngawi, East Java	Wet Season 1928/29	1.31	1.9
Pasarejo village, Ngawi, East Java	Wet Season 1927/28[b/]	2.14	1.0
	Wet Season 1927/28 [c/]	2.35	1.1
	Dry Season 1928	1.58	.7
Karangmalang village, Ngawi, East Java	Wet Season	1.53	1.3
Jaan village, Ngawi, East Java	Wet Season 1926/27	2.50	2.1
Kenep village, Sidoarjo, East Java	Wet Season 1925/26[b/]	3.80	1.8
	Wet Season 1925/26[c/]	3.01	1.6
Jetis village, Mojokerto, East Java	Wet Season 1926/27	3.05	2.0
	Wet Season 1927/28	1.84	1.2
Kertarejo village, East Java	Wet Season 1925/26	2.75	2.2
	Wet Season 1926/27	2.32	1.7
	Wet Season 1927/28	2.04	1.8
Kuncung village, East Java	Wet Season 1926/27	3.19	2.7
	Wet Season 1926/27[c/]	3.43	2.4
	Wet Season 1926/27	3.08	2.4
Kuningan village, Cirebon, West Java	Wet Season 1926/27	1.33	.8
Maja, Cirebon, West Java	Wet Season 1926/27	1.60	1.1
Kuncung village, East Java	Dry Season 1927	2.62	2.2
	Average	2.39	1.7

Table 54 (cont.)

Location	Date	Yields of rough rice (ton/ha)	Rough rice in Kg per labor hour
1969			
Gemarang, Ngawi, East Java:			
Local/Nat. Imp. varieties	Dry Season 1969	1.39	0.7
HYV	Dry Season 1969	2.33	1.4
Sidomulyo, Sidoarjo, East Java:			
Local/Nat. Imp. varieties	Dry Season 1969	5.00	3.7
HYV	Dry Season 1969	5.27	5.4
Geneng, Ngawi, East Java:			
Local/Nat.Imp. varieties	Dry Season 1969	1.16	.9
HYV	Dry Season 1969	32.0	1.8
Janti, Sidoarjo, East Java:	Wet Season 1969/70	2.76	2.3
	Average	3.02	2.3
1969-1970[d/]			
Pemalang, Central Java:			
Local varieties	Wet Season 1969/70	2.31	1.6
Banyutowo, Ventral Java:			
Local varieties	Wet Season 1969/70	5.31	3.2
Kebumen, Central Java:			
Local varieties	Wet Season 1969/70	4.31	2.2
Banyumas, Central Java:			
Local varieties	Wet Season 1969/70	3.73	2.4
Gemarang, East Java:			
HYV	Wet Season 1969/70	5.57	2.8
Gemarang, East Java:			
Local varieties	Wet Season 1969/70	3.59	2.8

Table 54 (cont.)

Location	Date	Yields of rough rice (ton/ha)	Rough rice in kg per labor hour
Sumokembangsri, East Java:			
HYV	Wet Season 1969/ 1970	5.52	3.7
Local varieties	Wet Season 1969/ 1970	4.54	2.5
	Average	4.35	3.6
1975 to 1979[a/]			
Banyutowo village, Kendal, Central Java. f/	Wet Season 1975 1976	1.75	1.1
Gemarang village, Ngawi, East Java.	Wet Season 1978/ 1979	4.50	3.9
Kraton village, Lumajang, East Java	Wet Season 1978/ 1979	2.24	1.6
	Average	2.83	2.2

Source: The information in this table comes from the same sources as shown in Appendix Table 1.

a/ This in Indonesian is gabah. The wet stalk paddy yields have been converted to gabah (rough rice which has not yet had the hull removed) using a conversion of 70%.

b/ Rice field before rented to sugar cane factory.

c/ Rice field after returned from sugar cane factory.

d/ This information is from William L. Collier and Achmad T. Birowo, "Comparison of Input Use and Yields of Various Rice Varieties by Large Farmers and Representative Farmers", 1973. The labour hours do not include harvest labor and are in days per ha. To make this somewhat comparable we have assumed a 5 hour labor day and added 400 hours/ha to harvest. These are the estimates for the Representative Farmers.

Table 54 (cont.)

e/ This period is essentially before the brown plant hopper resistant varieties were widely distributed. Consequently, this does not represent the last period of 1978-81 that was suggested in the first part of this paper.

f/ The labor estimate did not include harvest labor. To make the estimates comparable, we have added an assumed 400 hours/ha for harvesting.

markets in East Java.[31/] Because of the large amount of information already available on these institutions, in this section only a summary of a few of these institutions in the selected villages in East Java will be discussed.

Gepyokan

Previously, labor use in the rice harvest in Gemarang village was shown to have declined by more than 50% between 1969 and 1978. What would cause a major shift of this magnitude in a densely populated village and thus cause a major decline in the demand for non-family agricultural labor? The explanation in Gemarang is the emergence of a new institution and a change in tools to harvest rice. In this village there was a change in rice harvesting tools from the ani-ani hand held rice knife to the sickle together with the emergence of harvest laborer groups which are called gepyokan which is a new institution in this village. This term in Javanese means to thresh a bundle of stalk paddy (seikat padi) and in this instance means a group of harvest laborers who use a sickle and thresh the paddy in the field. A significant change is that the groups contract with the farmers to harvest which means the harvest has been closed to others. In the past anyone could join the harvest but with this institution the leader of the Gepyokan group contacts the farmer, bargains about the price, and competes with others for the job contract.

The number of members in a gepyokan group varies between 8 and 15 males which is also a major change from women doing the rice

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31/ a). Soentoro, William L. Collier, and Kliwon Hidayat, Land Markets in Rural Java, Occassional Paper, Agro Economic Survey, Bogor, Indonesia, 1980. 115 pp.

Footnote # 31 (cont.)

b). Collier, William L., Harjadi Hadikoesworo, and Suwardi Saropie, Income, Employment, and Food Systems in Javanese Coastal Villages, Ohio University Center for International Studies, papers in International Studies, Athens, Ohio, 1977, 152 pp.

c). Collier, William L., "Agricultural Evolution in Java: Decline in Shared Poverty and Involution", in Agricultural Development in Indonesia (ed.) Gary E. Hansen, Westview Press .

d). Sajogyo and William L. Collier, "Adoption of High Yielding Rice Varieties by Java's Farmers", in Technical Change in Asian Agriculture, (ed.) R.T. Shand, Australian National University Press, Canberra, 1973.

e). Collier, William L., "Declining Labor Absorption (1878-1980) in Javanese Rice Production", Kajian Ekonomi Malaysia (Malaysian Economic Studies), Vol. XVI, nos. 1 & 2, June/December 1980, Journal of the Malaysian Economic Association.

f). Collier, William L., Soentoro, and Irna Sutomo Basuki, "Observations on Land Reform in Java (in Indonesian)", Prisma, Indonesian Journal of Social and Economic Affairs, No.9, September, 1979, Jakarta, pp.17-32.

g). Collier, William L., "Technology and Peasant Production: A Comment", Culture and Change: Journal of the Institute of Social Studies, The Hague, Netherlands, July 1977.

h). Collier, William L., Soentoro, Gunawan Wiradi, and Makali, "Agricultural Technology and Institutional Change", Food Research Institute Studies, Stanford University, Vol. XIII, No.2, November 1974, pp.169-194.

i). Collier, William L., Jusuf M. Colter, Sinarhadi, and Robert d'A Shaw, "Choice of Technique in Rice Milling: A Comment", Bulletin of Indonesian Economic Studies, Australian National University, Canberra, March 1974, pp. 106-121.

j). Collier, William L., Gunawan Wiradi, and Soentoro, "Recent Changes in Rice Harvesting Methods: Some Serious Social Implications", Bulletin of Indonesian Economic Studies, Canberra, Vol. IX, No.2, July 1973, pp.36-45.

k). Collier, William L., Soentoro, Guwnawan Wiradi, and Makali, "Tebasan System, High Yielding Varieties, and Rural Change", Prisma: Indonesian Journal of Social and Economic Affairs, No.6, December 1974, pp.13-31.

l). Sri Hartoyo and Soentoro, "Penggunaan Sumber Daya, Lembaga Pelayanan dan Potensi Pembangunan Di Daerah Persawahan Pegunungan Dan Daerah Pantai", Studi Dinamika Pedesaan Jawa Timur, SDP Jatim Series No.5, March 1980

m). Sri Hartoyo and Suradi, "Gepyokan: Suatu Bentuk Kerjasama Buruh Tani Di Pedesaan", SDP Jatim Research No.1, Studi Dinamika Pedesaan Jawa Timur, Malang, December 1979.

harvesting to men doing it. Of the 31 sample respondents who joined these gepyokan groups 77% stated that their membership was fixed and permanent, and that 40% had a specific leader. Any member of a gepyokan group must pay a fee of Rp500 to Rp1500 per person. This money is used to purchase plastic sacks and other items for threshing the paddy. The main requirements for membership in a gepyokan group are that the members must be male and have a strong physique, their age should be from 18 to 45, though most are between 25 and 34 years of age, and have a similar social status.

This gepyokan system emerged in Gemarang village in 1974, six years after the introduction of the new rice varieties. The first gepyokan group appeared after a rice harvesting demonstration for using the sickles to cut the stalks and then threshing in the field in the village's trial plots (demplot) set up by the extension service. Then, the use of this gepyokan system steadily increased and in the planting season of 1978/79, apparently 88% of the sample farmers in the study were using the gepyokan groups to harvest their rice. Of the 43 respondents who used this system, 67% gave as the reason for using this institution that it was easier and faster, 28% because the rice has short stalks and shatters easily, 14% because it reduced the cost, and the rest gave other reasons. These reasons of the farmers indicate that the main motive was economic and was to reduce the cost of production which means to reduce the number of laborers in the harvest. Thus, these farmers in employing gepyokan groups are thinking in a rational economic way. Yet, from the view of the harvesters, this gepyokan system discriminates against women and those males who are older than 45 years in this rural labor market.

Of the 52 respondent families in the study by the Agro Economic Survey whose main income is from farm labor, sixty percent have a family member in a gepyokan group, only 15% were laborers in a harvest using the ani-ani tool, and 25% did not join a harvest.

The laborer households who were not able to participate in a gepyokan group were headed by divorced or widowed women and families who did not have any young, male members. Thus, due to the spread of this institution, approximately 40% of the laborer households were prevented from joining the rice harvests in Gemarang. These laborers however find work in the sugar cane fields, plant secondary crops, and are involved in non-agricultural work.

The introduction of this new system of rice harvesting in Gemarang has also caused a decline in the harvesting wage. In 1973 all of the farmers gave a 10% share to the rice harvesters and in 1978 this share was varying between 7 to 10%.[32] Those farmers who gave a share (bawon) of 10% were only 28% of the respondents, while the others gave smaller shares.[33] Besides this reduction in the harvest cost, the use of the sickles means that in the next planting season the farmers do not need to pay laborers to cut the stalks that would have been left if they had used the ani-ani in the harvest.

Perhaps this decline in the harvest share (bawon) causes competition between the laborers and the gepyokan groups. Especially since the share of 10% gives a higher wage per hour than the spading (memacul)wage. Consequently, the harvest laborers still want to participated in the rice harvest even though the normal share (bawon) has declined to 7%. The wage per hour in 1978 for these hired farm laborers was:

1. Spading	Rp.38.
2. Gepyokan labor	Rp.58.
3. Harvest with ani-ani	Rp.24

32/ Gunawan Wiradi, "Proses Panen dan Alat-Alat yang Digunakan: Suatu Catatan", Memorandum No.2, Agro Economic Survey, May 1974, p.22.

33/ Sri Hartoyo and Suradi, "Gepyokan: Suatu Bentuk Kerjasama Buruh Tani Di Pedesaan (Kasus di Desa Gemarang, Jawa Timur), Research Note No.1, Rural Dynamics Study East Java, Agro Economic Survey, 1979, p.18.

Consequently, the introduction of this new institution into the rural labor market in Gemarang has caused the following:

1. The switch from using the ani-ani hand held rice knife to the sickle in the rice harvest and the associated emergence of the gepyokan groups prevents women and older men from joining the rice harvest. These two institutions clearly influence the labor market in Gemarang and are an example of the rapid change occurring in institutions in the labor market throughout East Java.

2. The decline in the laborers harvesting wage (share) which was caused by the introduction of the sickle in the gepyokan groups has been accepted by the harvesters because the income per hour was still higher than the normal wage levels per hour in the village.

3. The change from using the ani-ani to the sickle in rice harvesting spread throughout the village of Gemarang because it was a rational decision from an economic perspective. The farmers' benefited because their costs were lower, the harvest laborers accepted it because the harvest wage was still higher than the wage for other types of work, and the laborers who were displaced (women, and old man) were unable to object because they have very little influence in the village.

Ijon Kerja Institution.

Another institution that affects the rural labor market is ijon kerja though the term ijon in the past refered to the purchase of a crop before it was harvested (futures market), this relatively

new institution refers instead to sale of a man's labor in the future. Sellers in this system are in a very weak bargaining position with respect to the buyers and are forced to sell whatever they can in order to survive. Therefore, this labor market institution of ijon kerja is an institution where laborers are paid in advance and perhaps several months later actually perform the work. Their salaries are much lower than the actual wages they could get at the time they begin to work. Many farmers who were interviewed about this institution prefered to remain silent when asked questions about the topic because of immoral connotations of the term ijon. For this reason, the research conducted by the Agro Economic Survey beginning in 1973 focussed on this phenomenon in only one village, Sumokembangsri. Although it is probable that the system is used elsewhere, it is very difficult to determine how widespread is this institution.

Information on the existence of ijon kerja was derived during qualitative interviews conducted in Sumokembangsri in 1973. No information could be obtained through the formal questionnaires of the then available partial census. However, questions were added to the 1978 partial census questions which indicated that 39 households (8%) within the sample were engaged in ijon kerja. It is believed, however, that in actuality, ijon kerja transactions are more prevalent that what was shown by the interview results.

Three kinds of ijon kerja can be found in Sumokembangsri village: (1) daily ijon labor, (2) job contract ijon, and (3) the blek-blekan system. Daily ijon labor is based upon a fixed daily wage. For example, the daily wage for hoeing during the 1977-78 wet season was Rp200. Job contract ijon is associated with an existing contractual arrangement, e.g., a contract to prepare land. The contract rate at the time of the interviews was Rp5000 per 0.35 hectare. Wages in the blek-blekan system ("blek" means a tin container with a volume

of approximately 20 liters) are tied to amounts harvested. For instance, a person may receive Rp.500 for each blek of gabah (about 12.5 kilograms) harvested. The number of households engaged in ijon transactions in Gemarang is shown in Table 55.

Daily labor ijon are usually performed by men; in only one case was a woman involved in ijon kerja. This phenomenon may be caused by the demand for female labor being relatively less and the pressure on women to perform work and obtain immediate payment being relatively high. The blek-blekan system utilizes both male and female labor, but this is probably explainable as a phenomenon of social convention.

The wages received for daily ijon labor ranged from Rp150 to Rp300 for a 7-hour work day, with the average being Rp180. The rate under the blek-blekan system ranged from Rp400 to Rp500 per blek. Daily job ijon wages are usually received five months before work commences, while for blek-blekan, it is about three months. By comparing these rates with current wage levels, we can make a rough estimate of the rate of interest implied in these transactions, i.e. the profitability to the buyers which is presented in Table 56.

It is surprising to note that the estimated rate of interest is low, amounting to only 5% per month. Although the definition of "low" is relative, it should be observed that short-term credit in rural areas can involve an interest rate as high as 43% per month.

The findings suggest that there might be some rational motivation on the part of the ijon buyers (employers) to participate in these forms of transactions. One immediate explanation is the assurance of being able to obtain labor when it is necessary to prepare the land for cultivation. Timeliness is becoming the key to success when the technological level is high, such as in the case of rice cultivation supported by the BIMAS (credit) program. Another explanation could be that the competition for labor with the sugar can plantation

Table 55. - Number of Households Engaged in the Ijon System of Labor in Sumokembangsri.

Type of ijon transaction	No. of households engaged (N = 30)	Percentage of total uncommitted households
A. Daily ijon labor	23	59
B. [illegible] contract ijon	3	8
C. Blek-blekan ijon	15	38

Source: Interview survey in 1973 by Mr. Soentoro.

Table 56. - Wage Level of Ijon Labor at the Time of Transaction and the Estimated Rate of Interest Charges for the Service. a/

Specification	Daily labor wage	Blek-blekan system
a. Payment received (Rp/day)	200	500
b. Time lag between payment and working period (month)	5	3
c. Real wage level at time of work (Rp/day)	250	750
d. Estimated rate of interest (% per month)	5	17

Source: Field studies in Sumokembangsri village in 1973, 1978, and 1979.

a/ Observed rate of interest in a cooperative was 5% per month; interest rates of short-term credit could be as high as 43% per month.

is high enough in this area to require a kind of labor recruitment policy. This rationale seems to be confirmed by the low frequency of sharecropping in this area, indicating that owners have probably been assured of an adequate labor force to carry out cultivation and harvesting.

The blek-blekan systems seems to occur only sporadically and probably is of little importance in the village economy. The buyers are usually farm owners who reserve an area for their ijon laborers. At harvest time, the laborers are allowed to work in the unreserved areas before harvesting the reserved fields. The harvest share in the village is 4:1, or 20% of the total produce going to the laborers. Thus, even though the estimated rate of interest is high (17% per month), the arrangement itself may be quite beneficial to the ijon workers. In general, the blek-blekan system provides a very financially lucrative opportunity for village laborers.

Consequently, the ijon kerja institution provides landless laborers with a method to obtain funds at a time when employment is not available. As was shown, the interest rate was very low for this type of transaction. This institution is another example of how complicated are the rural labor markets in the villages studied by the authors in East Java.

Contract Land Preparation

Also, in an effort to reduce the cost of rice production in Gemarang village a few farmers have just begun to use padi tractors with the expressed purpose of lowering the cost of land cultivation. As another example in both Sumokembangsri and Gemarang villages, there has emerged the institution of contract (borongan) spading in land cultivation. These contract groups which spade the field have been created by the farmers so that they pay a smaller total amount and the work is better because the contract is faster. The laborers who are

in the contract labor groups are able to get more work, though fewer participate in this operation which reduces the amount of hired labor in soil preparation. The competition between the contract groups forces the laborers to work harder so that they will be employed again by the farmer. Since these contract groups have fewer members than if the farmers used daily laborers for spading then the members of the contract team are able to get a higher wage.

Institutions are clearly one of the reasons that explain the decline in labor use per ha per season in rural Java. These institutions have been involved in the decline in harvesting labor and soil preparation labor. However, this is only part of the story since changes in tools has caused a reduction in weeding labor and hulling labor.

The role of the institutions is obviously an important component in a study of labor markets. The above discussion is only a small indicator of how those institutions operate in rural Java. Since off-farm or non-agricultural labor is becoming more and more important in Java, research is urgently needed on the institutions that affect the non-agricultural rural labor markets.

S U M M A R Y

Throughout this study a number of issues were presented about land and labor markets in East Java. The following is a summary of these topics:

1. Villagers who have sufficient funds purchase land form marginal farmers in the land markets and thus expand their land holdings. These larger landowners then "sharecrop out" some of their land in this market to small farmers and also cultivate themselves. Both of these groups of farmers also hire laborers to perform some or most of the cultivation activities.

2. The sharecropping land market is characterized by: (a) large farmers (owners) "sharecrop out" part or all their sawah land to landless villagers and/or marginal farmers; (b) the number of people who want to "sharecrop in" land is much greater than the number of people who want to "sharecrop out" land to the landless marginal farmers; (c) the landowner receives a relatively high share from the person who has "sharecropped in" the sawah land; (d) the sharecropping contracts are very stable and last for many years between the same individuals; and (e) family interests have an influence on who receives a "sharecropping in" opportunity.

3. The rental land market among the villagers is characterized by: (a) small marginal farmers "rent out" their sawah land to wealthier villagers who are usually large farmers (cultivators); (b) the number of marginal farmers who want to "rent out" their land is much greater than the number of farmers who have sufficient funds and want to "rent in" sawah land and these small landowners must look for the persons who want to "rent in"

land; (c) the landowners who "rented out" their sawah receive a low rental rate for their land; (d) renting contracts are not as stable as the sharecropping contracts and are for shorter period of time between the same individuals; and (e) family interests do not influence who is able to rent land.

4. The rental market is fragmented into a number of sub markets that respond to different incentives and involves different groups of people. These different rental markets are: (a) the villager to villager rental market which pays a low rent to the landowner and a high return to the person who "rents in" and cultivates or "sharecrops out" the rented land; (b) the villager to sugar cane factory rental market which is controlled by the government at a fixed rental rate where the landowners must rent their land to the factory; (c) a person outside the village renting to the villagers; and (d) the villager to outsider or wealthy farmer rental market in which the landowner who has a ratooned crop of sugar cane on his land and rents to the person at a high rental rate who will then cultivate sugar cane.

5. The rental rates for sawah land depend on who needed the land. If the sugar cane factory rents land, the rental rate is high because the factory needs the land to supply the factory with sufficient cane. If the marginal farmers "rent out" their land, the rental rate is low. If an outsider or wealthy person wants to rent ratooned cane sawah land, the rental rate is high because of the high potential return to the second cane crop.

6. The sharecropper and pengedok want to cultivate the land with sharecropping arrangements even though they must wait five months and could possibly earn a comparable income by working as daily hired laborers. They do this because they are more assured of

of the income when they sharecrop than if they are looking for daily employment in the labor market.

7. The land sale market is much more greatly influenced by the Government, (land reform, sugar cane requirement, Bimas credit) national policies (the conflict among the parties in the early 1960's), local power groups in the villages, and the historical tenure arrangements, then by economic forces.

8. The land reform in 1960 (UUPA) accelerated the sale of land among the rural villagers and to outsiders, especially in the areas where previously the land was held communally.

9. In the regions where the land was held communally and then changed to private ownership as well as in the regions where Dutch lands were redistributed to the sharecroppers who then received private ownership rights, land concentration is occurring through the sale of land by marginal farmers to wealthy individuals.

These propositions have been suggested by the results of the research by the authors in these selected villages in East Java. The above is a summary of the research results. However, one must recognize that even in these villages only some of the propositions have been conclusively proven valid, some have had partial proof only, and some of the propositions have only been tentatively suggested by the research findings.

FURTHER RESEARCH

In the first part of this study, it was suggested that since 1948 there have been five distinct periods in the evolution of agriculture and labor markets in East Java. This study has reviewed most of the available information on the 1948 to 1968 periods, has presented research results on the 1968 to 1973 period and the 1973 to 1978 period. However, the situation in rural Java appears to have greatly evolved during the 1978-1981 period which has only briefly been examined in this study. Also, in the first part of this study several proportions were suggested about what has occurred in the land and labor markets in the 1978-1981 period. The main points were suggestions that there may be a shortage of hired laborers for agricultural activities in East Java, that there may be a major increase in opportunities for off-farm or non-agricultural employment for landless and marginal farmers. These two topics need to be very carefully examined to determine if it is true. What has caused it, what are the institutions involved, how many people are involved, and who in the rural villages has access to these employment opportunities.

Besides the proposition on the labor markets, it was also suggested that there has been a major change in the agricultural situation in East Java since the introduction in 1978 of the brown plant hopper resistant rice varieties (IR32, 36, 38) and improved water control. If there has been a major advance in rural development, this needs to be documented, compared with the previous periods, and analyzed in order that development experts and policy makers are aware of what occurred, how it happened, and who benefited from this development.

The authors have a feeling that the improved employment opportunities and improved agricultural situation has added another layer in the intricately woven network of land and labor relationships in East Java. The past research indicated that there have been many changes in these land and labor markets which were accelerating polarization in rural Java. This new layer of possible increased demand for hired laborers outside of agriculture adds an entirely new respective to rural development in East Java, and should be carefully studied for its validity and its lessons for rural development in Asia.

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APPENDIX

Table 1. - Comparison of Labor Use (Hours/Ha) by Operation in Rice Production between 1875 and 1980 in Java, Indonesia.

	Operations (hours/ha)							
	Seed-bed	Field prepar-ation	Trans-plant-ing	Fertil-izing and spray-ing	Weeding, Guarding Water Manage-ment	Har-vest-ing	Drying and storing	Total
1875-1878								
Kediri (n.a.) 1878[a/]	63	595	230	-	594	286	120	1888
Blitar (.7 ha) 1875/76[b/]	89	408	300	-	300	600	120	1817
Kebumen (.7 ha) 1875[c/]	167	772	173	-	465	n.a.	96	
Ngrowo (Kediri) (.7 ha) 1875/76[d/]	52	515	230	-	504	286	200	1787
Average	93	573	233		466	390	134	1889
1924-1930								
Sawo, Ngawi (.56 ha)[e/]	21	230	314	-	10	444	-	1019
Karangmalang, Ngawi, (.66 ha)[e/]	29	167	409	-	43	526	-	1174
Jaan, Berbek, (1.79 ha)[e/]	10	136	305	-	15	740	-	1206
Jatisari, Lumajang (.83 ha)[f/]	39	223	258	-	290	501	68	1377
Demak[g/] (n.a.)	n.a.	173	n.a.	-	n.a.	540	-	n.a.
Surabaya[g/] (n.a.)	66	209	280	-	386	839	-	1780
Rembang[g/] (n.a.)	n.a.	252	310	-	n.a.	476	-	n.a.
Surakarta[g/] (n.a.)	n.a.	959	351	-	n.a.	520	-	n.a.

Table 1 (cont.)

	Operations (hours / ha)							
	Seed-bed	Field prepar-ation	Trans-plant-ing	Fertil-izing and spray-ing	Weeding, Guarding Water Manage-ment	Har-vest-ing	Drying and storing	Total
Besuki[g/] (n.a.)	n.a.	141	n.a.	-	n.a.	459	-	n.a.
Banten[g/] (n.a.)	n.a.	216	151	-	359	316	-	1042
Cirebon[g/] (n.a.)	67	102	355	-	253	339	-	1136
Prijetan, Surabaya, 1923 [g/]	n.a.	116	382	-	28	n.a.	-	n.a.
Prijetan, Surabaya, 1924 [g/]	n.a.	156	411	-	n.a.	n.a.	-	n.a.
Kuningan, Cirebon[g/] (n.a.)	88	229	690	-	421	406	-	1834
Maja, Cirebon[g/] (n.a.)	74	301	673	-	124	277	-	1529
Kenep, Sidoarjo[h/] (.41 ha)	26	413	484	-	459	876	-	2258
Kenep, Sidoarjo[i/] (.33 ha)	92	447	412	-	254	713	-	1919
Average	51	267	386	0	220	531	68	1523
Wet Season 1968/69								
Local Varieties: [j/]								
Kebanggan, Banyumas (1.0 ha)	24	230	142	19	206	n.a.	28	
Patemon, Kebumen (.4 ha)	69	315	283	50	306	n.a.	72	
Sukaraja Lor, Banyumas (1.0 ha)	46	256	200	29	311	91	58	991
Wanarata, Pemalang, (1.3 ha)	36	270	255	20	405	n.a.	60	
Sidomulyo, Sidoarjo (.25 ha)	64	276	179	53	211	161	123	1067
Gemarang, Ngawi (1.0 ha)	61	291	284	19	346	n.a.	33	

Table 1. (cont.)

	Operations (hours / ha)							
	Seed-bed	Field prepar-ation	Trans-plant ing	Fertil-izing and spray-ing	Weeding, Guarding Water Manage-ment	Har-vest-ing	Drying and storing	Total
Serang, Pemalang, (1.5 ha)	86	369	508	72	650	n.a.	107	
Janti, Sidoarjo, (.58 ha)	63	370	208	59	310	195	126	1331
Banyutowo, Kendal, (.65 ha)	84	236	359	76	546	355	41	1697
Bulus Pesantren, Kebumen (.4 ha)	109	259	130	30	415	n.a.	39	
Average	64	287	255	43	371	301	69	1290
High Yielding Varieties: k/								
Sidomulyo, Sidoarjo (.54 ha)	50	179	154	44	180	174	80	861
Gemarang, Ngawi (1.37 ha)	53	244	323	25	383	n.a.	38	
Average	52	212	239	35	282	174	59	1053
Dry Season 1969								
Local Verieties: 1/								
Sukaraja Lor, Banyumas (1.0 ha)	54	236	128	28	292	n.a.	69	
Bulus Pesantren, Kebumen (1.0 ha)	54	252	83	7	264	n.a.	17	
Wanarata, Pemalang (1.5 ha)	47	273	195	35	296	n.a.	30	
Patemon, Kebumen, (.4 ha)	72	390	204	21	468	n.a.	44	
Serang, Pemalang, (.5 ha)	155	385	160	85	340	n.a.	36	

Table 1. (cont.)

	Operations (hours/ha)							
	Seed bed	Field preparation	Transplanting	Fertilizing and spraying	Weeding, Guarding Water Management	Harvesting	Drying and storing	Total
Gemarang, Ngawi, (.45 ha)	69	393	303	53	518	647	49	2112
Sidomulyo, Sidoarjo (.19 ha)	65	429	200	73	316	166	98	1349
Geneng, Ngawi (.45 ha)	44	241	242	16	264	475	21	
Sukosari, Jember, (.50 ha)	111	231	243	0	346	125	16	1072
Janti, Sidoarjo, (.58 ha)	63	370	208	59	310	195	126	1331
Banyutowo, Kendal, (.5 ha)	142	329	171	43	290	391	37	1403
Average	80	321	194	38	337	333	49	1352
High Yielding Varieties:[m/]								
Sukaraja Lor, Banyumas (.5 ha)	71	280	173	44	418	n.a.	122	
Wanarata, Pemalang (.5 ha)	53	320	196	70	364	n.a.	55	
Gemarang, Ngawi, (.45 ha)	40	245	249	29	366	678	33	1640
Sidomulyo, Sidoarjo (.46 ha)	43	333	144	49	282	87	43	
Sukosari, Jember, (1.2 ha)	143	257	202	35	354	83	50	1124
Geneng, Ngawi (.19 ha)	51	328	270	50	573	475	47	1799
Average	67	294	206	46	393	331	58	1395

Table 1. (cont.)

	Operations (hours / ha)							
	Seed bed	Field preparation	Transplanting	Fertilizing and spraying	Weeding, Guarding Water Manage. ment	Harvesting	Drying and storing	Total
Wet Season 1977/78.[n/]								
Gemarang, Ngawi, (.57 ha)	32	197	169		333	340	n.a.	1071
Sumokembangsri, Sidoarjo (.52 ha)	137	372	359	n.a.	317	510	n.a.	1695
Sukosari, Jember, (.50 ha)	58	112	147		228	185	n.a.	790
Sungunlegowo, Gresik (.43 ha)	83	93	262		375	341	n.a.	1154
Petung, Trenggalek, (.20 ha)	134	353	114		294	302	n.a.	1197
Tambakrejo, Banyuwangi (.69 ha)	34	113	190		405	198	n.a.	940
Average	57	207	207		325	313	-	1109
Dry Season 1978.[o/]								
Gemarang, Ngawi (.53 ha)	37	220	188		285	326	n.a.	1856
Sumokembangsri, Sidoarjo	169	326	316	n.a.	340	519	n.a.	1670
Sukosari, Jember (.50 ha)	66	152	184		337	216	n.a.	955
Sungunlegowo, Sidoarjo, (.56 ha)	45	82	329		376	448	n.a.	1280
Petung, Trenggalek, (.16 ha)	140	305	116		350	298	n.a.	1209
Tambakrejo, Banyuwangi (.35 ha)	-	69	143		417	269	n.a.	898
Average	91	192	213		303	346		1145

Table 1. (cont.)

	Operations (hours / ha)							
	Seed bed	Field preparation	Transplanting	Fertilizing and spraying	Weeding, Guarding Water Management	Harvesting	Drying and storing	Total
Wet Season 1980								
Jatisari, Lumajang	38	172	165	24	425	220	58	1102
Tempeh Tengah, Lumajang	24	157	192	23	394	296	59	1153
Madurejo, Lumajang	17	126	295	19	305	368	26	1156

a/ J.N.F. Sollewijn Gelpke, Naar Aanleding van Staatsblad, No.110, 1878, p-51 to 53. He presented the information in bahu and the author converted it to Ha by dividing by .7 Dr.Gelpke very carefully observed and measured each operation and area in order to make these estimates of labor use.

b/ J.N.F. Sollewijn Gelpke, Rapport over de Padi- Cultuur in de Afdeeling Ngrowo (1875/1876), Appendix B (Questions asked of the villagers and carrying out of crop cuttings as reported by the Assistant Resident Kroessen, in Blitar, East Java, August 30, 1876), pp. 329-332.

c/ E.A. Enklaar van Guericke, "Padicultuur. Halfyaarlyksch Rapport van den Directeur van Binnenlandsch Bestuur van den Gecomitteerde voor de Padicultuur in de Afdeeling Keboemen, Residentie Begelen", Tijdschrift van het Indisch Landbouw-Genootschap, Semarang, 1876, pp. 88 and 89.

d/ J.N.F. Sollewijn Gelpke, Rapport ove de Padi- Cultuur in de Afdeeling Ngrowo (1875/79) Batavia, 1877, pp. 271-274.

e/ Calculations were made by the author based on information in the Appendices in E. de Vries, R. Alers, and R.M. Soeparja Winotoatmodjo, "Ontleding van de Tabaks en Rijstcultuur in het Regentschap Ngawi (Java)", Landbouw, V, No.8, 1929/30, pp. 690, 695, and 696.

Table 1 (cont.)

f/ These estimates are from Table 12 and 13 in J. van der Ploeg and Koesno Adirono, Landbouwkundige Beschrijving van het Regentschap Loemadjang (Oost Java)", Landbouw, p.224 and p.225.

g/ These averages were made by the author based on information in the text and in the Appendicies in M.S. Smits, "Arbeidsaanwending in den Natten Rijstbouw op Java", Landbouw, I, 1925/26, pp.252-272.

h/ These averages were made by the author based on information in the text and in the Appendicies in G.J. Vink, Eiland Djojodihardjo, and M.J. van den Brand, "Ontleding van de Rijstcultuur in het Gehucht Kenep (Residentie Soerabaja)", Landbouw, VII, 1931/32, No.6, Buitenzorg, Indonesia. These fields are before renting to the sugar cane factory.

i/ The source is the same as footnote d. These fields are after the fields are returned to the farmers by the sugar cane factory.

j/ The number of respondents for local varieties in the Wet Season 1968/69 for the Agro Economic Survey's selected villages were:

Kebanggan	28	Gemarang	20
Patemon	31	Serang	19
Sukaraja Lor	26	Janti	26
Wanarata	35	Banyutowo	21
Sidomulyo	15	Bulus Pesantren	30

k/ The number of respondents for the HYV's in the Wet Season 1968/69 for the AES's selected villages were:

Sidomulyo	30
Gemarang	16

l/ The number of respondents for the local varieties in the Dry Season 1969 for the AES selected villages were:

Sukaraja Lor	30	Gemarang	29
Bulus Pesantren	29	Sidomulyo	20
Wanarata	25	Geneng	29
Patemon	30	Sukosari	6
Serang	30	Janti	26

m/ The number of respondents for the HYV's in the Dry Season 1969 for the AES selected villages were:

Sukaraja Lor	5	Sidomulyo	24
Wanarata	7	Sukosari	17
Gemarang	11	Geneng	11

n/ The number of respondents for rice production in the 1977/78 period were:

Gemarang	34	Sumokembangsri	62

Other than Sumokembangsri, this information is from Sri Hartoyo and Soentoro, Penggunaan Sumber Daya, Lembaga Pelayanan Dan Potensi Pembangunan di Daerah Persawahan, Pegunungan, dan Daerah Pantai Jawa Timur. Rural Dynamics Study, Jatim Series No.5, March 1980, appendicies.

APPENDIX

Table 2 - Percentage Hired and Family Labor Use and Male and Female Labor Use in Javanese Rice Production from 1926 to 1980.

Location and year	Number of respondents	Ave. size of operation (Ha)	Percentage labor use		Percentage labor use	
			Family (%)	Hired (%)	Female (%)	Male (%)
1926-1931						
Lumajang, East Java:						
1929/30			28	72	n.a.	n.a.
1930/31			31	69	n.a.	n.a.
Kenep, Surabaya, East Java:						
1925/26	39		59	41	59	41
Jetis, Mojokerto, East Java:						
1926/27	20		42	48	64	36
Kertorejo, East Java:						
1926/27	n.a.		32	68	n.a.	n.a.
Sawo, Ngawi, East Java:						
1928/1929	28	.70	48	52	70	30
Karang Malang, Ngawi, East Java:						
1926/27	31	.61	48	52	68	32
Jaan, Berbek, East Java:						
1926/27			29	71	n.a.	n.a.
Pasarejo, Pasuruan, East Java:						
1927/28	44	.28	n.a.	n.a.	69	31
Jatisari, Lumajang, East Java:						
1929/30			n.a.	n.a.	65	35
Average (1926-1931)			40	60	66	34
1968/1969 Wet Season						
Kebanggan, Banyumas, Central Java: (no harvest labor)						
Local varieties	28	1.	7	94	67	33
Gekbrong, Cianjur, West Java:						
a. Local varieties	29	1	8	92	56	44
b. HYV			0	100	43	57

Table 2. - (cont.)

Location and year	Number of respondents	Ave. size of operation (Ha)	Percentage labor use		Percentage labor use	
			Family (%)	Hired (%)	Female (%)	Male (%)
Patemon, Kebumen, Central Java						
a. Local varieties (no harvest labor)	31	.4	32	68	17	83
Sukaraja Lor, Banyumas, East Java:						
a. Local varieties	26	1.	2	98	26	74
b. HYV	35	1.	0	100	28	72
Wanarata, Pemalang, Central Java:						
a. Local varieties	35	1.	4	96	50	50
Sidomulyo, Sidoarjo, East Java:						
a. Local varieties	15	.25	39	61	41	59
b. HYV			27	73	50	60
Gemarang, Ngawi, East Java:						
a. Local varieties	24	1.	61	39	39	61
b. HYV (harvest labor not included)			74	26	29	11
Serang, Pemalang, East Java:						
a. Local varieties	19	.5	13	87	51	49
Janti, Sidoarjo, East Java:						
a. Local varieties	26	.58	23	77	49	51
Banyutowo, Kendal, Central Java:						
a. Local varieties	21	.65	8	92	33	67
Buluspesantren, Kebumen, Central Java:						
a. Local varieties	30	.4	49	51	9	91
b. HYV			69	31	10	90
Sukosari, Jember, East Java:						
a. Local varieties	13	1.	24	76	42	58
b. HYV			9	91	25	75
Average: a. Local varieties			22	78	40	60
b. HYV			30	70	40	60

Table 2 (cont.)

Location and year	Number of respondents	Ave. size of operation (Ha)	Percentage labor use		Percentage labor use	
			Family (%)	Hired (%)	Female (%)	Male (%)
Dry Season 1969						
Gemarang, Ngawi, East Java:						
a. Local varieties	14	.22	25	75	59	41
b. HYV			16	84	69	31
Sidomulyo, Sidoarjo, East Java:						
a. Local varieties	20	.19	28	72	40	60
b. HYV			16	84	46	54
Buluspesantren, Kebumen, Central Java:						
a. Local varieties	29	1.	33	67	12	88
b. HYV			66	34	15	85
(harvest labor not included)						
Sukaraja Lor, Banyumas, Central Java:						
a. Local varieties	30	1.	8	92	16	84
b. HYV			8	92	17	83
(harvest labor not included)						
Rowosari, Kendal, Central Java:						
a. Local varieties	26	1.	7	93	54	46
b. HYV			7	93	58	42
Wanarata, Pemalang, Central Java						
a. Local varieties	25	1.5	6	94	33	67
b. HYV			10	90	22	78
(harvest labor not included)						
Patemon, Kebumen, Central Java:						
a. Local varieties	30	.4	26	74	16	84
Serang, Pemalang, Central Java:						
a. Local varieties	30	.5	17	83	25	75
Average: a. Local varieties			19	81	32	68
b. HYV			20	80	38	62
1978-1980						
Kreton, Lumajang, East Java:						
Wet Season	66		47	53	24	76
Gemarang, Ngawi, East Java:						
Wet Season 1977/78	34	.57	24	76	26	74
Dry Season 1978	30	.53	27	73	32	68

Table 2. - (cont.)

Location and year	Number of respondents	Ave. size of operation (Ha)	Percentage labor use		Percentage labor use	
			Family (%)	Hired (%)	Female (%)	Male (%)
Sidoarjo, East Java:						
a. Wet Season 1977/78	23	.50	9	91	58	42
b. Dry Season	26	.50	8	92	65	35
Petung, Trenggalek, East Java:						
a. Wet Season 1977/78	43	.20	86	14	22	78
b. Dry Season 1978	20	.16	90	10	29	71
Tambakrejo, Banyuwangi, East Java:						
a. Wet Season 1977/78	14	.69	33	67	37	63
b. Dry Season 1978		.35	91	9	41	59
Average:						
a. Wet Season			36	64	35	65
b. Dry Season			64	46	42	58

Source: Same as Appendix Table 1 in this study.

APPENDIX

Table 3. - Average Labor Use (Hours/Ha) Yields, and Size of Operations for Rice Cultivation in Three Villages in Lumajang Kabupaten, East Java, for Three Planting Seasons in 1980.

Items	First planting season			Second planting season		Third planting season		Total per year		
	Jatisari village	Tempeh Tengah village	Madurejo village	Jatisari village	Tempeh Tengah village	Jatisari village	Tempeh Tengah village	Jatisari village	Tempeh Tengah village	Madurejo village
Number of respondents	24	10	20	18	7	9	6			
Average size of operation (ha)	.36	.41	.31	.19	.10	.16	.82			
Average rice yield (gabah kering/ha)	4.04	2.99	2.23	3.39	3.07	3.40	3.26			
Labor use (hours/ha):										
Seedbed: Family	32	5	14	30	4	42	6	104	15	14
Hired	6	19	3	7	22	3	15	16	56	3
Total	38	24	17	37	26	45	21	120	71	17
Soil preparation:										
Family	48	8	19	30	1	26	1	104	10	19
Hired	124	157	107	152	159	118	195	394	511	107
Total	172	165	126	182	160	144	196	498	521	126
Pulling seedlings:										
Family	23	2	4	23	2	25	2	71	6	4
Hired	12	41	36	30	40	16	43	58	124	36
Total	35	43	40	53	42	41	45	129	130	40
Planting seedlings:										
Family	17	9	13	21	12	24	11	62	32	13
Hired	113	140	242	117	136	113	151	343	427	242
Total	130	149	255	138	148	137	162	405	459	255

APPENDIX

Table 3. (cont.)

Items	First planting season			Second planting season		Third planting season		Total per year		
	Jati-sari village	Tempeh Tengah village	Madu-rejo village	Jati-sari village	Tempeh Tengah village	Jati-sari village	Tempeh Tengah village	Jati-sari village	Tempeh Tengah village	Madu-rejo village
Irrigating :										
Family	150	3	0	150	6	52	0	352	9	0
Hired	77	148	0	80	142	113	166	270	456	0
Total	227	151	0	230	148	175	166	632	465	0
Weeding : Family	64	9	12	68	13	87	14	216	36	12
Hired	134	234	293	136	203	159	243	429	680	293
Total	198	243	305	201	216	246	257	645	716	305
Fertilizing and spraying:										
Family	23	15	16	19	9	24	17	66	41	16
Hired	1	8	3	0	13	0	18	1	39	3
Total	24	23	19	19	22	24	35	67	80	19
Harvesting :										
Family	44	10	28	29	14	32	47	105	71	28
Hired	176	286	340	185	275	189	266	550	827	340
Total	220	296	368	214	289	221	313	655	898	368
Drying : Family	58	47	16	57	36	47	45	162	128	16
Hired	0	12	10	0	19	0	14	0	45	10
Total	58	59	26	57	55	47	59	162	173	26
Total labor use:										
Family	459	108	122	424	97	369	143	1252	348	122
Hired	643	1045	1034	707	1009	711	1111	2061	3165	1034
Total	1102	1153	1156	1131	1106	1080	1254	3313	3513	1156

APPENDIX

Table 4. - Cropping Patterns in Sumokembangsri and Gemarang, East Java 1978.

	Sumokembangsri (%)	Gemarang (%)
Rice - rice - rice	12.5	35
Rice - rice - palawija	66	53
Rice - palawija - palawija	20	5
Sugar cane - palawija	33	20
Sugar cane	-	12

Source: Field survey by Soentoro in 1978

Table 5. - Cropping Pattern in Sumokembangsri for a two year period.

Rice Wet Season	Rice Dry Season	Palawija	Rice Wet Season	Sugar cane
Nov/Dec 78	March/April	July/August	Nov./Dec.	April 80

Sugar cane	Rice	Rice - Wet Season
July/August 1980		

APPENDIX

Table 6. - Average Labor Use, Costs, and Returns per Ha in Rice Cultivation for Owner Operator Farmers in Sumokembangsri Village in the Wet Season 77/78, Dry Season I-1978, and Dry Season-II, 1978.

	Wet Season 1977/78 November to March	Dry Season I 1978 April to August	Dry Season II 1978 August to December
Number of respondents	35	23	17
Labor use (hours/ha)			
Family			
Male	226	195	206
Female	55	64	53
Male with carabou	15	9	11
Sub total	296	268	270
Hired labor			
Male	545	537	628
Female	440	533	551
Male with carabou	27	33	34
Sub total	1012	1103	1213
Total labor use	1308	1371	1483
Input costs (Rp/Ha)			
Inputs	38841	37159	38218
Wages for hired labor	44199	46656	59948
Others	1200	1750	1425
Total	84240	85565	99591
Yield and income			
Yield (Kg/Ha)	5410	4948	4030
Harvesters share (bawon)	4328	3958	3504
Gross income with harvest	264008	257270	245280
Net family income	179768	171705	145689

Source: Field survey by Soentoro in 1978.

APPENDIX

Table 7. - Average Labor Use, Costs and Returns for Soybeans and Corn Production in Sumokembangsri Village, East Java.

	Soybeans	Corn
Number of respondents	26	37
Labor use (hours/ha)		
Family		
Male	126	258
Female	25	114
Sub total	151	372
Hired labor		
Male	361	284
Female	126	264
Sub total	487	558
Total labor use	638	930
Costs of production (Rp/Ha)		
Costs of input	15988	23002
Hired labor cost	24593	23357
Costs	40581	46359
Yields and income		
Yield (kg/ha)	603	2250
Gross income	107163	79628
Net family income (Rp/Ha)	66582	33269

Source: Field survey by Soentoro in 1978

APPENDIX

Table 8. - Average Labor Use, Costs, and Returns for Soybeans Cultivation in Gemarang in 1978.

I t e m	Soybeans
Number of respondents	27
Average size of operation (Ha)	0.54
Labor use (hours/ha)	
Family	
Male	107
Female	31
Sub total	138
Hired labor	
Male	200
Female	162
Sub total	362
Total labor use	500
Cost of production (Rp/Ha)	
Input costs	6990
Hired labor cost	36370
Total	43360
Yields and income	
Yield (kg/ha)	430
Gross income	71420
Net family income	28060

Source: Field survey by the Rural Dynamics Study in East Java, 1978.

Table 9. - Average Labor Use, Costs and Returns by Tenure Status for Rice Cultivation in the First Cropping Season in 1978 in Gemarang, East Java.

I t e m	Owned	Share-cropped	Rented
Number of respondents	19	10	9
Labor use (hours/ha)			
Family			
Male	112	197	349
Female	17	9	67
Male with carabou	5	16	8
Sub total	134	222	424
Hired labor			
Male	530	586	453
Female	375	301	333
Male with carabou	54	48	48
Sub total	961	964	834
Total labor use	1095	1156	1245
Cost of product (Rp/Ha)			
Input costs	37,400	28,500	46,400
Hired labor cost	29,800	42,100	31,400
Land rent/share	0	114,800	27,400
Others	600	0	400
Total	67,800	185,400	105,600
Income			
Yield (ton/ha) a/	6.04	5.27	6.65
Cost of harvest (ton/ha)	5.50	4.76	6.02
Gross income (Rp/Ha)	245,000	261,700	316,400
Net family income (Rp/Ha)	177,200	76,300	210,800

a/ This is gabah kering panen (harvest dried)

Source: Field survey by the Rural Dynamics Study of East Java of the Agro Economics Survey in 1978.

APPENDIX

Table 10. - Average Labor Use, Costs, and Returns per Ha by Tenure Status for Rice Cultivation in the Second Season in 1978 in Genarang, Ngawi, East Java.

Item	Tenure status		
	Owned	Share-cropped	Rented
Number of respondents	15	8	11
Labor use (hours/ha)			
Family			
Male	149	194	328
Female	15	14	91
Male with carabou	6	5	7
Sub total	170	213	426
Hired labor			
Male	621	629	416
Female	83	207	273
Male with carabou	44	178	50
Sub total	748	1,014	739
Total labor use	918	1,227	1,165
Cost of product (Rp/Ha)			
Input costs	36,300	32,200	36,200
Hired labor cost	30,600	41,100	27,200
Land rent/share	0	98,100	34,800
Others	400	100	0
Total	67,300	171,500	98,200
Income			
Yield (ton/ha)[a/]	4.32	4.09	5.00
Cost harvest (ton/ha)	3.88	3.68	4.53
Cross income (Rp/Ha)	239,600	227,600	251,200
Net family income (Rp/Ha)	172,300	56,100	153,000

a/ This is gabah kering panen (harvest dried)

Source: Field survey by the Rural Dynamics Study of East Java of the Agro Economic Survey in 1978.