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THE DISTRIBUTION OF PERSONAL INCOMES
AMONG AFRICAN FARMERS--A
TWO PERIOD ANALYSIS

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THE DISTRIBUTION OF PERSONAL INCOMES AMONG AFRICAN FARMERS--A TWO PERIOD ANALYSIS

By

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ABSTRACT

THE DISTRIBUTION OF PERSONAL INCOMES
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The third National Development Plan of the Federal Republic of Nigeria has assigned the highest priority to the development of the agricultural sector. This commitment is based on equitable distribution of income between sectors, geographic regions and individuals. However, it has been difficult to design income and pricing policies to fulfill equity objectives due to inadequate information on the rural poor and why they are poor. Apart from the design issue, the impacts of income and pricing policies on the rural poor cannot be predicted without full understanding of the level, distribution, sources, and changes of income among the rural poor. The few available studies which are related to income distribution in Nigeria have each used one year's data. Since very little is know about the determinants of income changes over time more than one year's data would greatly improve our understanding of the true nature of income distribution.

The central objective of this study was to describe and explain the structure and distribution of income among a sample of rural households in Kwara State, Nigeria. Omu-Aran was chosen by the Kwara State Ministry of Agriculture as the area for an intensive management study conducted in 1969 and repeated in 1974. Within the area, two villages were chosen to reflect differences in ease of communication with marketing centers and to represent two ecological zones--savannah and forest--found in the area.

A simple random sample of 30 households were drawn in each village in 1969 from the list obtained from the total population enumeration. The same households were included in the sample in 1974 with a few additions to replace those who had died or moved. Input-output data were obtained by interviewing the households twice weekly throughout each survey year.

The levels of interpersonal distribution of income were estimated on the basis of these data. A Gini coefficient of 0.35 was found suggesting that income was fairly equitably distributed. Moreover, the Gini coefficient changed little and specific households remained relatively stable in their relative income ranking between the two years. Finally, the data showed that off-farm income tended to reduce income inequality.

An important finding was that the causes of poverty cannot be attributed to one single factor but rather to a

combination of factors. Among the resource endowment variables cropped land was found to be consistently related to income. Operating capital also showed high correlation with income pointing to the credit needs of lower income households. Furthermore, two sets of the very poor were distinguished. Some households were land short but worked their land very intensively. The other set of households possessed average land holdings but worked their land at low levels of intensity and thus realized low output levels. Low productivity, however, was common to both poverty groups. Ill health, insects, pests and diseases, poor quality inputs and poor management could be possible causes of low productivity. This is a critical area for further research because it has important implications for the development of improved technologies which are compatible with the circumstances of the poor.

Due to the wide differences in results between villages and between years policy makers are cautioned against making blanket applications over wide areas and against placing heavy reliance on the results of a single year's data on incomes. Further research priorities are identified on credit, land tenure, calorie intake, economic contribution of migrants and causes of inter-year variations in productivity.

TO QUEEN BENYA

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CHAPTER I

INTRODUCTION

A. Income Distribution and the Development Question

During the 1950s and 1960s development programs in less developed countries focused on stimulating growth in per capita Gross National Product (GNP). However, experiences in many developing countries during this period showed that growth in per capita GNP alone was at best only a rough proxy for development. As defined later by Seers in "The Meaning of Development", (52), development takes place only when there has been an improvement over time in unemployment, poverty levels and inequality. But the distribution of wealth and income has in most countries become more unequal with time despite a rapid growth rate in per capita GNP. This is believed to be the case in India (30) and Brazil (21), for example, in which the benefits from economic development have gone disproportionately to the rich. Over time the poorest households might have attained a marginally higher lever of income or wealth but such growth left them still relatively worse off compared with higher income households.

Although researchers and development planners have become increasingly concerned with income distribution the lack of adequate data has, among other obstacles, restricted

effective policy action (38, p.1). Needless to say, severe difficulties are encountered by planners when there is a paucity of data. The experience of Stolper (54) in preparing the First Nigerian Development Plan has been well enumerated in his book entitled, "Planning Without Facts". The lack of accurate data on income distribution in particular has been expressed by Phillips (47) who showed that among four African countries studied Nigeria was the poorest with respect to the availability of data on interpersonal income distribution.

The lack of information on income distribution, however, is only a part of a more general knowledge problem. There is also a general paucity of information on indigeneous farming practices. As an attempt to overcome the lack of accurate data on indigeneous farming practices in Northern Nigeria, D.W. Norman (42) undertook a socio-economic study of three villages in Zaria area during the late 1960's. The importance of such information was emphasized at the Ivory Coast Conference on Agricultural Research Priorities for Economic Development in Africa (56, pp. 139). The results of such studies have proven to be valuable in providing basic information for technical research workers in determining research priorities, and in giving extension workers some idea of what innovations are likely to be most readily adopted.

At the same time that Norman's study was being repeated in Bauchi and Sokoto areas, the Kwara State Ministry of Natural Resources requested that a similar study be carried

out in Kwara State. This request was considered by the Institute for Agricultural Research, Ahmadu Bello University, as an opportunity to replicate Norman's study in a different ecological zone of the then Northern States. The Kwara State Ministry preferred that the study be carried out in two areas Okene, an Igbirra speaking area, and Omu-Aran, a Yoruba speaking area. The focus of attention in this study is the Omu-Aran area while the Okene study was conducted by another researcher and will be reported elsewhere.

B. Problem Statement and Need

The most recent National Development Plan of the Federal Republic of Nigeria has assigned the highest priority to the development of the agricultural sector. This commitment was framed within the broader objective of distributive equity both between geographic regions of the country and among individuals. It has been argued, however, (38, pp 7-9) that the lack of adequate information on incomes and of a policy relevant theoretical framework pose substantial obstacles for the design and implementation of income policies to operationalize the interpersonal equity objective. This agrument is summarized in the recent five year plan as follows:

> Inter-factorial and inter-personal distribution of incomes is at the heart of development policy. For, while optimal factor remuneration will ensure rapid growth, an equitable allocation of income among persons provides an effective transmission mechanism between growth and development. Unfortunately, Nigeria has never had an articulate and deliberate incomes policy. One of the main difficulties has been the complete lack of relevant data on the subject (20, p.35).

In his address (18) to the nation on domestic and foreign policies, the Head of State stated that an effective income policy will be established in order to curb inflation in Nigeria. However, in order to establish an incomes policy existing distributional information has to be improved. Moreover, understanding income in the subsistence rural sector is a pre-requisite to sound income and development policies in Nigeria more generally.

As a further step in meeting the objectives of the village studies set up by Norman as well as to provide basic data on the rural income distribution, this study concentrates on income generation of farming households in one area of Kwara State.

The need for this study can therefore be summarized as follows:

1. Priority given to agricultural development by the Federal Government of Nigeria is based on the objective of an equitable distribution of incomes among sectors, geographic regions and individuals.
2. It is difficult to design income and pricing policies to fulfill the development objective due to inadequate data with which to identify and describe the rural poor, and to examine factors associated with rural poverty. The design and the impacts of income and pricing policies on the rural poor cannot be predicted without full understanding of the level, distribution, structure, and stability of incomes among the rural population.

C. Objectives of the Study

The objectives of this study can be summarized as follows:

1. To describe the levels, sources and distribution of personal incomes in two villages of Kwara State.
2. To describe the structural and behavioral characteristics among households in different income groups. The following characteristics will be considered:
   i) Demographic make up of the household
   ii) Asset ownership
   iii) Cropping patterns
   iv) Patterns of resource use
   v) Variation in average returns to factors
3. To identify the most important factors associated with income in two villages in each of two years.
4. To describe and explain changes in the levels and pattern of distribution of net farm income in two villages between 1969 and 1974.

D. Plan of Study

This study contains ten chapters. Chapter II presents a brief review of research pertaining to income distribution in Nigeria. Chapter III describes the data collection methodology and provides a general review of the ecological and economic characteristics of the study area. The levels, sources and distribution of net farm income and net household incomes are discussed in Chapter IV. Chapter V examines the differences in structural household characteristics among

income strata. Chapter VI examines differences in the endowments and use of land, labor and capital among income strata. Average factor productivities and cropping pattern variation are examined in Chapter VII. Chapter VIII summarizes the major correlates with net farm income during each year of study through an econometric analysis. The inter-year variation in income is examined through a case study approach in Chapter IX. Finally, Chapter X summarizes the major findings and general conclusions that can be drawn from the results of the study.

CHAPTER II

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

A. Brief Review of Other Studies

The literature on income inequality is large and has expanded rapidly during the past two decades. During the early 1950's Kuznets (34) examined the nature and causes of long term changes in the personal distribution of income. His seminal study addressed the question of whether income inequality increased or decreased in the course of a country's economic growth. Kuznets projected that income inequality would worsen for a period and then improve. Other scholars apart from Kuznets who have been associated with the question of income inequality include Chenery (11), Ahluwalia (4), Adelman and Morris (3). These authors, using a static comparison of cross-country data to infer within-country distributional changes over time, have generally confirmed Kuznets' projection. Others like Mincer (40) and Ranis and Fei (49) used within-country data to describe income distributions within the countries concerned.

The distribution of income within a country can be considered in terms of three general types of decompositions. Firstly, decomposition by factors of production answers questions as to how much of income inequality can be

attributed to the existing production technology together with the distribution of labor, land and capital. An example of this approach was that of Gardner (24). Secondly, income inequality can be broken down into economic sectors. This decomposition can answer questions such as how much of total national inequality can be attributed to between and within sector differentials employing an agricultural/non-agricultural or rural/urban breakdown. The study conducted by Yu (60) in Taiwan, Fields (21) and Fishlow (23) in Brazil are examples of this type of approach. A third method of income decomposition is by income generation functions. The studies by Fields (21), Lopez (37) and Patrick and Graber (45) are examples. Such a decomposition makes it possible to determine how much of total inequality can be explained by characteristics of workers and household production systems. The present study utilizes the latter approach.

As mentioned in the first Chapter there are very few studies of income distribution in Nigeria. In 1975, Phillips (47) conducted a survey of literature on income distribution in Ghana, Keyna, Tanzania and Nigeria and found that Nigeria had perhaps the poorest distribution data on income. In 1965, the FAO published a detailed agricultural plan named, "Agricultural Development in Nigeria 1965-1880." The equity question as to who would benefit from the plan was not explicitly dealt with. Michigan State University's Consortuim for the study of Nigerian Rural Development 1969-1985 also assumed away the question of inter-personal distribution. The absence

of equity treatment in these studies can be associated with at least two factors. First, the authors may not have given priority to the question of equity due to lack of data. Second, income inequality is a politically controversial area which may not be appropriate for examination by expatriates. In a country like Nigeria characterized by many internal diversities, indigenes themselves have found that a topic on income distribution could not be handled without some political risk. As a result the topic was relegated to the background by researchers and by policy makers in earlier development plans.

Of the few previous studies on income distribution published in Nigeria most have made exclusive use of official secondary data collected for other purposes. Examples are Aboyade (1) and Philip and Teriba (48). An exception to this more general pattern was the work of Essang. Essang (15) conducted an in-depth study to describe and explain patterns of income distribution among southern Nigerian farmers. Although his was the first study on income distribution based on primary data, his analysis considered only incomes generated from a single cash crop, cocoa. At best this is only a crude approximation of household income since the farmers also grew a wide range of food crops especially cocoyams, yams, maize and cassava which contributed a major proportion of household income. Moreover, only a single year's data was used.

Essang reported a very skewed distribution for both land and income. The Gini ratio was .68 for the distribution of

cocoa holdings, for example, and .79 for cocoa earnings. Moreover, he found a high correlation between political status and the distribution of cocoa earnings. The reason for this was found in the tenure system which gave the traditional rulers custody over communal land. As a result the richer class had priviledged access to land as well as to modern inputs and credit.

A second study of inequality was conducted by Hill, in a single village in the then North Central State, now Kaduna State (29). Although Hill made no attempt to estimate actual levels of income, she classified 171 farming units into four groups delineated on their relative ability to "withstand the shock of an exceedingly poor or late harvest." The subjective classification that Hill developed provided a useful approach to examine factors associated with relative poverty, and to infer causal relationships. She found, for example, that high income households had more working members, more wives and larger farms. Hill's work, however, is not without its limitations. Since only one village was surveyed, it was impossible to ascertain variations in income profiles due to market location and population density. Her study was devoid of statistical analysis and she was not able to estimate income levels directly.

More recently, Norman (42) has summarized the results of nine village studies conducted in the Zaria, Sokoto and Bauchi areas. These studies provide a broad comparative view of the levels and distribution of incomes at the village level in the north. Table 2.1 shows that income distribution in

Table 2.1 Gini coefficients on net income for nine villages in Sokoto, Zaria and Bauchi Areas

Village	Net Income Per Capita[a]	Mean Income Per Capita	Year of Study
Sokoto:		111.34	1968/69
Takatuku	0.2648		
Kaura Kimba	0.4043		
Gidan Karma	0.2990		
Zaria:		196.73	1967/68
Hanwa	0.3588		
Doka	0.2986		
Dan Mahawayi	0.5004		
Bauchi:		75.15	1968/69
Bishi	0.3728		
Nasarawa	0.3612		
Nabayi	0.3873		

[a]Net farm income from crops and livestock excluding taxes.

Source: Norman, D.W. and Pryor, D.H., "The Small Farmer in Hausaland," submitted for MSU Rural Development Series, 1979

Table 2.2 Gini coefficients on distribution of land in nine villages in Sokoto, Zaria and Bauchi areas.[a]

Village	Total Acres	Cultivated Acres
Sokoto:		
Takatuku	0.1987	0.1990
Kaura Kimba	0.4319	0.4279
Gidan Karma	0.2418	0.2518
Zaria:		
Hanwa	0.3635	0.3410
Doka	0.3997	0.3050
Dan Mahawayi	0.3568	0.4850
Bauchi:		
Bishi	0.3419	0.3459
Nasarawa	0.3316	0.3486
Nabayi	0.5577	0.2876

a. The Gini coefficients are calculated on the basis of the families possessing the usufructuary rights during the survey years.

Source: Norman, D.W. and Pryor, D.H., "The Small Farmer in Hausaland," submitted for MSU Rural Development Series, 1979

Table 2.3 Gini coefficients on household income for three villages in Kano State, 1974

Income Measure	Village	Gini Coefficient
Total Income Per Capita	Barbeji	0.2898
	Zoza	0.2251
	Rogo	0.3034
	All	0.2823
Farm Income Per Capita[a]	Barbeji	0.3298
	Zoza	0.2108
	Rogo	0.3504
	All	0.3183
Off-Farm Income Per Capita	Barbeji	0.4588
	Zoza	0.5562
	Rogo	0.5464
	All	0.5306
Non-Agricultural Income Per Capita[b]	Barbeji	0.5574
	Zoza	0.6759
	Rogo	0.5775
	All	0.6097
Total Income Per Household	Barbeji	0.3426
	Zoza	0.2624
	Rogo	0.3176
	All	0.3146

a. Farm income is net farm income obtained from field and tree crop production

b. Non-agricultural income is equal to net off-farm income less earnings obtained through employment as a hired farm laborer.

Source: Matlon, P.J., "The Size distribution, structure, and determinants of personal income among farmers in the north of Nigeria", Ph.D. Thesis, Cornell University 1977, p. 77.

the nine villages was fairly equitable even though there were substantial differences in average income among regions. Norman defined net income as the net farm income from crops and livestock. However, he did not include non-farm earnings. Table 2.2 also shows the Gini coefficients on distribution of land in the nine villages again reflecting a low degree of concentration. The studies summarized were of one year duration.

Matlon's work (38) provides the most comprehensive study on rural income distribution in Nigeria. Focusing on three villages in Kano State, Matlon estimated household income from all sources opened to each household, both agricultural and non-agricultural. One of the most unique features of Matlon's work was the generation of data on cash constraints, credit and participation in government programs. Table 2.3 summarizes his findings regarding the distribution of personal incomes which were in line with Norman's but contrasted importantly from the wide inequality implied in Essang's results. Off-farm income provided by hired farm labor employment was found to reduce inequality in the lower income households but trading incomes increased inequality among the upper income households. Productivity of land and labor was found to be the most important determinant of income.

In summary, the above studies (15,29,38,43) gave the following major findings: Hill found that there was a systematic association between demographic factors and income.

Essang and Hill further reported close relationship between land holdings and income.

Like Essang, Matlon found that access to agricultural extension and modern inputs were closely correlated to the relative income ranking of a household. Essang asserted that higher income was closely related to political power. This was likely a result of positive relationship between political status and land holdings, access to commerical sources of credit and to extension services.

Hill could not pinpoint the causes of poverty status among the poor households but Matlon found that land and labor productivity were probably the most important explanatory factors. Matlon concluded that the efficiency of resource use rather than variation in resource endowment was more important in explaining income variation.

The studies reviewed above have the following features:

1. Essang's study was on a single cash crop, cocoa, and the place of research was in the South-Western State of Nigeria. He examined only a single year.
2. Matlon's study was conducted in the far north in an area where groundnut is the dominant cash crop, though his study covered all farm and non-farm production. However, the fact that only one year's data was used by Matlon makes his results inconclusive as far as knowledge of the stability of income distribution is concerned.

3. Norman's study used a land-per-resident stratification to examine production relationships which according to Matlon (38, p. 13) is not an adequate proxy for income per resident. Thus behavioral and structural characteristics associated with income strata directly could not be examined. Moreover, while he examined the production of a wide range of crops, his study was in the north and was only for one year.

B. Conceptual Framework of the Present Study

Neither farm production nor income studies have been conducted in the geographical area in which the present research concentrates, the Nigerian middle-belt. This is a zone where most of the crops grown in both the south and north of Nigeria can be found but where no single crop has yet achieved the status of a cash crop. The present study will therefore have the following unique characteristics:

1. It will provide information on rural income on the middle-belt, a different ecological zone from those of earlier studies.
2. Using the data collected during two survey years (1969 and 1974) it will be possible to see what changes occur over time in the components, correlates and distribution of income. Examining data for two years also enables one to observe interstrata mobility of households.

Based on the review of earlier findings, income in this study is conceptually viewed (see Figure 2.1) as being a function

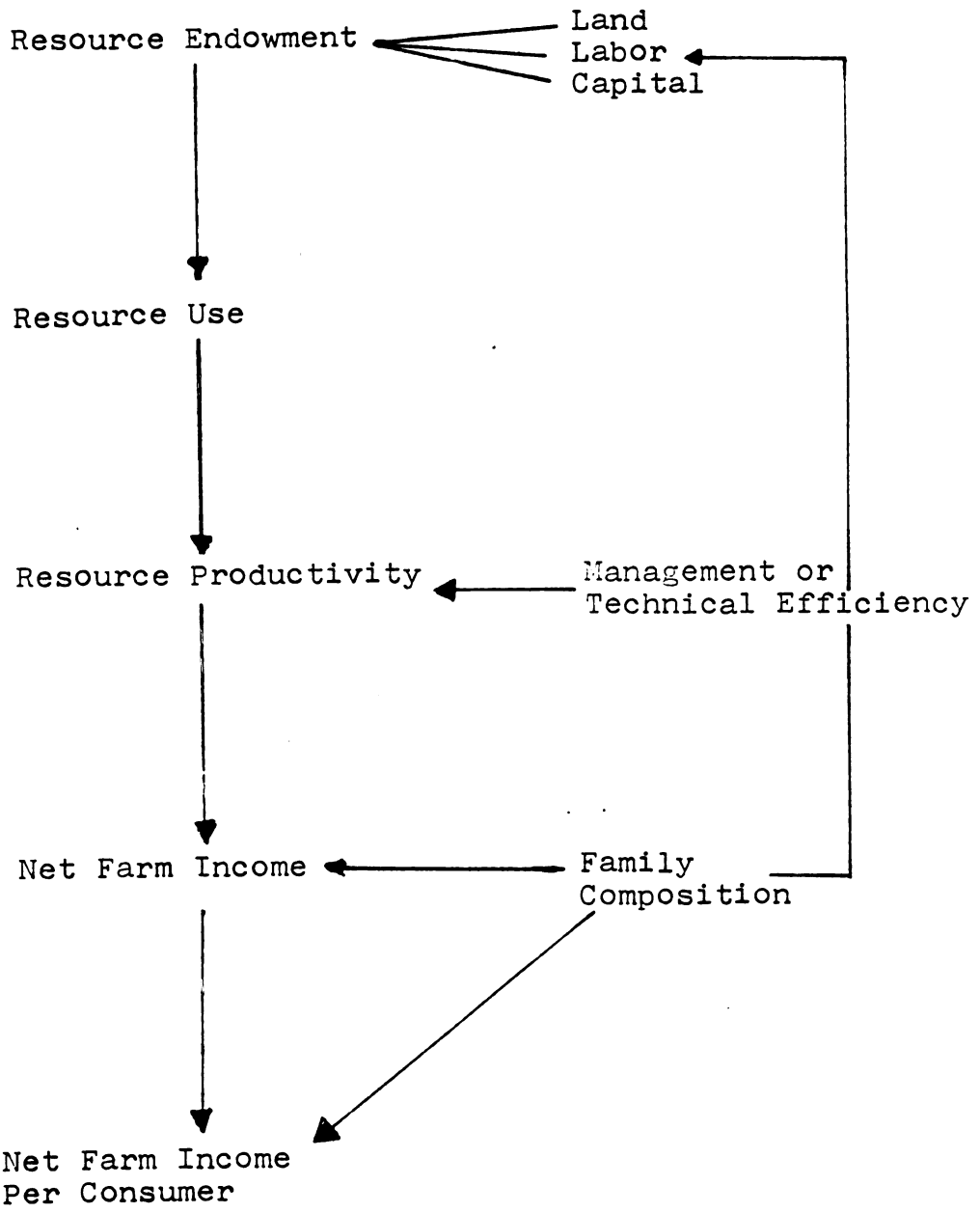

Figure 2.1 Determinants of net farm income per consumer

of family composition, resource endowment, resource use and resource productivity.

1. Resource Endowment

Resource endowment include the stock of land and capital and the available household labor force. A close relationship between income status and land was found by Essang, Hill and Matlon and between income and work force by Hill. Under certeris paribus assumptions if both labor and capital are not limiting it would be expected that the greater the size of land holding the greater the income generated. The total number of workers potentially able to work is determined by the size and age/sex composition of the household. The number of workers would be expected to determine how much acreage a household could endeavor to cultivate in a situation of surplus land and limited off-farm employment opportunities. Under the traditional technology in which hoes and cutlasses are the major tools and baskets and calabashes are the major equipment, a close relationship cannot be expected between farm income and capital stock per worker. However, operating capital might be closely related to income if efficiently used on seeds, fertilizer and hired labor. Since operating capital is directly related to savings it follows that the previous period's income would be a critical factor determining current income levels.

2. Resource Use

The total quantity of any factor available for use determines, in part, how much can be potentially employed in the production process, but the quantity actually employed will be more closely related to realized income. Thus, the total man-hours input may be an important determinant of both farm and non-farm income. Given the available work force and complementary inputs, how hard each worker labors (man-hours per worker) is a result of three variables: output per man-hour, the disutility of labor, and the utility of income. These, of course, are determined by a range of factors including the worker's income-leisure utility function, age, health status, resource quality, etc.

3. Resource Productivity

Hill contended that the higher income groups were more competent farm managers generating higher marginal and average returns to labor. Matlon also found a strong positive relationship between income status and factor productivity. Differences in income per consumer, our welfare measure, could be widened given available resources and use levels if there is systematic variation in factor productivity among households.

Factors which affect productivity may vary among households and for individual households over time.

Illness generally not only leads to loss of working days but it can lower the efficiency of the worker. Both the loss in working days and efficiency can lead to untimely operations which can result in reduced yields. Differences in crop mix might result in lower or greater output per acre or per man-hour. The levels of use of inputs can also result in productivity differences. The skill of combining the inputs and conducting timely and appropriate operations are also important factors. Finally other factor quality differences such as soil and climiate can affect productivity.

4. Family Composition

Family composition in the form of number of consumer units sharing the net farm income determine the size of the net farm income per consumer. The consumer-to-worker ratio, would be expected to influence the income per consumer in an inverse direction through its influence on the cultivated land per consumer ratio.

Interhousehold differences in the above sets of factors are hypothesized to be the major contributors of income inequality. Through tabular presentation and discussion we identify the relative importance of each of these sets within each year's data. Through this examination, it is hoped that an understanding is gained as to the basic causes of poverty.

Similarly, the movement of households between strata during the two time periods will be examined within the same framework to determine the most important causes of relative income changes over time.

The present chapter was concerned with the review of literature and the conceptual framework for this study. References will be made in later chapters to the various aspects of the framework presented here. The next chapter contains the description of the study area, sampling procedure and data collection methodology.

CHAPTER III

THE STUDY AREA, SAMPLING PROCEDURE AND DATA COLLECTION METHODOLOGY

A. Description of Omu-Aran Environment[1]

The middle-belt of Nigeria lies between the Sahel savannah in the north and the rain forest zone in the south. The middle-belt is characterized by large expanse of uncultivated arable land drained by the Niger and Benue rivers. According to the FAO Nigerian Agricultural Development Plan 1965-1980 (16), the middle-belt has perhaps the greatest agricultural potential of any region in Nigeria. Kwara State occupied about a third of this high potential agricultural region. Omu-Aran, the study area, is located in the south-central portion of Kwara State. The two villages of Ipetu and Odo-Ore were selected for intensive study within the Omu-Aran area. The criteria for village selection and village characteristics will be discussed later.

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[1]Most of the material in this section has been taken from description of the land resources area of the Northern State of Nigeria by K. Klinkenberg, Head of Soil Survey Section, Institute for Agriculturan Research, Ahmadu Bello University, Zaria, Nigeria. (Unpublished work).

1. Climate and Vegetation

The climate of Omu-Aran can be classified as sub-humid with a severe rainfall deficit from November to March, with rainfall concentrated in the April to October period. Rainfall is bimodal with an average annual level of about 62 inches.[1] The first peak occurs in May-July and the second higher peak in September-October. The seasonal rainfall distribution is shown in Figure 3.1.

Omu-Aran is situated in the Southern Guinea Savannah zone. While this area was originally forested, most large trees have been felled leaving only scattered patches of forest. The area is now a derived savannah zone covered by grasses such as Andropogon and Hyparrhenia species. There is a wide range of crops in the area the most important of which are yams, maize, guinea corn, cowpeas, cassava, vegetables and cotton, groundnuts and cocoa, bananas, plantains and cocoyam.

2. Geology

Omu-Aran and the surrounding area is underlain by a mixture of rocks, of which gneisses are the most widespread. The area is dominated by plains separated

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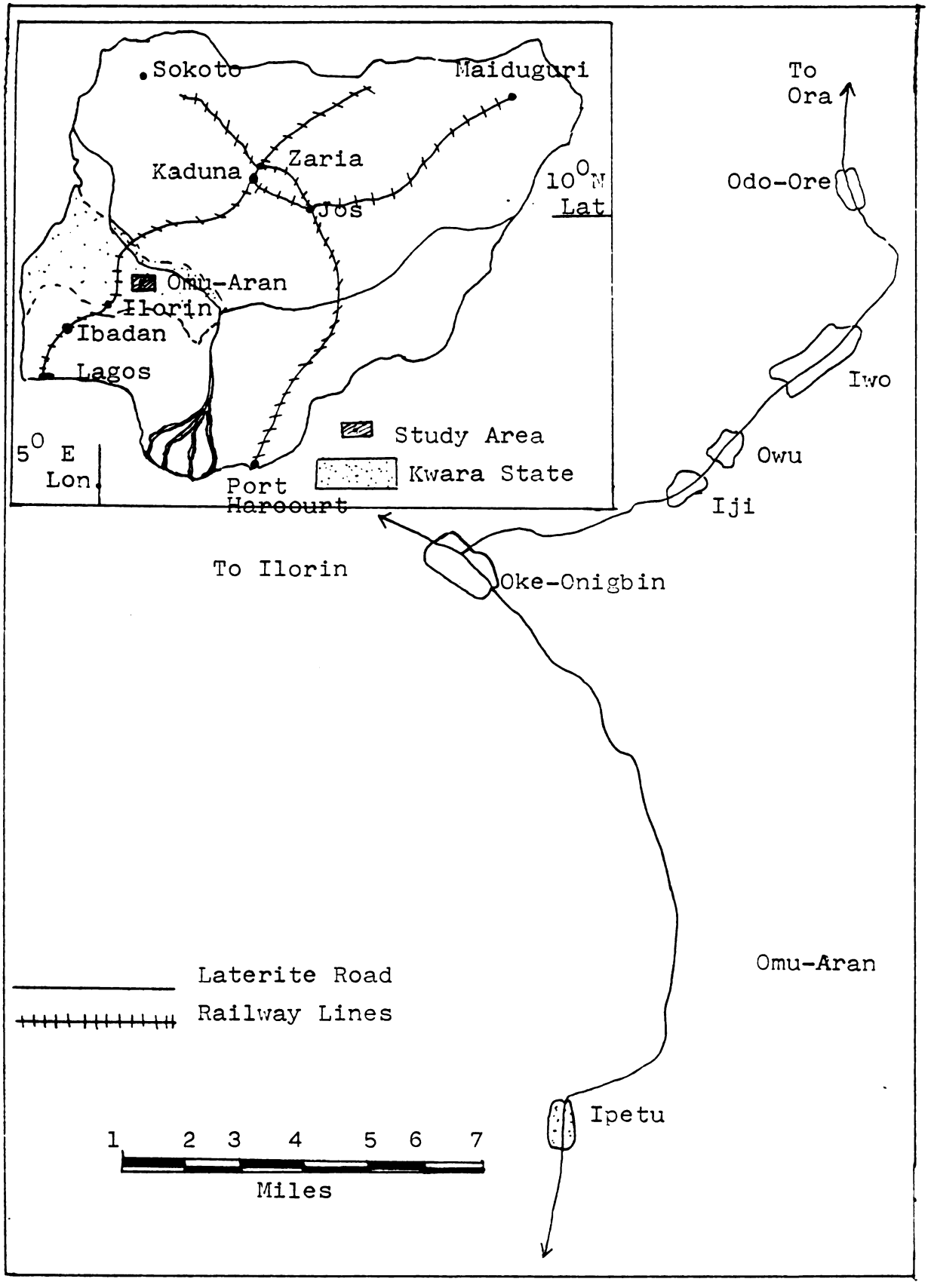
[1]The 62 inches annual rainfall reported was a 8-years' average figure obtained from the scanty rainfall records of the Ministry of Natural Resources Igbomina/Ekiti Division Omu-Aran and Omu-Aran Women Teachers' College.



Map 3-1 Detailed map of the two study villages in Kwara State, with inset of Nigeria

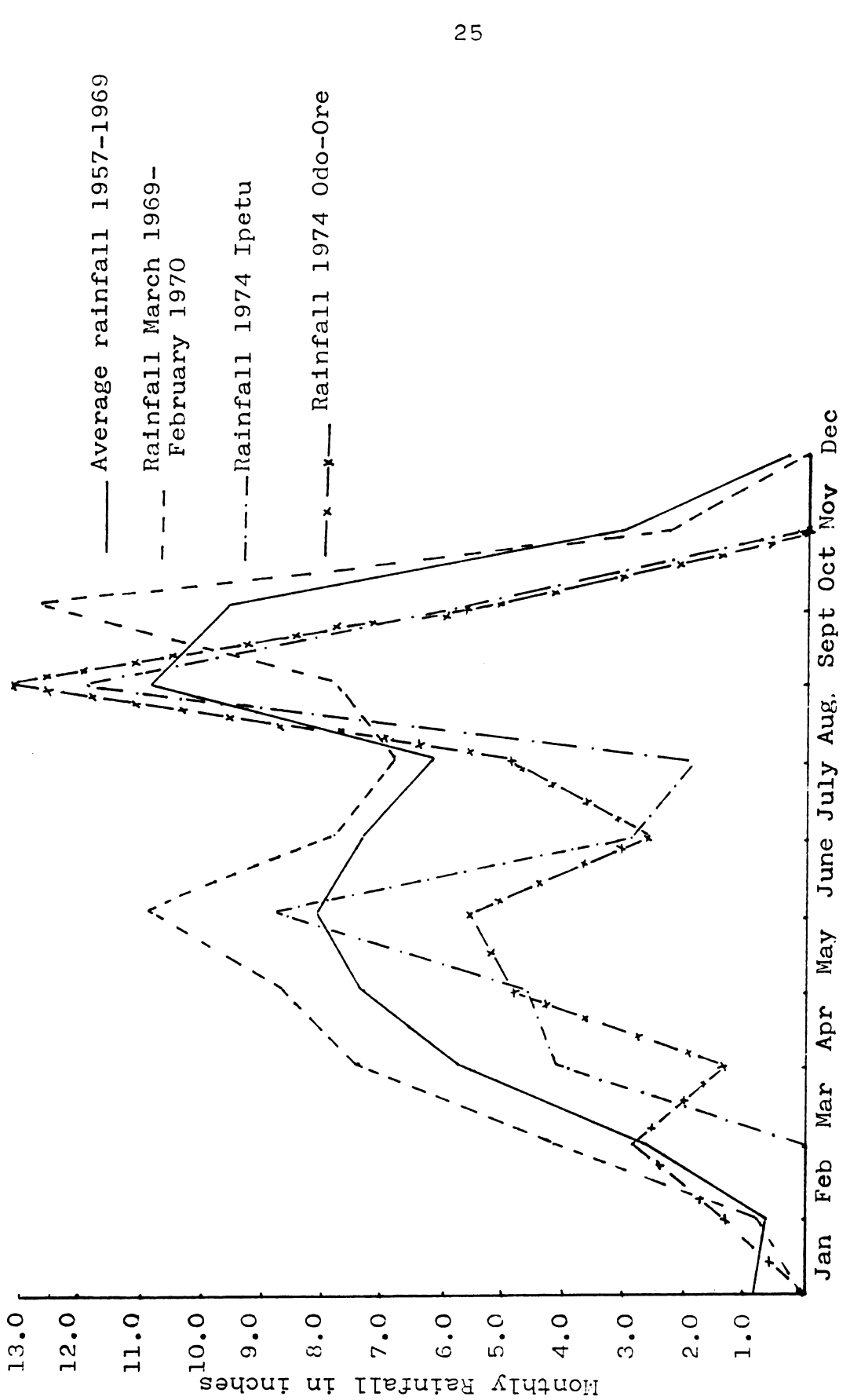


Figure 3.1 Average monthly rainfall distribution, Omu-Aran 1957-1974

Source: See Table **A-5.**

by groups of hills and steep quartzite ridges. Granite hills located near Osi rise to an altitude of 1300-1800 feet. Osi is located about 12 miles south-east of Omu-Aran.

3. Soils

Inselbergs and hill masses with shallow soils and rock outcrops which limit cultivated area are common. The upper slopes of the plains have 0.50 to 1.5 meters deep sandy clay loams. Locally, under high rainfall or over schists, very deeply weathered profiles may be found. Nearly all soils contain iron concretions, locally hardened to form an iron pan. The soils are classified as Ferrisols and generally have a moderately low cation exchange capacity and a low base saturation. Soils on amphiholite tend to be richer in plant nutrients. The soils are perhaps most deficient in nitrogen followed by phosphorus and potash.

4. Human and Political

Omu-Aran inhibitants are Yoruba speaking. With the creation of states and subsequent creation of administrative division in Kwara State, the area occupied by Igbomina dialect and Ekiti dialect speakers were combined into one division called Igbomina Ekiti Division. Being one of the oldest of the major towns Omu-Aran became the headquarters of the division in 1968.

Both study villages possessed a chieftancy institutional arrangement which means that political power in the village lay mostly in the hands of the chief and his subjects. A number of secondary officials assist the chief in carrying out his responsibilities. An Elemesho acts like the public relations officer and is next in importance to the chief. The Oluode, as the head of the hunters and of youth, assumes the responsibility of arranging the time and place for the hunting season. He is also responsible for gathering the youth to work on the farm of the chief whenever the need arises. In modern times there is also a councillor from each village who accompanies the chief to divisional headquarter meetings. He is paid a small fee for his services and is considered the political leader of the village.

There is no landless class because every male and female member of the villages possesses the right to crop the land. The only exception is forest land for which permission is needed from the clan head owning jurisdiction over it. The land tenure system is purely traditional. This is to imply that there are no sales of land and most of the land is said to be obtained through allocation and inheritance. The allocation of land is done by the chief and his subjects but each family can pass

down to future generations whatever land has been allocated to it. There is no evidence to suggest that the political and social institutional powers have been used to favor particular classes of farmers. Occasionally, a farmer can borrow a portion of a land from another friend if it is not under use. For such transfers there was no record of any payment being made to the owner.

The market system is also largely traditional being held once in five days. Traders come from Omu-Aran to sell manufactured articles including clothes, lanterns and shoes while some come to purchase farm products for resale at Omu-Aran markets. Some petty traders also live in Ipetu and go to Omu-Aran or Ilorin or Oshogbo to purchase their retailing wares. Some farmers carry their farm products by head load or lorry for sale in Omu-Aran. Similar transactions take place between Ora and Odo-Ore. With less commerical vehicles plying between the two villages of Ora and Odo-Ore, most of the goods are moved through head loads. The markets are held at five day intervals in both Omu-Aran and Ora, but Omu-Aran is the larger market.

B. Choice of Villages

Two villages were studied during the 1969/70 and 1974/75 cropping seasons. The following criteria were taken into account in the final selection of these villages:

1. Experience has shown that the village head is most influential in determining the cooperativeness and attitude of the village toward the survey. Great care was therefore taken to find villages whose heads would be sympathetic towards the aim of the project.
2. It was intended that aerial photographs of the area of the study would be taken to show clearly all field boundaries. Village areas devoid of steep slopes were selected to avoid the need for corrections for slope distortions in field measurements.
3. Limited time and finance was available for the study. Since a census had to be conducted to establish a sampling frame, villages were chosen which had a population below 1,000 inhabitants.
4. To ensure adequate supervision of the enumerators throughout the year it was considered necessary that even the most isolated village should be accessible, at least by bicycle, during the rainy season.
5. The chosen villages should differ in ease of communication from Omu-Aran. This selection was based on the concept that important differences between villages may arise as a result of differences in market access.
6. Villages were selected to represent two general ecological types. The villages further south and

at the border with the Western States of Nigeria are more heavily forested and tend to be wetter. To the north, villages are somewhat drier and more representative of the derived savannah area. A village was chosen to represent each ecological zone. The two villages were about 24 miles apart with one situated in each climatic zone.

The two villages selected were as follows:

i) Ipetu was located in Omu-Aran District, four miles southwest of Omu-Aran and situated on one of the best roads in Kwara State linking Kwara to the Western State. The total population was 768 in 1969 and 864 in 1974. Ipetu represents the forest type village thus rainfall would be expected to be higher in Ipetu. Although rainfall estimates were not available in in 1969 due to lack of rain guages, rainfall in Ipetu during 1974 was 40 inches in 1974. This figure was only 62 percent of the 8 years' average reported above. Moreover it was also unexpectedly lower than in the other village. It should also be noted that rainfall was less well distributed in 1974 compared with the other village. A lower September peak was obtained (Figure 3.1) and there were no rains at all in

February and March as in Odo-Ore, the other village.

ii) Odo-Ore is situated in former Ishin District about twenty miles north-west of Omu-Aran town. Situated ten miles off of the main Ilorin[1]-Omu-Aran interstate road it is more isolated than Ipetu. It is, however, motorable throughout the rainy season. The total population was 593 in 1969 and 608 in 1974. Odo-Ore represents the purely derived savannah type.

The survey rainfall estimates in Odo-Ore in 1974 was 43 inches, below the 8 years' average obtained from other sources. Odo-Ore is about nine miles away from Ora, the market outlet for Odo-Ore, while Omu-Aran only four miles away is the village's major market outlet. Thus Odo-Ore has more difficult access to the large external markets.

In 1969 the cultivated land per resident ratio was 0.45 acres at Ipetu, while Odo-Ore had 0.33 acres per resident. There was no data on the total acreage cropped by

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[1]Ilorin is the Headquarters for Kwara State and about fifty miles away from Omu-Aran.

each village in 1974 hence the total land per resident ratio could not be calculated. Based on the 1969 figures, however, it appears that population pressure on land is more acute at Odo-Ore than Ipetu despite its greater distance away from the urban influence. The reason for this situation is mostly due to a large portion of Odo-Ore land which is uncultivable due to rock outcrops.

Only minor differences in the types of crops grown characterized the two villages with cocoa, cocoyams, plantains and kola nuts grown at Ipetu, the forest land but not at Odo-Ore the drier village.

Neither Ipetu nor Odo-Ore have been importantly influenced by the presence of an extension worker. The extension agent responsible for the area was stationed at Iwo and was expected to serve Odo-Ore and about fourteen other surrounding villages. Due to lack of transportation and an inadequate supply of extension inputs to Iwo itself, the influence of the extension agent was not felt at all in Odo-Ore. Omu-Aran, being about 4 miles from Ipetu, was the base for the extension agent to serve Ipetu.

For reasons similar for Odo-Ore, Ipetu was not importantly influenced by the extension worker.

C. Population and Land

A detailed enumeration of the population in the two villages was conducted each year to provide frames of farmers in each village from which samples could be drawn. Tables 3.1 and 3.2 show age distribution of the population in both villages and for both years. For both villages more than 45 percent of the population was less than 20 years of age and nearly 30 percent were less than 10. These figures are similar to those obtained by J.C. Gibbs in his Bauchi study (25).

The average number of adult male equivalent worker units[1] was about 6 per household. Although the average number of residents per family was about 9 in 1969 and about 7 in 1974[2], this did not necessarily reflect a reduction in family size between the two years of study. Rather the differences could have arisen from a number of problems which arose in the data collection procedure:

1. There were some definitional problems encountered during the census. In 1969 the farmers did not

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[1]Worker units were obtained by assigning weights on the basis of age/sex to the number of residents found in each household. The coefficients applied to estimate the worker equivalent units are shown in Table 3.3.

[2]This is shown in Table 5.1 which contains detailed household size and composition treated in Chapter V.

Table 3.1 Age distribution of total population, Ipetu and Odo-Ore, 1969

Village	Age (yrs)	Number			Percentage of Total	Cumulative Percentage	Male/ Female Ratio
		Male	Female	Total			
Ipetu	0-9	111	126	237	30.86	30.86	0.88
	10-19	55	84	139	18.10	48.96	0.65
	20-29	36	95	131	17.06	66.02	0.38
	30-39	39	67	106	13.80	79.82	0.58
	40-49	21	40	61	7.94	87.76	0.53
	50-59	18	27	45	5.85	93.26	0.67
	60 or more	25	24	49	6.38	100.00	1.04
	All ages	305	463	768	100.00	-	0.66
Odo-Ore	0-9	62	85	147	24.79	24.79	0.73
	10-19	44	54	98	16.53	41.32	0.81
	20-29	36	97	133	22.43	63.75	0.37
	30-39	26	49	75	12.65	76.40	0.53
	40-49	25	37	62	10.45	86.85	0.68
	50-59	19	15	34	5.73	92.58	1.27
	60 or more	19	25	44	7.42	100.00	0.76
	All ages	231	362	593	100.00	-	0.64

Source: Survey Data

Table 3.2 Age distribution of total Population, Ipetu and Odo-Ore, 1974

Village	Age (yrs)	Number			Percentage of Total	Cumulative Percentage	Male/ Female Ratio
		Male	Female	Total			
Ipetu	0-9	122	121	243	28.72	28.72	0.99
	10-19	85	99	184	21.75	50.47	0.86
	20-29	49	92	141	16.67	67.14	0.53
	30-39	47	69	116	13.71	80.85	0.68
	40-49	29	27	56	6.62	87.47	1.07
	50-59	15	17	32	3.78	91.25	0.88
	60 or more	39	35	74	8.75	100.00	1.11
	All ages	386	460	846	100.00	-	0.84
Odo-Ore	0-9	84	94	178	29.27	29.27	0.89
	10-19	35	47	82	13.49	42.76	0.78
	20-29	31	68	99	16.28	59.04	0.46
	30-39	29	54	83	13.65	72.69	0.54
	40-49	22	35	57	9.38	82.07	0.63
	50-59	11	25	36	5.92	87.99	0.44
	60 or more	31	42	73	12.01	100.00	0.74
	All ages	243	365	608	100.00	-	0.67

Source: Survey Data

Table 3.3 Coefficients applied to estimate the number of man-equivalent worker units per household

	Age		
	0-6	7-14	15+
Male	0	0.50	1.00
Female	0	0.50	0.75

seem to understand the precise definition of the family as it was explained to them. A family was defined as consisting of the people who were eating and working together. Some households interpreted this to mean people who were living together under the same roof even though they could have consisted of more than one family given our definition.

2. Some of the villagers were skeptical about the purposes and intent of the study in the first year. Fear was exercised by some that their income taxes would be increased if the true number of families in their compound was revealed.
3. At the end of the 1969 survey year each participating household head was given gifts in appreciation for his participation. Compounds which could have been reported to consist of more than one family received less total gifts than would have been the case. Therefore, in 1974 it appeared that more families were willing to be counted separately both because of the gifts and because the 1969 survey had no effect on the income tax.

It is important to note that this apparent discrepancy in the family size definition could affect the inter-year comparison of incomes particularly the income per consumer figure, our welfare measure. It would also affect the comparison of household incomes.

The average land farmed per household in 1969 was 4.69 acres in Ipetu and 3.41 acres in Odo-Ore. In 1974, however, Ipetu had 3.70 acres and Odo-Ore had 4.36 acres per household. In both villages substantial acreage of upland fields remained in bush fallow.

This meant that the farmers could continue to practice shifting cultivation. However, there was little that could be termed virgin land and the fertility of the soil was not importantly improved before the farmers returned to the fallow land. The average fallow period was only about five years with no appreciable difference between villages. There were still some virgin forest lands at Ipetu apart from the upland fields. However, the clans who hold the right to them would not allow them to be developed without permission.

D. Representativeness of the Village

Given the time, staff and financial constraints of this project, it was not possible to choose more than two villages. With more villages in the study, the proposed mapping of the fields in the villages would not have been practicable. As a result, this study could be criticized that the selected villages were not representative of the study area. The following observations may partially answer this criticism:

1. There was no indication that the villages were in any way unique compared with other villages in the same general area. Marked differences were of course expected between the study villages due to the criteria adopted in their selection.
2. Capital is an insignificant input in traditional farming. Mixed farming or farmers using oxen in their farming operations is virtually absent throughout Kwara State. The possibilities of major variation in production technology are therefore limited thereby simplifying the selection of representative villages.
3. Demographic factors, land pressure and agro-climatic conditions within the same locality are fairly uniform, thus little variation can be expected between villages with respect to products produced.

E. Sampling Procedure

Following the enumeration of the entire population of each village the list of households was used as the sampling frame. A simple random sample of about 30 households was drawn in each village each year. This resulted in a high sampling percentage of 39 for Ipetu and 70 for Odo-Ore. By deliberate sampling design 20 of the households which were in the sample in 1969 were also in the sample in 1974 in Ipetu. Similarly, 22 of the Odo-Ore households were in the sample for both years of the study.

F. Data Collection

The data collected from the households in the sample can be divided into two classes on the basis of the frequency of collection:

1. Class 1

These were data collected twice weekly throughout each of the survey years. Data were collected by day and by field or crop combination on:

a. Farm labor

i. Household: the number of household members who worked on a specific day, the class of the workers which was determined by age and sex, the type of work they did (planting, weeding, etc.) and the time they worked.

ii. Non-family: the same data as for (i) plus information on where they lived, type of labor, and wages paid.

iii. Work on farms of other households: number, age/sex category and time worked, name of person for whom the work was done and wages received.

b. Seeds and cuttings: type, source, cost and amount used (in local units of measure) on a particular field.

c. Output: total number of units harvested by field and time of removal, condition of crop (whether threshed or not), weights of five units of the

crop selected at random and, where there were yield plots, the weight of the crop harvested from those plots. The final yield estimate used in the analysis was in most coses the yield plot estimate.

Additional data were collected by day on:

d. Other activities of household members. Work on crafts, trading and services: number, age/sex category and time worked with details of type of work.

e. Sales and marketing costs of farm products: type, condition, and number of units of the product sold, place of sale, revenue received, mode and cost of transport to the place of sale.

2. Class 2

These were data collected at less frequent intervals during each survey year.

a. Farm inventory

i. Livestock: numbers, type, ages and sale value.

ii. Tools: numbers, type, ages and sale value.

iii. Building: numbers, ages and cost of replacement.

b. Retail prices in local measures by crop and month in the local markets.

c. Crop rotation patterns by field during the three years before the survey year.

d. Land tenure patterns of fields, method and cost of acquisition, and the number of years each field had been under the control of the current cultivator.

e. Crop mixtures by field.

f. Conversion ratios: weight in pounds of local measures of crops, e.g. perese of guinea corn, basket of yams, etc.

g. Threshing and shelling percentages of all crops.

In 1969 all the data enumerated above were collected. However, in 1974 time devoted to occupations other than farming was not collected. The result of this omission is that off-farm income cannot be estimated for 1974. Thus, in the subsequent analysis, we can examine only net farm income in 1974 but can refer to both farm and total household incomes in 1969.

Aerial photographs of Ipetu and Odo-Ore were taken in January 1969. The boundaries of the fields farmed by each individual were delineated on enlarged aerial photographs as a result of visits to each field. In addition a check survey was carried out later in the year on all fields farmed by individuals in the sample. From this information it was possible to construct farm maps. By use of planimeter the sizes of the individual fields were then measured.

In 1974 no aerial photographs were taken and hence farm maps were not constructed. Instead indirect field measurements were obtained. A number of fields were randomly

selected in each village and the number of heaps[1] were counted. An angle finder and chain was used to measure the selected fields. Regression analysis was then applied to derive coefficients relating the number of heaps to field area. During the field identification trips after the crops were planted, the number of heaps in all fields were counted. Their acreage were then determined by applying the coefficient obtained in the regression analysis. This method was found to be substantially cheaper than the aerial photograph method and nearly as accurate.

The present chapter has been concerned with the description of the study area, the sampling procedure and the data collection methodology. The next chapter deals with the levels, distribution and sources of income. The definition of income, the major criterion for stratification, is given and various methods of evaluating the distribution of income are presented.

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[1] A heap is a collection of the soil into mounds in rows such as to leave furrows between which act as spaces between the crops.

CHAPTER IV

LEVELS, DISTRIBUTION AND SOURCES OF INCOME

This chapter contains the definition of income which serves as a major criterion for the stratification of sampled households in subsequent analysis. Mean levels of income are presented for each village and various methods of evaluating the distribution of income are discussed and applied to the survey data.

A. The Definition of Income

1. Net Household Income

For the purpose of this study household income has been defined as the return to family labor, management and land; that is, as the total value of production from crops produced on the household farm, less fixed and variable costs incurred in the farming operation, plus net income derived from sources other than work on the family farm (see Table 4.1). It was not possible to estimate income from livestock due to the absence of accurate purchase and sales records. However, since the livestock contribution to income is generally negligible among the Yoruba tribe in this area, this does not pose an important

Table 4.1 Components of net household income

Components	Operation
Farm Enterprises	
1. Value of all crops harvested	+
2. Fixed costs in farming operation:[1]	
Depreciation on tools	-
Depreciation on equipment	-
Depreciation on storage facility and shelter	-
3. Variable costs in farming operation:	
Total value of seed planted	-
Total value of inorganic fertilizer used	-
Total cost of non-family labour used	-
Total cost incurred in transporting input and output to and from the farm	-
Non-Farm Enterprises	
4. Estimated net income derived from all off-farm occupations.[2]	+

[1] A straight line depreciation method was used employing different lengths of life for different tools and equipment.

[2] Off-farm occupations includes hunting, gathering, local manufacturing (e.g. blacksmith) trading, (e.g. cooked food) and services (e.g. plaiting hair).

problem[1]. No value has been placed on crop by-products (e.g. stalks of groundnuts and cowpea haulms, etc.) and therefore to that extent gross income from crop production is underestimated. Fixed costs include only the depreciation of tools, equipment and on-farm shelter since no costs were incurred for obtaining usufructuary rights to land. Variable costs included the value of seed planted, fertilizers applied, and the cash and in-kind payments to non-family labor hired by the family for use on the family farm, as well as for transporting farm inputs and farm products.

Average daily wage rates for all major off-farm occupations were estimated by the researcher in discussion with farmers.[2] The average of the figures obtained from the groups have been used. The rates of pay which were estimated for different occupations are specified in Appendix Table A-3. Estimates of income earned in off-farm occupations in 1969 were obtained by multiplying reported hours worked in each occupation by its respective average hourly returns.

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[1]Livestock income would be important among the Fulani tribe but there were no Fulani in the village samples.

[2]Farmers were gathered together in different working groups and were asked to give estimates of what they thought the daily wage rates were for the various off-farm activities.

2. Gross Farm Income

Gross Farm Income is defined as the total value of production from crops. It is item (1) in Table 4.1.

3. Net Farm Income

Net Farm Income is defined as the gross farm income less fixed and variable costs incurred in farming operations. It is item (1) less items (2) and (3) in Table 4.1.

B. Mean Incomes by Village and Household Sector

The distribution of personal income can be viewed at several levels of aggregation. Total household income alone does not indicate the relative welfare position of members since the latter would differ among households with the same level of total household income but which vary in family size. A welfare measure which is sometimes used is income per capita. However, to the extent that household composition varies in a manner correlated with household consumption requirements, the per capita measure also fails to reflect accurately relative welfare status.[1] To correct for differences in household composition weights were assigned to the number of residents in

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[1]Welfare is being narrowly defined only to reflect income (hence potential consumpton) generated during the year of observation.

each household to convert them into male adult aquivalent consumer units[1] (38, p.61). The weights assigned are shown in Table 4.2. Income per capita and per consumer was subsequently obtained by dividing total net farm income or net household income by the number of residents and consumer units, respectively.

Table 4.2 Coefficients applied to estimate the number of man-equivalent consumer units per household

	Age		
	0-6	7-14	15+
Male	0.25	0.65	1
Female	0.25	0.65	0.75

Table 4.3 shows the mean net incomes per household, per capita and per consumer for each village. Only 1969 is shown because off-farm income data was not obtained in 1974. The results show an average of ₦337 net household income for 1969. To place these results in perspective, Norman (42, p.107) found net household income to be ₦206 in his 1967/68 study while Matlon (38, p.61) found ₦350 in his 1974/75 Kano study. Table 4.4 compares the three studies in terms of income per household and income per capita and presents off-farm income as a

[1]The weights represent a close approximation of caloric requirement ratios.

Table 4.3 Mean net incomes by village and household, 1969 and 1974 (in naira).

		Per Household			Per Capita[a]			Per Consumer[b]		
Year	Village	Farm	Off-Farm[c]	Total	Farm	Off-Farm	Total	Farm	Off-Farm	Total
1969	Ipetu	319.50	77.00 (19.4%)	396.50	42.68	8.57	51.25	61.67	12.58	74.25
	Odo-Ore	222.17	46.59 (17.3%)	268.76	31.37	6.55	37.92	40.00	8.47	48.47
	All	274.44	62.91 (18.6%)	337.35	37.44	7.64	45.08	51.64	10.68	62.32
1974	Ipetu	462.90	--	--	53.48	--	--	78.91	--	--
	Odo-Ore	463.52	--	--	70.52	--	--	97.37	--	--
	All	463.19	--	--	61.53	--	--	87.65	--	--
1974[d]	Ipetu	203.68	--	--	23.53	--	--	34.72	--	--
	Odo-Ore	203.95	--	--	31.03	--	--	42.84	--	--
	All	203.80	--	--	27.07	--	--	38.57	--	--
1974[e]	Ipetu	238.61	--	--	27.81	--	--	41.03	--	--
	Odo-Ore	243.96	--	--	37.38	--	--	51.61	--	--
	All	241.24	--	--	32.04	--	--	45.65	--	--

Table 4.3 (cont'd)

[a]Incomes per capita are obtained by dividing aggregate net incomes by total number of persons in each household.

[b]Incomes per consumer are obtained by dividing aggregate net incomes by consumer man-equivalents. Consumer man-equivalents were computed by applying weights to each person on the basis of the person's age and sex. The weights, representing approximate caloric requirements, are contained in Table 4.2.

[c]In parenthesis is included the ratio of off-farm income to total income.

[d]Income figures have been adjusted to 1969 levels to account for inflation using Ilorin consumer price index which was 132 in 1969 and 302 in 1974 with 1957 as base year.

[e]Income figures have been adjusted to 1969 levels to account for inflation using the village weighted market prices deflator of 194 for Ipetu and 190 for Odo-Ore with 1969 of base year. See Tables A-1 and A-2 for calculations of the deflator.

Source: Survey Data

Table 4.4 A comparison of mean incomes per capita and per household and off-farm income as percent of household income obtained in three Nigerian surveys.

	Mean Household Income Per Capita (Naira)	Mean Household Income (Naira)	Off-Farm Income Percent of House Income	Place and Year of Study
Norman[1]	28 (23)[a]	206 (169)[a]	22%	Zaria 1967
Matlon[2]	52 (19)[b]	350 (129)[b]	28%	Kano 1974
Olukosi[3]	45 (34)[c]	337 (255)[c]	19%	Kwara 1969

Figures in bracket are deflated values. We are reducing each figure to 1957 constant prices using the urban consumer price index.

[a]Consumer Price Index at Kaduna was 122 in 1967 with 1957 = 100 (See Table A-4)

[b]Consumer Price Index at Kaduna was 271 in 1974 with 1957 = 100 (See Table A-4)

[c]Consumer Price Index at Ilorin was 132 in 1969 with 1957 = 100 (See Table A-4)

Sources: [1]Norman, D.W., "An Economic Survey of Three Villages in Zarior Province: Input-Output Study," Vol. 2. Samaru Misc. Paper 38, 1972.

[2]Matlon, P.J., "The Size Distribution, Structure, and Determinants of Personal Income Among Farmers in the North of Nigeria," Ph.D. Thesis, Cornell University, 1977

[3]Survey Data

percent of net household income. In Norman's study off-farm income was about 22 percent of net household income while Matlon estimated the proportion to be 28 percent. The present study found 19 percent. Net household incomes per capita were ₦28 and ₦52 for Norman and Matlon, respectively, while the present study observed ₦45. It is likely that differences shown in these figures can be attributed largely to differences in agroclimatic conditions and to price changes.

Table 4.3 shows that in 1969 Ipetu, the forest-type village located closer to the major market, had substantially higher figures in all nominal income measures than did Odo-Ore, the more isolated village located in the savannah zone. Ipetu also had a slightly higher figure of off-farm income both as a percent of total net household income and in absolute terms. This might be due to proximity to Omu-Aran, the large market center which permitted greater access to off-farm opportunities. In 1974 there was no difference between net farm incomes of the two villages, however, Odo-Ore had a higher net farm income per capita and per consumer. The reason for this reversed situation between years is due in part to better rainfall distribution in Odo-Ore in 1974.[1]

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[1]Figure 3.1 and Table A-5 show that Ipetu had no rainfall recorded in February and March unlike Odo-Ore which also had a higher September peak and higher rainfall in August.

In the whole of Kwara State, Ilorin is the only town where the Federal Office of Statistics gather price data to estimate consumer price indices. In 1969 the consumer price index for all foods was 132 and in 1974 it was 302, with 1957 as the base year (17, p.116). If 1969 is used as base year (i.e. 1969 = 100), the 1974 price index was approximately 229. This means that between 1969 and 1974 in Ilorin prices of food have increased by 129 percent. However, since Omu-Aran is less urbanized than Ilorin, it would be expected to have a less dramatic increase in relative prices between 1969 and 1974. This is because Ilorin as the State headquarters would be expected to experience a faster population growth rate which would result in increased demand for food products. At a nearly constant level of food supply, retail prices of food crops would be expected to rise. For this reason a second price index was calculated from the survey price data. For crops which were grown in each of the two years and for which price information was obtained, the prices in each year were weighted by multiplying the price by the value of each crop as a percentage of total value of all crops grown in **all households** during the year of study. These weighted values were summed for each year and the difference between them is expressed as a percentage of that of 1969 (the base year). Using this method the percentage increase in price between 1969 and 1974 was

94 at Ipetu (Omu-Aran market) and 90 at Odo-Ore (Ora market).[1] The two price indices were used to deflate 1974 income figures shown in Table 4.3.

The average net farm income per household in 1969 for both villages was ₦274 increasing to ₦463 in 1974. In nominal terms this gives a 69 percent increase over 1969. But in real terms (after deflating) the household incomes in fact decreased in 1974 using both price indices. Considering each village separately, however, average incomes in Odo-Ore increased between 1969 and 1974 using the weighted market price deflator. This increase in Odo-Ore is observed for income per household, per capita and per consumer. In short, while real incomes decreased in Ipetu during the period, a real increase in incomes was experienced in Odo-Ore.

C. Size Distribution

It was stated in the first chapter that the distributional impacts of alternative policies in developing countries is receiving greater attention. But since many types of distributions can occur substantial measurement problems

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[1] Appendix Table A - 3 shows that in 1969 prices were higher in Omu-Aran market for 6 out of 9 major crops. On average, prices in Omu-Aran were 34 percent higher than Ora market. In 1974 prices were higher in Omu-Aran for 8 out of 9 crops with an average difference of about 41 percent. It would be recalled that Ora is the nearer market to Odo-Ore and Ipetu is located more closely to Omu-Aran. These figures also show that intervillage income differences are in part due to prices.

have been encountered in uniquely quantifying changes in distribution. Champernowne (10, pp.787-816), for example, has tested six inequality measures and found that the standard deviation of the log of income and the harmonic mean formulation were the most sensitive for ranking distributions characterized by differences in the extreme low income range. The coefficient of variation was found to be most sensitive in discriminating distributions with extreme inequality in the high income range; while the Gini coefficient was more sensitive to transfers in the middle income range.

Due to the unique sensitivities of these measures, three approaches have been used in this study in order to describe the underlying distributions. Tables 4.5 and 4.6 present the size distribution of net farm income per household, per capita and per consumer unit for each stratum in the total sample for each year and each village. Similar information for net household income is in the Appendix. For the village net incomes per consumer strata, the households in each village sample were arrayed according to the size of their income per consumer. The poorest third was allocated into the low income stratum, the second third into the medium and the richest third into the high income stratum. A similar array and allocation was used for the incomes per capita and per household stratifications. Allocating households into the combined or total sample strata for

Table 4.5 Average and cumulative income, number of residents, and consumer units by net farm income strata, Total Sample, 1969 and 1974.

Year	Net Farm Income Strata[a]	Ave. net farm income per household (Naira)	Cumulative % of income	Ave. Income per capita (Naira)	Ave. income/consumer (Naira)	Ave.no. persons/household	Cumulative % of persons	Ave.no consumers/household	Cumulative % of consumers	No. of households
1969	Low	95.25	11.6	11.34	15.27	11.55	39.9	8.14	40.6	18
	Med	226.10	39.0	28.80	41.50	11.22	78.7	7.43	77.6	18
	High	501.97	100.00	72.19	98.16	6.17	100.0	4.49	100.0	18
1974	Low	109.30	7.9	22.15	30.68	6.37	28.3	4.41	28.2	19
	Med	368.89	34.4	50.97	69.84	7.74	62.7	5.58	64.0	19
	High	911.39	100.0	111.54	162.45	8.37	100.0	5.62	100.0	19
1974[b]	Low	48.09		9.75	13.50					
	Med	162.31	(Same)	22.43	30.73			(Same)		
	High	401.01		49.08	71.48					
1974[c]	Low	56.92		11.54	15.98					
	Med	192.11	(Same)	26.55	36.37			(Same)		
	High	474.65		58.09	84.60					

Table 4.5 (cont'd)

[a]The assignment of households into income strata was accomplished by arranging the households according to net farm income per consumer and allocating the poorest third of the household to the low stratum, the second third to the medium stratum and the richest third into the high stratum.

[b]Income figures have been adjusted to 1969 levels to account for inflation using Ilorin consumer price index which was 132 in 1969 and 302 in 1974 with 1957 as base year.

[c]Income figures have been adjusted to 1969 levels to account for inflation using the village weighted market prices deflator of 194 for Ipetu and 190 for Odo-Ore with 1969 as base year. See Tables A-1 and A-2 for calculations of the deflator.

Source: Survey Data

Table 4.6 Average and cumulative net farm incomes, number of residents and consumer units by income strata within each village, 1969 and 1974

Year	Village	Stratum	No. of households	Average income per household (Naira)	Cumulative % of income	Average income per capita (Naira)	Average income per consumers (Naira)	Average number of residents	Cumulative % of residents
1969	Ipetu	Low	10	133.23	14.4	13.46	21.14	13.20	44.8
		Med	9	273.36	41.0	33.68	50.48	11.78	80.7
		High	10	547.29	100.0	80.00	112.27	5.70	100.0
	Odo-Ore	Low	9	75.48	12.2	9.50	12.75	12.22	48.7
		Med	7	167.34	33.3	25.31	32.03	9.00	76.6
		High	9	411.51	100.0	57.95	73.47	5.89	100.0
1974	Ipetu	Low	10	121.81	8.8	19.56	46.34	7.30	29.1
		Med	10	366.19	35.1	45.52	60.00	8.10	61.4
		High	10	900.72	100.0	95.36	130.39	9.70	100.0
	Odo-Ore	Low	9	95.41	6.9	25.67	46.07	4.89	25.0
		Medium	9	375.70	33.9	56.13	91.56	7.67	64.2
		High	9	919.44	100.0	129.76	154.49	7.00	100.0

Table 4.6 (cont'd)

	Village	Stratum	No. of household	Average income per household (Naira)	Cumulative % of income	Average income per capita (Naira)	Average income per consumer (Naira)	Average Number of residents	Cumulative % of residents
1974[a]	Ipetu	Low	10	53.60	--	8.61	20.39	--	--
		Med	10	161.12	--	20.03	26.40	--	--
		High	10	396.32	--	41.96	57.37	--	--
	Odo-Ore	Low	9	41.98	--	11.29	20.27	--	--
		Med	9	165.31	--	24.70	40.29	--	--
		High	9	404.55	--	57.09	67.98	--	--
1974[b]	Ipetu	Low	10	63.34	--	10.17	24.10	--	--
		Med	10	190.42	--	23.67	31.20	--	--
		High	10	468.37	--	49.59	67.80	--	--
	Odo-Ore	Low	9	50.57	--	13.61	24.42	--	--
		Med	9	199.12	--	29.75	48.53	--	--
		High	9	487.30	--	60.77	81.88	--	--

[a] 1974 income figures were deflated using Ilorin CPI which was 132 in 1969, 302 in 1974 with 1957 = 100.

[b] 1974 income figures were deflated using the village weighted market prices method which gave an index of 194 for Ipetu and 190 for Odo-Ore with 1969 = 100. See Tables A-1 and A-2 for the calculations

Source: Survey Data

the three income measures was achieved in the same manner. Because of intervillage income differences therefore, it is possible for a household to belong to different strata in the village and total groupings.

Table 4.5 shows that during 1969 the low income group on average earned only ₦11.34 net farm income per capita compared with ₦72.19 for the high income group. The data also showed that during 1969 family size and income per capita varied inversely, with households in the lowest income group composed of about 12 persons per household compared with only 6 among the richest households. In 1974, undeflated net farm income per capita of the poorest third was ₦22.15 compared with ₦111.54 for the richest third. Moreover in contrast to the earlier pattern household size varied directly with income. While the poorest third on average had 6 persons per household, the middle and richest third had 7 and 8 persons, respectively.

For the two village combined sample the real incomes of the lowest and medium income classes did not change appreciably between 1969 and 1974. However, a 20 percent decrease in real per capita incomes was observed for the richest class. Thus, inequality in per capita incomes decreased during the period. For the individual villages, however, the decrease in inequalities arose for different reasons. In Ipetu, for example, the poorest class experienced the smaller decrease in real per

capita incomes, 24 percent compared with 30 and 38 for the medium and high classes respectively. In Odo-Ore, on the other hand, the poorest class had the greatest percentage increase in real incomes, 43 compared with 18 and 5 percent respectively for the medium and high income classes.

The ratio of income per capita between low and high income strata in Ipetu and Odo-Ore was **1:5.9 and 1:6.1** respectively in 1969. It appeared that in 1969, Ipetu with the easier access to the market showed less income inequality than the more isolated Odo-Ore village. In 1974 the ratio of income per capita between low and high income strata in Ipetu was 1:4.9 and 1:5.1 at Odo-Ore.

It would be recalled that the above figures represent only farm incomes. The effect of non-farm incomes on both relative inequality and the absolute income differences between strata can be identified by examining the distribution of total household incomes per capita among strata. This is done in **the Appendix.** The data show that the low income group on average earned ₦17.66 net household income per capita compared to ₦80.87 for the high income group in 1969. The cummulative percentages of incomes and residents of of total sample in 1969 reveal that the poorest third of households (42 percent of the population included in the low stratum) obtained only 19.7 percent of net household income while the richest third of households (21.30

percent of the population included in the high stratum) obtained 41.8 percent.[1] In 1969 the addition of the off-farm income thus increased the share of the poorest third from 11.6 (Table 4.5) for net farm income to 19.7 percent for the net household income (Table A-6). The share of the richest third also decreased from 61 percent (Table 4.5) to 41.8 percent. Thus relative inequality was reduced with the addition of off-farm income, although the absolute income gap widened slightly between strata.

Tables 4.7 and 4.8 present three summary measures of size distribution of net farm income and net household income per household, per capita and per consumer for 1969. The three measures used are:

The Gini coefficient, defined as:

$$(\tfrac{1}{2}\, n^{2} w) \sum_{i=1}^{n} \sum_{j=1}^{n} \left| Y_i - Y_j \right|$$

The coefficient of variation defined as:

$$\frac{V}{u}$$

The Standard Deviation of the Natural Logarithm of income, defined as:

$$\int_{o}^{\bar{y}} \left[\text{Log} \left(\frac{y}{u^*} \right) \right]^2 f(y)\, dy$$

---

[1] The above results fall in line with the figures reported by Matlon. Matlon found that the poorest third of the households earned about 18.6 percent compared with the richest third which earned 46.3 percent.

Where for the three measures:

V = standard deviation of income

u = arithmetic mean of income

u* = harmonic mean of income

y = an income observation

y_i = income of observation i

y_j = income of observation j

$\bar{y}$ = maximum income observed

n = number of individual observations

Two values are given for the coefficient of variation and standard deviation of natural log of income. The first is the absolute value of the coefficient while the figure in parenthesis is a standardized measure such that zero equals perfect equality and a value of 1 equals perfect inequality. The conversion[1] follows after Champernowne (10, pp.787-816). The Gini coefficient is already standardized.

The Gini coefficient for the net household income per capita for the total sample is .3482 in 1969 ranging between .3246 in Ipetu to .3749 in Odo-Ore. In comparison

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[1]The standardized value have been calculated as follows:

1. Coefficient of variation

$$\left(\frac{V}{u}\right)^2 \Big/ \left(\frac{V}{u}\right)^2 + 1$$

2. Standard deviation of natural logarith of income

$$(VLnY)^2 \Big/ (VLnY)^2 + 1$$

where V = standard deviation; u = mean income; Y = income

Table 4.7 Three summary measures of the size distribution of income by household and village, 1969

Income Measure	Village	Gini Coefficient	Coefficient Variation	Standard Deviation of Natural Logarithm of Income
Net Farm Income per Capita	Ipetu	0.3842	0.9146 (0.4555)	0.2599 (0.0633)
	Odo-Ore	0.4257	0.8006 (0.3906)	0.2998 (0.0825)
	All	0.4027	0.8950 (0.4448)	0.2789 (0.0722)
Net Farm Income per Consumer	Ipetu	0.3648	0.7885 (0.3834)	0.2245 (0.0480)
	Odo-Ore	0.4157	0.7853 (0.3815)	0.2617 (0.0641)
	All	0.3951	0.8250 (0.4050)	0.2463 (0.0572)
Net Farm Income per Household	Ipetu	0.3275	0.6219 (0.2789)	0.1289 (0.0163)
	Odo-Ore	0.4185	0.8402 (0.4138)	0.1658 (0.0268)
	All	0.3772	0.7199 (0.3414)	0.1508 (0.0222)
Net House hold Income per Capita	Ipetu	0.3246	0.7793 (0.3778)	0.1865 (0.0336)
	Odo-Ore	0.3749	0.7212 (0.3422)	0.2068 (0.0410)
	All	0.3482	0.7769 (0.3764)	0.1982 (0.0378)
Net House hold Income per Consumer	Ipetu	0.3041	0.6657 (0.3071)	0.1562 (0.0238)
	Odo-Ore	0.3598	0.6998 (0.3287)	0.1798 (0.0313)
	All	0.3390	0.7141 (0.3377)	0.1744 (0.0295)
Net House hold Income per Household	Ipetu	0.2711	0.5083 (0.2053)	0.0900 (0.0010)
	Odo-Ore	0.3541	0.6812 (0.3170)	0.1201 (0.0142)
	All	0.3146	0.5985 (0.2637)	0.1107 (0.0121)

Source: Survey Data

Table 4.8 Three summary measures of the size distribution of income by household and village, 1974

Income Measure	Village	Gini Coefficient	Coefficient Variation	Standard Deviation of Natural Logarithm of Income
Net Farm Income Per Capita	Ipetu	0.3492	0.6769 (0.3142)	0.2127 (0.0433)
	Odo-Ore	0.3609	0.7538 (0.3623)	0.2091 (0.0419)
	All	0.3818	0.7380 (0.3526)	0.2116 (0.0492)
Net Farm Income per Consumer	Ipetu	0.3548	0.6786 (0.3153)	0.1872 (0.0339)
	Odo-Ore	0.3802	0.7731 (0.3741)	0.1958 (0.0369)
	All	0.3879	0.7396 (0.3536)	0.1948 (0.0366)
Net Farm Income per Household	Ipetu	0.3969	0.7831 (0.3881)	0.1599 (0.0249)
	Odo-Ore	0.5456	0.8472 (0.4179)	0.1876 (0.0340)
	All	0.4871	0.8068 (0.3943)	0.1716 (0.0287)

Source: Survey Data

Matlon (38, p.77) reported a Gini coefficient of .2823 for his overall sample and Norman (41) reported .2867 for the Sokoto study, .3501 for Zaria and .3190 for the Bauchi study. Thus income inequality was somewhat greater in the present Kwara State study area.

Comparing Gini ratios calculated for net household income per capita with net farm income per capita in 1969 it is apparent that off-farm income importantly reduced inequality. Thus, for the overall sample, the Gini coefficient for the net household income per capita is .3482 compared with .4027 for the net farm income per capita.

There are also notable differences between the Gini coefficients for the two villages. Ipetu the large village located on a major road and nearest to Omu-Aran consistently showed less inequality than Odo-Ore using the Gini measure. This pattern is apparent for both years and for both farm and household income measures in 1969. There are, however, some differences between years even though the relative village differences remain. Since data on non-farm incomes were not obtained in 1974, however, it is not possible to compare the distribution of total household incomes between villages in the latter year.

Differences in the Gini coefficients calculated for the income per capita, per consumer and per household measures should also be noted. In 1969 the Gini

coefficient for income per capita is greater than that for income per consumer and both are greater than the Gini coefficient for income per household. The conclusion might then be that the income is more equitably distributed among households than among individuals. However, in 1974, the Gini coefficients depict a reverse order. These changes are due in part to the reversed relationship between income per capita and family size between 1969 and 1974. It is recalled that households in the higher income group were on average smaller than lower income households in 1969 but larger in 1974.

Differences in village rankings between the coefficient of variation and the standard deviation of the logarithm of income measures also merit mention. As stated earlier, the coefficient of variation is more sensitive to distributions with inequality in the relative high income range while the standard deviation of the log of income is more sensitive to extreme lower income inequality. From the point of view of net household income per capita and income per consumer, Ipetu during 1969 had greater inequality using the coefficient of variation measure but less inequality using the standard deviation of natural log of income. This shows that the larger village of Ipetu was characterized in 1969 by greater inequality within the high income range, while Odo-Ore displayed greater

inequality attributable to extreme relative inequality in the lower income range. In 1974, however, these patterns reversed with Odo-Ore displaying a relatively greater inequality at high income level and Ipetu displaying a relatively greater inequality at the extreme poverty level. In short, due to interyear variation, it is not possible to characterize either type of inequality as representative of either village. Moreover, due to distinct village distributions, it is not possible to characterize either village as either more or less equitable.

The distribution patterns within each village and for different income measures are presented graphically in Table 4.9 and Figures 4.1 - 4.3 and also in the Appendix, Tables A-10 and A-11 and Figures A-1 - A-6. Both villages display distributions which are negatively skewed to right. As pointed out by Matlon (38, p.73), this is typical of most income distributions and particularly expected in a population where mean earnings do not greatly exceed a minimum subsistence level. The net farm income per capita is more skewed in Ipetu in 1969 than in Odo-Ore. This implies that Ipetu was characterized in 1969 by greater income inequality within the high range in support of the coefficient of variation results. However, it is clear that the patterns changed between years. Note the concentration of a small set of high income households in Odo-Ore

Table 4.9 The percent distribution of households within net farm and net household income per capita, 1969 and 1974.

Income Measure	Range of Income per Capita (Naira)	Households											
		1969						1974					
		Ipetu		Odo-Ore		All		Ipetu		Odo-Ore		All	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Net Farm Income Per Capita	0-20	7	24.14	9	36.00	16	29.63	5	16.67	3	11.11	8	14.04
	21-40	9	31.03	9	36.00	18	33.33	9	30.00	4	14.81	13	22.81
	41-60	8	27.59	4	16.00	12	22.22	6	20.00	9	33.34	15	26.32
	61-80	1	3.45	2	8.00	3	5.56	3	10.00	3	11.11	6	10.53
	81-100	1	3.45	0	0	1	1.85	4	13.34	2	7.41	6	10.53
	101-120	2	6.90	1	4.00	3	5.56	1	3.33	1	3.70	2	3.51
	121-140	0	0	0	0	0	0	1	3.33	2	7.41	3	5.26
	141+	1	3.45	0	0	1	1.85	1	3.33	3	11.11	4	7.01
	Total	29	100.	25	100.	54	100.	30	100.	27	100.	57	100.
Net Household Income Per Capita	0-20	4	13.79	7	28.00	11	20.37						
	21-40	10	34.48	9	36.00	19	35.19						
	41-60	8	27.59	5	20.00	13	24.07						
	61-80	2	6.90	2	8.00	4	7.41						
	81-100	2	6.90	1	4.00	3	5.56						
	101-120	2	6.90	0	0	2	3.70						
	121-140	0	0	1	4.00	1	1.85						
	141+	1	3.45	0	0	1	1.85						
	Total	29	100.	25	100.	54	100.						

Source: Survey Data

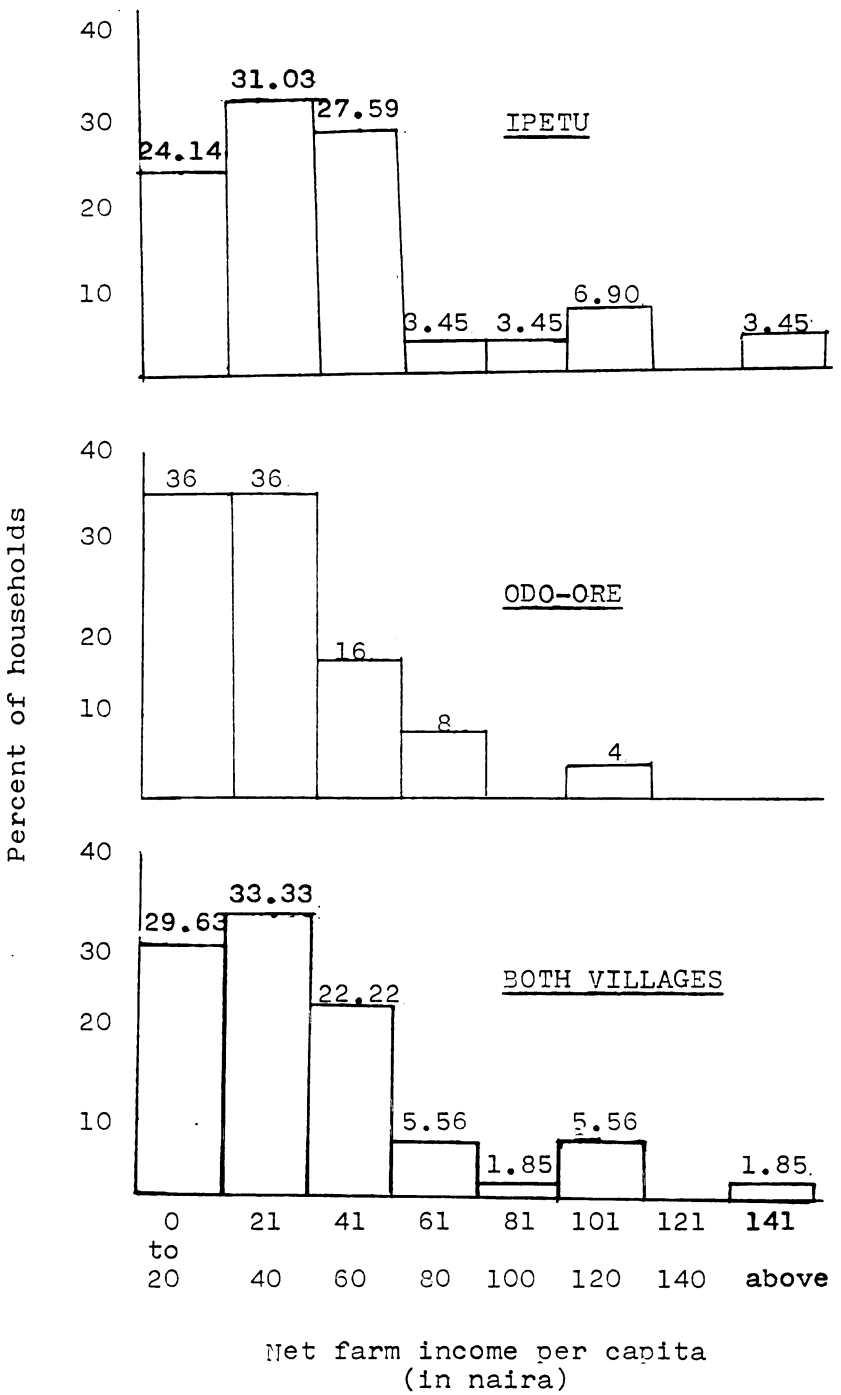

Figure 4.1 The percentage distribution of households based on net farm income per capita, 1969

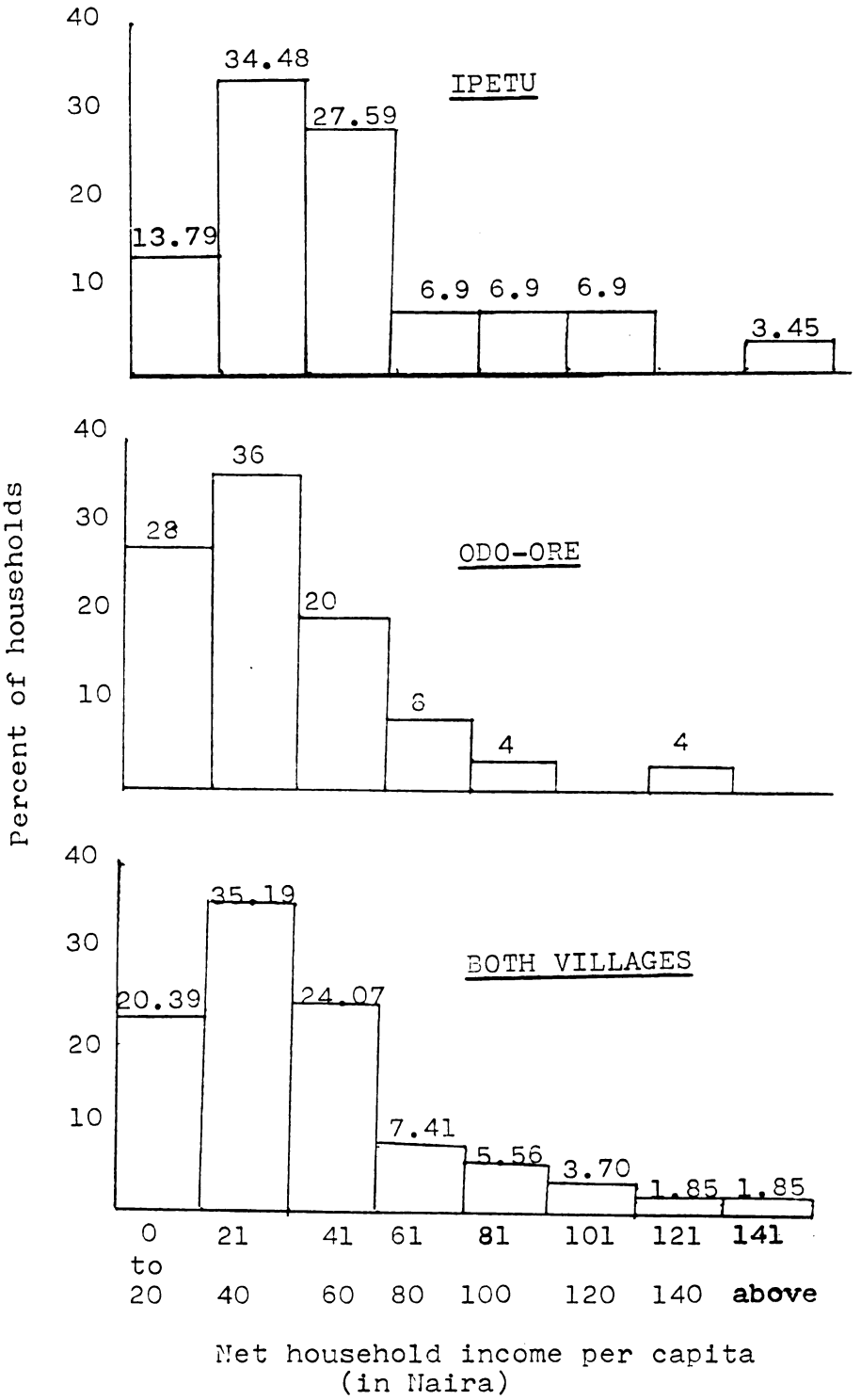

Figure 4.2 Percentage distribution of households based on net household income per capita, 1969

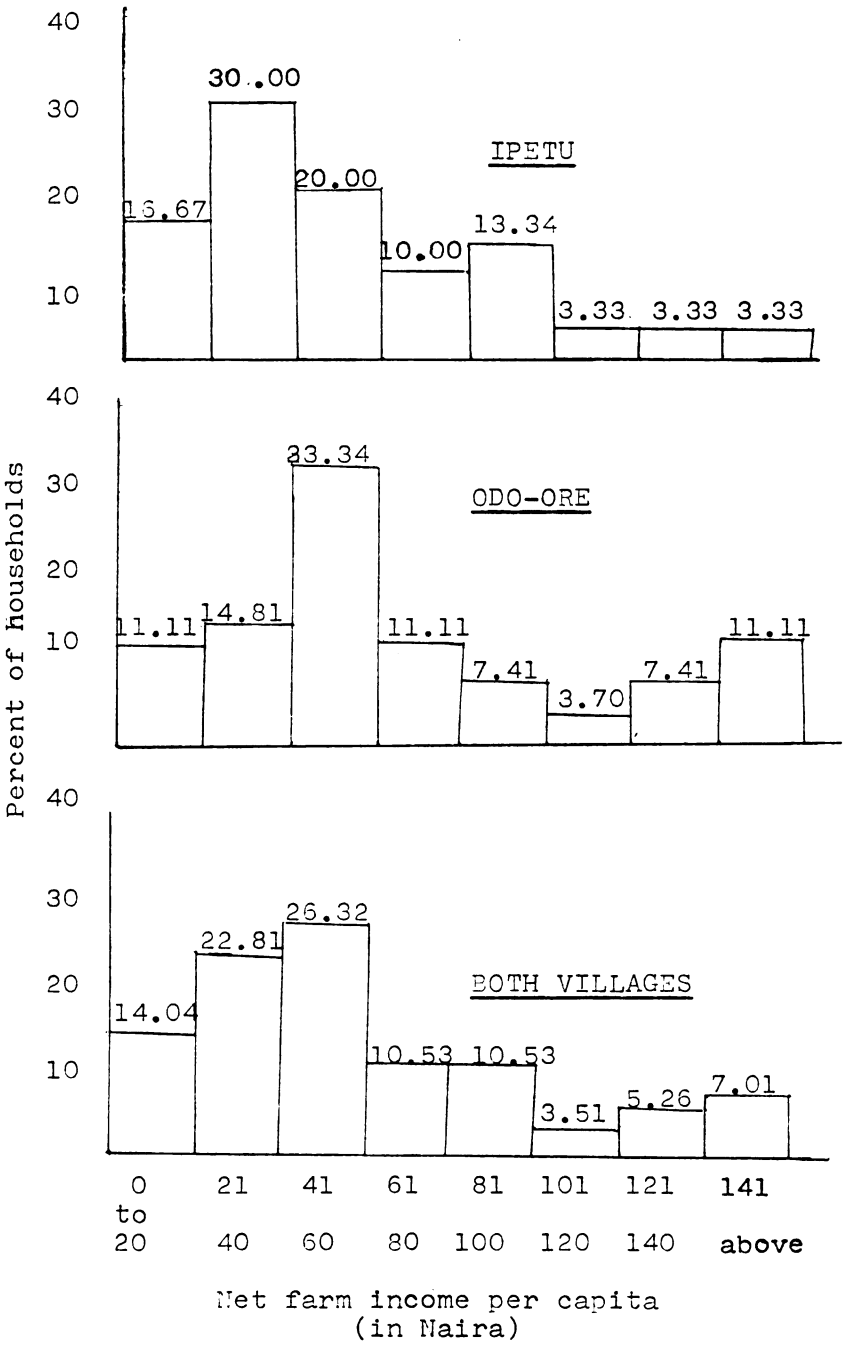

Figure 4.3 Percentage distribution of households based on net farm income per capita, 1974.

in 1974 compared with Ipetu, the larger village. This confirms the results shown earlier for the higher coefficient of variation in Odo-Ore during 1974 i.e. indicating higher income inequality in the high income range. Similar patterns are obtained for income per consumer and per household shown in the Appendix. For the total sample, comparing Figure A-6 with Figure 4.1 it is evident that in 1969 the net farm income per household is more skewed than net farm income per capita. For the same total sample in 1974, however, the comparison between Figures A-4 and 4.3 revealed that the net farm income per household is less skewed than net farm income per capita. This confirms the results of the Gini coefficients and coefficient of variation which showed that income per household was more equitable in the year 1969 than income per capita while the reverse occurred in 1974.

D. Summary

The discussion in this chapter can be summarized as follows:

1. The overall mean net farm and net household incomes were ₦274 and ₦337 respectively in 1969. Ipetu, the larger village closer to Omu-Aran and on the better road, had the higher net farm income of about ₦320 in 1969 while Odo-Ore had ₦222. Ipetu also had a higher off-farm income in 1969 of ₦77 as compared to ₦47 in Odo-Ore, the more isolated

village. In 1974, however, the net farm income was about ₦463 in both villages.

The per consumer net farm income was also higher in Ipetu (₦62) than in Odo-Ore (₦40) in 1969. Average income per consumer in 1974 decreased by 33 percent (using the weighted price deflator) in Ipetu below that of 1969. On the other hand in the smaller, more isolated village, Odo-Ore, per capita farm incomes increased by 29 percent. The increase in per consumer income experienced in Odo-Ore was due in large part to better rainfall level and distribution.

2. The different equity measures applied to the data indicated that in general the distribution of incomes per capita is relatively equitably distributed as shown by the Gini coefficients of 0.3482 on net household income per capita in 1969. The distribution of net farm income per capita was relatively stable between years showing a slight decline in the Gini coefficient from 0.4027 in 1969 to 0.3818 in 1974. Each measure of inequality reflected this same decrease in inequality between years and in both villages.

3. Net household incomes were more equitably distributed than the net farm income. That is, off-farm incomes tended to reduce inequality during the one year for which data were available for such off-farm earnings.

4. Due to interyear variation it was not possible to distinguish either village as displaying greater or lesser inequality nor was either village consistently characterized by a particular type of inequality.
   a. Ipetu, the larger village situated on the better road and closer to Omu-Aran, displayed **greater** income inequality within the high income range in 1969. The Gini coefficient calculated on the net farm income per capita was 0.3842.
   b. Odo-Ore, the smaller village representing the savannah type village and more isolated from Omu-Aran, displayed **greater income inequality** at the middle and low income levels in 1969. The Gini coefficient was 0.4257 for the net farm income per capita.
   c. However, in 1974 Odo-Ore showed a **somewhat greater** income inequality compared with Ipetu within the higher income range. The Gini coefficient for the net farm income per capita was 0.3609.
   d. Ipetu, on the other hand, in 1974 showed greater income inequality at the low income levels. The net farm income per capita Gini coefficient was 0.3492.

These changes in the type of inequality in each village between years demonstrate the caution with which the results from one year's study on income distribution should be used.

CHAPTER V

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF INCOME STRATA

The present chapter examines the demographic makeup of households within each income stratum. These include a description of family size, age/sex compesition, and education. These determine in part both the production capacity of the households and its demand for income. Within the conceptual framework set out earlier the resource endowment of land and capital are considered in the next chapter while this chapter is concerned with the labour endowment treated under the various demographic characteristics.

A. Family Size

Statistics describing variation in household size and composition among income strata are shown in Table 5.1. The size of the household has been presented as the number of residents, consumer equivalents and worker equivalents. These data show that in both villages in 1969 the poorest households had larger families on average than richer households. However the data show a reversed pattern in 1974 with poorest households smaller in size than the high

Table 5.1 Household size and composition by village net farm income per consumer strata, 1969 and 1974

Variable	Village	1969				1974			
		Village Mean	Income Class Low	Med	High	Village Mean	Income Class Low	Med	High
Number of residents	Ipetu	10.2	13.2	11.8	5.7	8.4	7.3	8.1	9.7
	Odo-Ore	9.0	12.2	9.0	5.9	6.5	4.9	7.7	7.0
	All	9.6	11.6	11.2	5.2	7.5	6.4	7.7	8.4
Consumer man-equivalents	Ipetu	6.6	8.5	7.4	3.9	5.7	4.9	5.6	6.5
	Odo-Ore	6.8	8.9	6.9	4.7	4.7	3.6	5.7	4.8
	All	6.7	8.5	7.1	4.5	5.2	4.4	5.6	5.6
Worker man-equivalents[a]	Ipetu	5.5	7.1	5.1	3.4	4.9	4.3	5.0	5.5
	Odo-Ore	6.3	8.2	6.2	4.4	4.3	3.4	5.2	4.2
	All	5.9	7.3	6.3	4.1	4.6	3.9	5.1	4.9
Consumer to worker ratio	Ipetu	1.18	1.19	1.21	1.15	1.16	1.16	1.13	1.18
	Odo-Ore	1.08	1.09	1.09	1.07	1.10	1.08	1.09	1.13
	All	1.13	1.10	1.18	1.11	1.13	1.13	1.11	1.16

[a]Worker man-equivalent has been defined as the working capacity for an individual family member compared to that of an adult male based on the age/sex category.

Source: Survey Data

income households. In general family size was greater in 1969 than 1974. The apparent reverse in the association between income and family size between the two years and the apparent larger family size in 1969 are largely due to data collection problems explained earlier. The 1974 figures appeared to be the more realistic estimates because of the greater trust and openess on the part of the farmers during the later year.

B. Family Composition

The consumer-to-worker ratios are also shown in Table 5.1. The consumer-to-worker ratio as a measure of dependency has been calculated by dividing the number of consumer man-equivalents by the number of worker man-equivalents (See Tables 4.2 and 3.3 earlier). The data shows that the consumer-to-worker ratio was stable between years at 1.13 for the overall sample.

It was hypothesized that under the traditional farming system with abundant land and capital stock not being a limiting factor, income per consumer would be determined in part by the size of the household's work force relative to consumer requirements. That is, one could expect that households with a higher dependency ratio would generally be poorer. However, the data show that there were no consistent relationships between incomes and dependency ratio which suggests

that interhousehold differences in composition may not be an important factor affecting relative incomes. What might be more important is the intensity with which each worker works, the quantity and quality of complementary factors, and the resulting productivity differentials.

In a polygamous society like the one with which we are concerned, the possession of many wives in a household could be an asset in boosting the labor force. On the other hand, the possession of many wives can be a reflection of income status. For the overall sample, the mean number of wives per household was approximately 1.9 during both years. Moreover, there was no consistent association with income. In 1969 there was an inverse relationship between the number of wives per household and income in Odo-Ore but with no clear relationship in Ipetu. In 1974, this was reversed with direct relationship evident in Ipetu but no pattern in Odo-Ore. The mean number of wives was greater in Ipetu during both years.

C. Age of Household Head[1]

Management quality in farming could be expected to be related to the age and experience of the farm manager.

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[1]The actual age figures should be used with some caution because birth records were generally absent in the study area. Despite the effort made in collecting the information on age, lack of accurate knowledge coupled with social prestige associated with age in Yorubaland, the reported age figures were only approximate.

Other factors which might contribute to a life cycle income pattern are accumulation of land and other assets, changing dependency ratio and the size of household. The age of the household head was therefore broken down by income groups. The results are shown in Table 5.2. The mean age of the household head was 58 in 1969 and 61 in 1974 for the total sample. The age figures ranged between 35 and 80 years in 1969 and between 35 and 85 years in 1974 for the total sample. There was no consistent relationship with income. We further considered the variation in income per consumer across household head age groups but found no consistent pattern. In short, there was no evidence to suggest a life cycle pattern in earnings.

D. Percent Literacy

Percent literacy is defined as the percentage of family members who either could read or write at least in Yoruba and/or those going to school. Field's study (21) in Brazil has shown that educational attainment is an important contributing factor to wage differentials and thus to income status. In general, the higher the level of education the greater the expected income. Within the present setting characterized by self-employment one could expect that literacy might widen the horizon of the individual farmer and could

Table 5.2 Age of household head, percent literacy and family composition by net farm

Table 5.2 Age of household head, percent literacy and family composition by net farm income per consumer strata, 1969 and 1974.

Variable	Village	Net Farm Income Per Consumer 1969 Low	Med	High	All	1974 Low	Med	High	All
Age of household head	Ipetu	54.50	58.33	50.90	54.45	57.30	55.00	61.50	57.93
	Odo-Ore	56.67	62.14	66.11	61.60	62.77	67.22	61.67	63.89
	All	57.78	58.89	56.61	57.76	58.05	62.89	61.32	60.75
Percent literacy in household	Ipetu	11.30	12.22	7.70	10.34	12.10	10.00	16.80	12.97
	Odo-Ore	3.33	3.86	3.67	3.60	6.00	10.67	10.78	9.15
	All	5.56	9.61	6.50	7.22	9.63	9.74	14.11	11.16
Number of adult males	Ipetu	2.70	2.33	1.40	2.14	1.50	1.30	1.90	1.57
	Odo-Ore	3.22	3.00	1.78	2.64	1.11	1.89	1.56	1.52
	All	3.00	2.56	1.56	2.37	1.32	1.63	1.68	1.54
Number of adult females	Ipetu	3.70	3.00	1.90	2.86	2.40	3.40	3.00	2.93
	Odo-Ore	5.11	2.00	2.33	3.24	2.56	2.89	2.78	2.74
	All	4.22	2.44	2.44	3.04	2.47	3.16	2.89	2.84
Number of male children[a]	Ipetu	2.50	3.56	1.40	2.45	1.60	1.60	3.00	2.07
	Odo-Ore	1.67	2.14	1.00	1.56	0.44	1.78	1.56	1.26
	All	1.83	3.06	1.22	2.04	1.11	1.53	2.42	1.68
Number of female children[a]	Ipetu	4.30	2.89	1.00	2.72	1.80	1.80	1.80	1.80
	Odo-Ore	2.22	1.86	0.78	1.60	0.78	1.11	1.11	1.00
	All	2.50	3.17	0.94	2.20	1.47	1.42	1.37	1.42
Number of wives	Ipetu	1.90	2.78	1.10	1.90	1.50	2.50	2.60	2.20
	Odo-Ore	2.11	1.71	1.67	1.84	1.56	1.22	1.89	1.56
	All	2.06	2.22	1.33	1.87	1.53	1.95	2.21	1.89

[a]Children are defined as male and female family members below 15 years of age

Source: Survey Data

enlighten him as to the existence of modern inputs[1] thereby facilitating their use.

While neither village had its own school, schooling was available in villages within three to four miles of each village in the years of study. Due to the recent establishment of the schools, household heads could not have been educated. With the exception of two household heads in Ipetu none of the household heads could read or write even in Yoruba. Only about 8 percent in Ipetu and 4 percent in Odo-Ore of the household members on the average were in school in 1969, and 13 and 9 percent, respectively, in Ipetu and Odo-Ore in 1974. Since only children were literate, their influence on farming decisions was most likely negligible. Thus the literacy figures may more likely reflect the effect of income on education rather than vice versa.

Table 5.2 shows no clear relationship between the percent literacy and income. In 1974 overall literacy had increased and a slight positive relationship with income was evident indicating that with growing awareness, higher income households may have begun to take

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[1]Modern inputs like fertilizers, seed dressing, improved seed varieties, etc. were not a common feature to observe in the study villages during both years.

somewhat greater advantage of the available opportunity.

E. Summary

In summary, it has been found that income strata do not divide themselves into distinct family types. In general, demographic factors do not appear to be associated in a consistent manner with income as shown by family size and composition or percent literacy. Age was also not found to be importantly related to income status. Moreover since income did not vary with age we concluded that life-cycle factors affecting incomes were negligible. Most of the factors described above show conflicting patterns with income between years. Again this shows that heavy reliance on one year's data might be misleading.

The next chapter takes us into the consideration of the second part of our conceptual framework. There we consider the resource endowment factors which determine production capacity.

CHAPTER VI

RESOURCE ENDOWMENT AND USE BY INCOME STRATA

It has been shown in the previous chapter that demographic factors do not appear to contribute significantly to income differentials as shown by the dependency ratio, family size, and composition, percent literacy or number of wives. Moreover, there was no significant variation between the two villages as far as these demographic factors are concerned. We found that the results agree with other studies in one year but not in the other, suggesting possibly wide changes between years.

Having considered the endowment of labor this chapter examines the endowment of land and capidal. The levels of use of land, labor and capital as they relate to income are also considered.

A. Land Holdings

Information on total land holdings was not available hence the cropped land has been used as an approximation of the endowment of land. Under ceteris paribus assumptions, the size of land holding would be expected to vary directly with gross farm income. Table 6.1 shows the cultivated acreage per household,

Table 6.1 Cultivated land holdings by village and farm income per consumer strata, 1969 and 1974

		1969				1974			
			Income Classes				Income Classes		
Variable	Village	Village Mean	Low	Med	High	Village Mean	Low	Med	High
Cropped acres per household	Ipetu	4.69	3.77	4.90	5.42	3.70	1.89	3.27	5.95
	Odo-Ore	3.41	2.54	2.92	4.65	4.36	2.19	3.54	7.36
	All	4.10	2.89	4.15	5.25	4.01	2.24	3.16	6.64
Cropped acres per worker	Ipetu	1.07	0.58	0.86	1.76	0.77	0.49	0.66	1.17
	Odo-Ore	0.68	0.38	0.56	1.05	1.07	0.69	0.72	1.79
	All	0.89	0.48	0.72	1.46	0.91	0.61	0.65	1.48
Cropped acres per consumer	Ipetu	0.92	0.49	0.73	1.53	0.65	0.42	0.58	0.97
	Odo-Ore	0.63	0.35	0.51	1.00	0.96	0.64	0.67	1.58
	All	0.79	0.44	0.62	1.31	0.80	0.54	0.59	1.27
Upland[a]	Ipetu	90.78	90.13	88.82	93.21	94.40	93.05	92.91	97.24
	Odo-Ore	99.85	100.00	100.00	99.58	100.00	100.00	100.00	100.00
	All	94.98	95.17	96.02	93.75	97.05	96.34	96.06	98.76
Lowland[a]	Ipetu	4.30	4.16	4.86	3.95	3.01	3.78	2.49	2.76
	Odo-Ore	0	0	0	0	0	0	0	0
	All	2.31	1.76	2.70	2.47	1.58	1.99	1.52	1.24
Forest land[a]	Ipetu	4.91	5.72	6.32	2.84	2.59	3.17	4.60	0
	Odo-Ore	0.15	0	0	0.42	0	0	0	0
	All	2.71	3.06	1.28	3.78	1.36	1.67	2.42	0

[a]Expressed as a percent of total cropped land.

Source: Survey Data

per worker and per consumer. It is recalled that in Chapter V an inverse relationship was found between income per consumer and the number of residents and workers in 1969. In 1974, however, a direct relationship was obtained. During both years, in contract with family size, a direct relationship was found between cropped land per consumer and income per consumer. This means that in 1969 and 1974 the poorest third was characterized by substantially lower cropped acres per consumer. As would be expected (See Appendix Table A-8) the association was not as strong between land holding and net household income as with farm income.

As a result of the observed positive relationship between income and size of land holding, some of the variables under consideratoion in this and subsequent chapters are broken down both by cropped land classes and by income classes. This has been done to partially control for the individual effect of land on the dependent variables as they vary across income classes.

There are three land types in this study area namely upland (odan), lowland (akuro), and forest (igbo) type. Lowland fields are usually more productive than upland because they are well-watered all the year

round and are used for growing a wider range of crops, especially maize and yams. Forest land could be more productive than upland, especially during the first few years it is put into production of food crops. Tree crops like kolanuts and cocoa, cocoyam, and plantains are grown in the forest land. The percentage of each of these three land types has been broken down by income strata and the results are shown in Table 6.1

Lowland soils were only found in Ipetu where they constituted about 4 percent of total cropped land during both years. An examination of land holdings among income strata in that village showed no association between land holdings by type and income.

Tables 6.2 and 6.3 show the frequency distribution of households with income and land classes for 1969 and 1974, respectively. It is clear that the average net farm income per consumer increased as one moves from low to higher land classes. Nevertheless a substantial proportion of the poorest households fall into middle and high land strata indicating that land alone is not a completely determining factor.

B. Value of Capital Stock Used in Production

Capital, the third major factor of producation is defined here to include the value of tools and equipment. Tools include hoes and cutlasses, and equipment

Table 6.2 Frequency distribution of households among land and net farm income per consumer classes, 1969

Variable	Village	Land Strata	Acres Range	Income Classes Low	Med	High	Total	Average net farm income per consumer
Cropped land per worker strata	Ipetu	Low	0.22-0.60	6	4	-	10	
		Med	0.71-0.90	4	3	2	9	
		High	1.10-3.39	-	2	8	10	
		All	0.22-3.39	10	9	10	29	
		Ave. land/worker		0.58	0.86	1.76	1.07	not calculated
	Odo-Ore	Low	0.11-0.37	6	3	0	9	
		Med	0.44-0.75	2	3	2	7	
		High	0.79-1.52	1	1	7	9	
		All	0.11-1.52	9	7	9	25	
		Ave.land/worker		0.38	0.56	1.05	0.68	not calculated
Cropped land per consumer strata	Ipetu	Low	0.20-0.54	6	4	-	10	32.07
		Med	0.56-0.76	4	3	2	9	42.53
		High	1.00-2.72	-	2	8	10	108.50
		All	0.20-2.72	10	9	10	29	
		Ave.land/ consumer		0.49	0.73	1.53	0.92	61.67
	Odo-Ore	Low	0.10-0.36	6	3	-	9	17.75
		Med	0.44-0.66	3	3	1	7	31.36
		High	0.69-1.43	-	1	8	9	68.99
		All	0.10-1.43	9	7	9	25	
		Ave.land/consumer		0.35	0.51	1.00	0.63	40.01

Table 6.2 (cont'd)

Variable	Village	Land Strata	Acres Range	Income Classes Low	Med	High	Total	Average net farm income per consumer
Cropped land per household strata	Ipetu	Low	1.49-3.36	4	2	4	10	57.39
		Med	3.38-5.52	5	4	-	9	32.18
		High	5.67-9.57	1	3	6	10	92.49
		All	1.49-9.57	10	9	10	29	
		Ave. land/household		3.77	4.90	5.42	4.69	61.67
	Odo-Ore	Low	0.78-2.20	5	2	2	9	23.24
		Med	2.48-3.57	1	3	3	7	58.45
		High	3.67-12.74	3	2	4	9	42.44
		All	0.78-12.74	9	7	9	25	
		Ave.land/household		2.54	2.92	4.65	3.41	40.01

Source: Survey Data

Table 6.3 Frequency distribution of households among land and net farm income per consumer classes, 1974.

Variable	Village	Land Strata	Acres Range	Income Classes Low	Med	High	Total	Average net farm income per consumer
Cropped land per worker strata	Ipetu	Low	0.22-0.60	7	3	-	10	
		Med	0.71-0.90	2	4	4	10	
		High	1.10-3.39	1	3	6	10	
		All	0.22-3.39	10	10	10	30	
		Ave.land/worker		0.49	0.66	1.17	0.77	not calculated
	Odo-Ore	Low	0.11-0.37	4	4	1	9	
		Med	0.44-0.75	4	4	1	9	
		High	0.79-1.52	1	1	7	9	
		All	0.11-1.52	9	9	9	27	
		Ave.land/worker		0.69	0.72	1.79	1.07	not calculated
Cropped land per consumer strata	Ipetu	Low	0.20-0.54	6	4	-	10	39.19
		Med	0.56-0.76	3	4	3	10	85.68
		High	1.00-2.72	1	2	7	10	111.89
		All	0.20-2.72	10	10	10	30	78.91
		Ave.land/consumer		0.42	0.58	0.97	0.65	
	Odo-Ore	Low	0.10-0.36	5	4	-	9	46.94
		Med	0.44-0.66	3	4	2	9	76.14
		High	0.69-1.43	1	1	7	9	169.03
		All	0.10-1.43	9	9	9	27	97.37
		Ave.land/ consumer		0.64	0.67	1.58	0.96	

Table 6.3 (cont'd)

Variable	Village	Land Strata	Acres Range	Income Classes				Average net farm income per consumer
				Low	Med	High	Total	
Cropped land per household strata	Ipetu	Low	1.49-3.36	6	4	-	10	46.34
		Med	3.38-5.52	4	4	2	10	60.00
		High	5.67-9.57	-	2	8	10	130.39
		All	1.49-9.57	10	10	10	30	78.91
		Ave.land/household		1.89	3.27	5.95	3.70	
	Odo-Ore	Low	0.78-2.20	6	2	1	9	46.07
		Med	2.48-3.57	3	4	2	9	91.56
		High	3.67-12.74	-	3	6	9	154.49
		All	0.78-12.74	9	9	9	27	97.37
		Ave.land/household		2.19	3.54	7.36	4.36	

Source: Survey Data

includes items like baskets, calabashes and knives. Table 6.4 relates the value of capital stock to income class. The average capital per household was about ₦7 in 1969 and ₦20 in 1974. The deflated value for 1974 is ₦10.40[1]. Both capital per worker and per consumer varied directly with income in 1969 in both villages. In contrast no consistent pattern was evident in 1974 in either village. Operating capital will be considered in a later chapter.

C. Value of Livestock

As a final aspect of resource endowment we examined the distribution of wealth among the sample households. While wealth is a partial reflection of past incomes, it can directly influence current farming decisions in several critical respects. For example, households which possess more wealth would presumably be able to assume more risk and would be less likely to fall below meeting subsistence needs during bad years. Within the study area wealth could be best represented by the number of livestock (especially cattle) by types of transportation (such as bicycles, motor-cycles or motor vehicles) and by the value of dwelling places.

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[1]The weighted village market price deflator was used. These were 194 in Ipetu and 190 in Odo-Ore with 1969 as base year. The third estimating procedure is shown in Appendix Table A-2.

Table 6.4 The value of capital per household, per worker and per consumer by net farm income per consumer strata, 1969 and 1974 (in naira)

Year	Capital Per	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
1969	Worker	0.87	1.46	2.17	1.50	0.97	1.60	2.83	1.81
	Consumer	0.73	1.20	1.90	1.28	0.87	1.48	2.64	1.68
	House-hold	6.14	8.21	6.80	7.01	5.59	8.12	8.88	7.48
1974	Worker	3.88	4.63	4.06	4.19	4.63	3.09	6.06	4.59
	Consumer	3.34	4.08	3.40	3.60	4.20	2.81	5.47	4.16
	House-hold	14.28	22.92	21.11	19.43	14.31	14.21	24.99	17.84
1974[a]	Worker	2.02	2.41	2.11	2.18	2.45	1.64	3.21	2.43
	Consumer	1.74	2.12	1.77	1.87	2.23	1.49	2.90	2.20
	House-hold	7.43	11.92	10.98	10.10	7.58	7.53	13.24	9.46

[a]Deflated using the weighted village market prices deflated

Source: Survey Data

Since data collected for these items were not available for present analysis it is not possible to analyze the wealth aspect fully. For our consideration, the value of livestock would be used as a rough partial measure of wealth. Livestock is a minor concern in these villages. This does not mean that livestock is not an important item in the overall economy of the study area. In fact it is important. The owners of the cattle, however, belong to another tribe, the Fulanis. Although some villagers purchase cows as a form of savings these are typically kept away from the villages in the care of the Fulanis. Usually cows are purchased by well-to-do farmers out of savings from farming operations, from trading, or in other enterprises.[1] The purpose is to see if there are any strong relationships between the value of livestock reported by the households and income status.

Table 6.5 contains the value of livestock disaggregated by income class. The mean value of livestock per household in 1969 was about ₦15 increasing to about ₦48 in 1974. The deflated value for 1974

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[1]Some Fulanis move to other unknown areas without informing the cow owners and some lie that the cows have died or that they fail to reproduce. As a result of such fraudulent acts only a few farmers now take the risk of keeping their cattle with the Fulanis.

Table 6.5 Value of livestock by type, Ipetu and Odo-Ore, 1969 and 1974 .

		Net Farm Income Per Consumer Strata							
		1969				1974			
Variable	Village	Village Mean	Low	Med	High	Village Mean	Low	Med	High
Total Value	Ipetu	7.22	9.08	6.49	6.03	44.21	39.56	22.46	70.6
of	Odo-Ore	23.20	29.65	19.67	19.50	51.27	34.05	85.25	34.5
Livestock	All	14.62	20.42	10.32	13.12	47.55	34.32	52.01	56.3
Deflated by Weighted Village Price Deflator	Ipetu	--	--	--	--	22.99	20.57	11.68	36.71
	Odo-Ore	--	--	--	--	27.17	18.05	45.18	17.94
	All	--	--	--	--	24.76	18.87	27.09	29.32

Source: Survey Data

was about ₦25. A substantial part of this increase is likely due to the increased openess and trust on the part of the farmers in 1974.

Important interyear variation is evident with respect to income strata. In 1969 it was unexpectedly found that the poorest households appeared to possess more livestock with this relationship reversing in 1974. These results probably reflect the effect of an underenumeration for cattle, with underenumeration greatest among higher income households. The higher income households would have tended to understate their holdings more than the poor income households for fear of increased personal income tax arising from the study. Finally an examination of the types of animals kept showed that there was nothing to suggest that the composition of livestock holdings varied by income group.

D. Labor Use

The endowment of labor was considered in Chapter V and in earlier sections of this chapter land and capital use have been taken as proxies for factor endowments. This leaves us with labor use to be considered in the present section. As noted earlier in Chapter III, there are about four months, November-February, in which there is no rainfall. As a result, farming activities are mostly concentrated in the

remaining 7-8 month growing season. The distinct seasonality of farm labor underlies the low labor inputs reported in Table 6.6. For example, the average level of farm labor for adult males was 658 man-hours per year in Ipetu and only 417 man-hours in Odo-Ore in 1969. On the average, a female adult worked only 42 hours in farm labor in 1969 in Ipetu and 9 hours in Odo-Ore. The low hours of female farm labor is particularly significant in view of the fact that there are no social restrictions on women as regards farm work.[1] It was evident, however, that certain operations like ridging and weeding were done mostly by men while women were considered better in harvesting operations, particularly for crops such as maize, guinea corn, cotton and cowpeas. Both males and females worked more hours on the average in Ipetu than in Odo-Ore in 1969. This might be due to the greater acreage per household in Ipetu (4.69 compared to 3.41 acres in Odo-Ore). Substantially higher employment levels were recorded in 1974 however, and relative employment levels switched between

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[1]This contrasts with the Moslem dominated areas of the north where women are usually kept in seclusion so that they cannot contribute to on-farm work. Although there are Moslems in these survey villages there was no strict observance of this rule hence it cannot be asserted that women's participation on the farm are hindered by religious beliefs.

villages in that year. For example, an adult male in Ipetu worked an average of 745 man-hours compared with 1048 man-hours in Odo-Ore. The increase over the 1969 figure for adult male farm labor input in Odo-Ore was 150 percent. The cause of this substantial increase is not clear, but part of the reason might be due to increased average land holding per household in 1974 above that of 1969 (Table 6.1). However, in addition the increases in land and labor reported could also be a function of the greater trust and openess on the part of the farmers during the later year. In contrast to the pattern for males, there was a decrease in both villages in 1974 in the adult female farm labor input.

The layout of Tables 6.6 and 6.7 permits us to examine separately the relation between land and labor, income and labor, and their interaction. It is clear that these figures should be used with caution, however, because the number of observations per cell are very small.

In both years and in both villages, the highest levels of employment were recorded among high income males, but at least in 1974 this was due primarily to land holding differentials. After controlling for land in 1969, the data show that miles in high income strata generally worked more

Table 6.6 Land and labour use intensities by land and net farm income per consumer classes, 1969

Variable	Cropped land per consumer classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Man hours family farm labour per male adult	Low	317	230	---	284	216	197	--	209
	Med	407	779	1035	656	302	325	676	416
	High	--	862	982	956	--	779	663	677
	All	362	614	992	658	245	318	666	417
Man hours family farm labour per female adult	Low	15	12	--	14	3	4	--	4
	Med	52	47	71	540	8	12	9	9
	High	--	70	45	50	--	--	16	14
	All	34	41	50	42	5	6	15	9
Off-farm hours per male adult	Low	27	140	--	69	1	1	--	1
	Med	93	281	20	148	18	3C	2	17
	High	---	67	63	64	--	84	13	21
	All	60	187	55	97	7	21	10	12
Female adult off-farm man hours per female adult	Low	274	180	--	239	254	603	--	394
	Med	283	193	104	218	70	192	149	127
	High	--	315	337	332	--	247	466	439
	All	279	216	290	263	193	435	396	334
Total farm labor in man hours (family + hired)	Low	1422	1575	---	1479	917	737	--	846
	Med	1602	1970	2077	1823	576	995	751	746
	High	---	2447	1651	1810	--	782	1203	1150
	All	1512	1944	1736	1723	804	818	1102	915

Table 6.6 (cont'd)

Variable	Cropped land per consumer classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Total farm labour per acre in manhours	Low	433	319	---	390	441	289	---	380
	Med	343	386	528	429	205	322	334	275
	High	---	376	300	315	---	315	257	264
	All	388	406	346	379	362	302	274	314
Family farm labour per consumer in manhours	Low	130	123	---	127	82	104	---	91
	Med	187	260	336	240	106	161	216	153
	High	---	390	432	424	---	324	277	283
	All	158	243	413	272	90	152	263	170
Family labour percent of total farm labour	Low	79	85	---	81	92	96	--	93
	Med	89	84	96	89	87	96	98	93
	High	---	81	89	87	--	96	96	96
	All	84	84	90	86	90	96	96	94
Number of households	Low	5	3	--	8	6	4	-	10
	Med	5	4	2	11	3	2	2	7
	High	--	2	8	10	--	1	7	8
	All	10	9	10	29	9	7	9	25

Source: Survey Data

Table 6.7 Land and labor use intensities by land and net farm income per consumer classes 1974

Variable	Cropped land per consumer classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Man hours family farm labour per male adult	Low	366	996	786	621	397	869	--	586
	Med	917	758	689	772	1203	1142	924	1144
	High	--	880	950	932	915	1484	1183	1161
	All	476	901	855	744	870	1119	1154	1048
Man hours family farm labour per female adult	Low	20	7	25	16	10	13	--	11
	Med	11	14	18	15	18	18	65	22
	High	--	5	21	17	7	20	17	16
	All	18	9	21	16	13	17	23	18
Total farm labour in manhours (family + hired)	Low	711	1784	1259	1133	707	1807	--	1147
	Med	1053	1107	1611	1283	1541	1682	1420	1607
	High	--	1383	2061	1892	933	1663	2595	2208
	All	779	1501	1846	1375	1128	1707	2464	1767
Total farm labour per acre in manhours	Low	453	720	321	539	575	572	--	574
	Med	400	456	382	414	480	535	1213	577
	High	--	239	290	278	423	335	383	386
	All	378	513	299	397	478	512	459	483
Family farm labour per consumer in manhours	Low	129	269	146	180	197	204	--	200
	Med	260	256	241	262	286	367	791	376
	High	--	211	303	280	443	345	585	538
	All	155	254	269	226	291	329	608	409

Table 6.7 (cont'd)

Variable	Cropped land per consumer classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Family labour percent of total farm labour	Low	81	96	96	88	98	90	--	95
	Med	94	91	88	91	90	99	97	95
	High	--	88	93	92	100	99	95	96
	All	84	93	92	90	95	97	96	96
Number of households	Low	8	5	1	14	3	2	--	5
	Med	2	3	3	8	4	6	1	11
	High	--	2	6	8	2	1	8	11
	All	10	10	10	30	9	9	9	27

Source: Survey Data

hours than males in the low-income classes. Among households with medium land holdings, for example, 1035 man-hours per worker was recorded in the high-income class, compared with only 407 man-hours in the low-income class in Ipetu in 1969. In 1974, however, the reverse of the above result was obtained. For the medium land class of 1974, for example, 917 man-hours per male worker was recorded for the low income class but 689 man-hours for the high income class.

The data also show that greater off-farm hours were contributed by females than by males. While on average male adults worked 98 man-hours per year in off-farm activities in Ipetu and about 13 man-hours in Odo-Ore, female adults averaged 264 in Ipetu and 334 in Odo-Ore. As mentioned earlier the off-farm data was available for only 1969, hence no comparison between years is possible.

Farm employment was earlier shown to be lowest among the land-short poor households during both years and in both villages. In 1974, there was no clear pattern in either villages as to labor inputs per acre. But in 1969 labor inputs per acre were in fact lowest among the lowest income households with medium land holdings. For example, in Ipetu in 1969 the lowest income households with medium land holdings had 343 man-hours per acre (Table 6.6)

compared with 528 for the highest income households with medium land holdings. Also in Odo-Ore the former group had 205 man-hours per acre compared with 334 man-hours per acre for the latter group. The 1969 labor data therefore tended to suggest that there were two types of poverty households (1) those households who were short of land but who worked their land very intensively, and (2) households with adequate land who farmed at very low levels of intensity and as a result realized low returns to land.

Family labor as a proportion of total man-hours averaged 87 percent in Ipetu and 95 percent in Odo-Ore in 1969. In 1974 these figures were 90 in Ipetu and 96 in Odo-Ore. A particularly interesting but unexpected result is the finding that family labor as a percent of total hours in farm work increased with cropped land per consumer and also with income. That is, poorer households tended to use a greater proportion of hired labor relative to their total labor inputs. Moreover the data show that in 1969 the poorest third hired the greatest amounts of labor per acre and per household in both villages. In 1974, however, while both villages displayed the same result on per acre basis, the richest third used more hired labor per household in both villages.

Table 6.8 Hired Labor per household, per acre by type, by land and net farm income per conumer classes, Ipetu and Odo-Ore, 1969

Variable	Cropped Land per Consumer Classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Aro labor per acre in manhours	Low	46.70	8.73	--	32.46	17.54	0.19	--	10.60
	Med	10.77	11.27	0.88	9.16	0.88	0	1.25	0.74
	High	--	12.03	17.20	16.17	--	0	5.15	4.51
	All	25.37	10.71	17.01	17.48	13.76	0.15	3.30	5.34
Owe labor per acre in man-hours	Low	9.17	2.49	--	6.66	5.39	3.86	--	4.78
	Med	1.23	0	0	0.56	23.50	3.21	4.26	12.20
	High	--	29.77	0.01	5.96	--	1.21	2.57	2.40
	All	5.13	13.72	0.01	5.87	11.54	3.35	2.84	5.05
Agbaro labor per acre in manhours	Low	12.03	22.22	--	15.85	6.93	6.97	--	6.95
	Med	22.43	53.60	21.86	33.66	2.54	9.53	2.19	2.54
	High	--	7.13	11.23	10.41	--	0	3.42	2.99
	All	16.59	23.93	14.43	17.29	6.06	5.13	2.90	3.53
Total hired labor per acre in manhours	Low	67.90	33.44	--	54.98	29.87	11.02	--	22.33
	Med	34.44	64.88	22.74	43.40	26.92	12.74	7.70	17.38
	High	--	48.92	28.44	32.54	--	1.21	11.14	9.90
	All	51.17	50.85	27.30	42.84	28.89	10.11	10.38	16.97
Aro labor per house-hold in manhours	Low	143.25	37.96	--	103.77	51.53	0.75	--	31.22
	Med	48.04	52.56	5.00	41.86	1.75	0	2.00	1.32
	High	--	74.41	117.41	108.72	--	0	19.16	16.77
	All	95.65	52.46	94.93	81.99	34.94	0.43	15.35	18.22

Table 6.8 (cont'd)

Variable	Cropped Land per Consumer Classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Owe labor per household in manhours	Low	30.25	15.67	--	24.78	13.54	11.91	--	12.89
	Med	8.40	0	0	3.82	60.83	8.92	6.82	30.57
	High	--	279.06	0.03	55.84	--	3.00	12.07	10.94
	All	19.33	67.24	0.03	27.54	29.31	9.78	10.90	17.21
Agbaro labor per household in manhours	Low	26.63	89.38	--	58.00	17.73	12.98	--	15.83
	Med	87.80	140.55	108.00	113.61	10.75	26.50	3.50	13.18
	High	--	57.50	64.47	63.78	--	0	7.18	6.28
	All	62.55	117.25	67.08	81.09	15.40	14.99	6.36	12.03
Total hired labor per household in manhours	Low	200.13	143.01	--	186.55	82.80	25.64	--	59.94
	Med	144.24	193.11	113.00	117.43	73.33	35.42	12.32	45.07
	High	--	410.97	181.91	228.34	--	3.00	38.41	33.99
	All	177.53	236.95	162.04	190.62	79.65	25.20	32.61	47.46
Number of households	Low	4	4	--	8	6	4	--	10
	Med	5	5	1	11	3	2	2	7
	High	--	1	9	10	--	1	7	8
	All	9	10	10	29	9	7	9	25

Source: Survey Data

Table 6.9 Hired labor per household and per acre by type by land and net farm income per consumer classes, Ipetu and Odo-Ore, 1974

Variable	Cropped Land per Consumer Classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Aro labor per acre in man-hours	Low	15.50	8.02	4.59	12.05	5.56	0	--	3.33
	Med	3.25	32.81	10.06	16.89	2.26	0	29.91	3.57
	High	--	21.62	6.51	10.28	0	0.81	4.34	3.23
	All	13.05	18.18	7.38	12.87	2.86	0.12	7.18	3.39
Owe labor per acre in man-hours	Low	24.10	11.50	1.28	17.97	2.78	3.30	--	2.99
	Med	0	0	4.80	1.80	3.07	0	0	1.12
	High	--	0	1.87	1.41	0	0	0.57	0.42
	All	19.28	5.75	2.69	9.24	2.29	0.73	0.51	1.18
Agbaro labor per acre in manhours	Low	34.89	5.29	5.10	23.26	0	28.30	--	11.32
	Med	17.30	8.59	20.20	15.12	36.15	2.47	0.53	14.54
	High	--	4.55	9.11	7.97	0	0	9.10	6.62
	All	31.37	7.63	12.04	17.01	16.07	7.94	8.15	10.72
Total hired labor per acre in manhours	Low	74.49	27.80	10.97	53.28	8.33	31.59	--	17.64
	Med	20.54	41.40	35.06	33.81	41.48	2.52	30.44	19.22
	High	--	26.17	17.49	19.66	0	0.81	14.01	10.27
	All	63.70	31.56	22.11	39.12	21.21	8.79	15.84	15.28
Aro labor per house-hold in manhours	Low	21.88	26.00	18.00	23.07	6.67	0	--	4.00
	Med	8.50	68.33	43.67	44.13	8.50	0.17	35.00	6.36
	High	--	167.50	49.50	79.00	0	4.00	31.38	23.18
	All	19.20	67.00	44.60	43.60	6.00	0.56	31.78	12.78

Table 6.9 (cont'd)

Variable	Cropped Land per Consumer Classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Owe labor per household in manhours	Low	43.88	22.00	5.00	33.29	3.33	18.00	--	9.20
	Med	0	0	16.67	6.25	10.00	0	0	3.64
	High	--	0	11.83	8.88	0	0	4.13	3.00
	All	35.10	11.00	12.60	19.57	5.56	4.00	3.67	4.41
Agbaro labor per household in manhours	Low	42.50	11.20	20.00	29.71	0	154.50	--	61.80
	Med	34.00	18.00	89.00	48.63	98.75	8.50	0.62	40.60
	High	--	33.50	68.17	59.50	0	0	56.25	40.91
	All	40.80	17.70	69.60	42.70	43.89	40.00	50.07	44.65
Total hired labor per household in manhours	Low	108.26	59.20	43.00	86.07	10.00	172.50	--	75.00
	Med	42.50	86.33	149.34	99.01	117.25	8.67	35.62	50.60
	High	--	201.00	129.50	147.38	0	4.00	91.76	67.09
	All	95.10	95.70	126.80	105.87	55.45	44.56	85.52	61.84
Number of households	Low	8	5	1	14	3	2	--	5
	Med	2	3	3	8	4	6	1	11
	High	--	2	6	8	2	1	8	11
	All	10	10	10	30	9	9	9	27

Source: Survey Data

Hired labor consisted of three types, namely Aro, Owe and Agbaro. Aro was a reciprocal arrangement between two farmers in which they worked together on each other's farm on alternate days. The cost incurred was usually in the meals provided by the host. Owe was an arrangement whereby a farmer invited all other farmers in the village or all the youth to perform a particular task, like ridging, on his farm. The cost to him would be the feast which followed in his house. Agbaro was an arrangement in which the farmer employed people either within or from outside the village to work on his farm. The employer would supply the day's meals and usually also provided some payment in cash. There was a tendency to use Agbaro labor for harder operations like ridging and weeding.

It would be expected that the high-income class hired more agboro labor because it is expected to be more productive while the low-income class would use more aro and owe because the form of payment for the latter two depended on the farmer's discretion thus enabling him to pay laborers in whatever product was most convenient, like yams or maize. The data show, however, that there were no patterns evident between use of these hired labor types and income.

E. Summary

1. Among the three resources considered--land, labor and capital--only land seemed to show a strong and consistent relationship with income status.
2. Off-farm activities were found to be earried out mostly by women in 1969 while the farm labor input was mostly by men. Off-farm labor input was greater in Ipetu, the larger village closer to Omu-Aran.
3. Two types of poverty households were evident on examining the relationship of labor input per acre with land and income classes in 1969. The data suggest that some households were poor primarily because of limited land use. Another group of households, however, were found to be poor not because they were land short but due in part to low labor use on available land and consequently low output.
4. In 1969 the poorest third hired the greatest amounts of labor per acre and per household in both villages. However, in the later year, the poorest third hired more labor on a per acre basis in both villages, but on per household basis the richest third hired more in both villages.
5. The value of livestock has been used as an approximation for wealth but there was conflicting

evidence between the two years as to whether our measure of wealth was positively or negatively related to income.

In the next chapter analysis is focussed on the relationship between income and the choice of crop enterprises. The degree of intercropping is also examined to see whether the land short households tended to maximize returns to land through intercropping.

CHAPTER VII

CROPPING PATTERNS AND FARM BUDGETS BY INCOME STRATA

The previous two chapters were respectively concerned with a description of household characteristics and resources use by income classes. Having considered patterns of resource endowment and use within our earlier stated conceptual framework, the next step is to examine resource productivity. In this chapter cropping patterns are examined to determine systematic variation among income classes. Farm budgets are also constructed to identify variation in productivity among income and land classes.

A. Cropping Patterns

As mentioned previously in Chapter I, the study area is located within an ecologically heterogeneous zone within which both annual and perennial crops are grown. The major crops include yams, maize, guinea corn, cotton, cowpeas, cassave, okra, spinach and roselle. The food staples are the root crops yams and cassava and grains in the form of maize and guinea corn. In spite of the minor ecological variation there were no major differences in the growing of these staples between the savannah and forest type villages. There was, however,

some variation among other crops. For example, cotton was more common in the drier Odo-Ore area, whereas in the forest land of Ipetu, cotton was replaced by tree crops like cocoa, bananas, plantains, kolanut and by cocoyams. The perennial crops such as cocoa and kolanut can be considered the main cash crop of Ipetu while cotton was the only non-food crop grown for the market and for home use in Odo-Ore. Every farmer grew yam and maize in Ipetu, whereas in Odo-Ore every farmer grew guinea corn in addition to yams and maize. Guinea corn appeared more common in Odo-Ore than Ipetu because the farafara variety grown in this study area requires a drier condition than that which prevailed at Ipetu.[1] As a result of the lowland in Ipetu, the farmers grew more vegetables like okra, oyoyo, spinach and amukan.

The distribution of the major crops grown is shown in Tables 7.1 and 7.2. Most crops were grown in mixtures which means that more than one crop grows on the same plot at the same time. In order to obtain a rough estimate of the acreage under each crop, it was necessary to find the adjusted acreage by dividing the size of the plot by the number of crops grown on it. For example, in a two-crop mixture field of two acres maize and guinea corn,

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[1]When the Ipetu farmers were asked why they were not growing as much guinea as at Odo-Ore, they replied that their soil was too wet and heavy for guinea corn and instead they grew more maize.

Table 7.1 Adjusted acreage of each major crop grown as a percentage of total acreage, Ipetu and Odo-Ore, 1969

Adjusted acreage of each crop percentage of total	cropped land per consumer classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Total adjusted acreage	Low	3.15	4.27	--	3.57	2.33	2.88	--	2.55
	Med	4.32	3.72	4.12	4.06	1.93	3.16	2.57	2.47
	High	--	7.41	5.33	5.74	--	2.48	4.96	4.65
	All	3.73	4.72	5.08	4.51	2.20	2.90	4.43	3.20
Early Maize	Low	18.64	21.03	--	19.54	14.92	14.97	--	14.94
	Med	31.11	20.29	6.29	22.66	13.70	29.62	28.14	22.38
	High	--	47.45	24.29	28.92	--	22.98	15.63	16.55
	All	27.64	21.64	22.36	23.96	14.51	20.30	18.41	17.54
Late Mazie	Low	17.03	4.76	--	12.43	10.31	28.70	--	17.66
	Med	11.59	18.75	15.13	14.84	13.31	8.46	13.66	12.03
	High	--	10.10	15,55	14.46	--	3.23	13,37	12,10
	All	14.31	12.16	15.46	14.04	11.31	19.28	13.43	14.31
Guinea Corn	Low	--	--	--	--	21.51	15.49	--	19.10
	Med	0.59	3.01	--	1.36	15.92	26.51	27.83	22.35
	High	--	--	1.94	1.55	--	35.89	19.70	21.73
	All	0.29	1.34	1.55	1.05	19.65	21.55	21.51	20.85
Cowpeas	Low	10.14	7.58	--	9.18	4.61	2.71	--	0.39
	Med	15.23	16.37	12.44	15.13	2.22	9.98	0	3.80
	High	--	5.92	11,49	10,37	--	--	3,99	3,49
	All	12.69	11.12	11.68	11.85	3.82	4.40	3.10	3.72

Table 7.1 (cont'd)

Adjusted acreage of each crop percentage of total	Cropped land per consumer classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Yam bean	Low	0.82	0	--	0.51	0	0	--	0
	Med	0	0	0	0	0	0	0	0
	High	--	2.36	2.58	2.54	--	0	0.15	0.13
	All	0.41	0.52	2.07	1.02	0	0	1.12	0.40
Groundnut	Low	0.47	0	--	0.29	4.03		--	2.42
	Med	0	0	0.37	0.07	0	0	0	0
	High	--	0	1.50	1.20	--	0	0	0
	All	0.23	0	1.28	0.52	2.69	0	0	0.97
Yam	Low	29.54	38.71	--	32.98	19.29	20.88	--	19.92
	Med	25.50	27.21	33.85	27.64	23.60	11.53	15.22	17.76
	High	--	28.54	28.97	28.88	--	26.61	17.41	18.56
	All	27.52	31.34	29.95	29.54	20.73	19.03	16.92	18.88
Cassava	Low	4.31	13.39	--	7.71	11.96	4.66	--	12.71
	Med	3.05	6.71	25.54	8.47	28.36	7.31	5.23	15.73
	High	--	0	4.40	3.52	--	11.29	15.14	14.66
	All	3.68	7.45	8.63	6.55	17.43	6.36	12.98	12.71
Cocoyam & Sweet potatoes	Low	0	0	--	0	0	0	--	0
	Med	0	0	0	0	0	0	0	0
	High	--	0	0	0	--	0	0	0
	All	0	0	0	0	0	0	0	0

Table 7.1 (cont'd)

Adjusted acreage of each crop percentage of total	Cropped land per consumer classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
All Vegetables	Low	7.63	3.77	--	6.18	4.98	0.65	--	3.25
	Med	9.74	3.85	6.11	6.94	0.66	0	0	0.28
	High	--	0.82	3.40	2.88	--	0	0.71	0.62
	All	8.68	3.15	3.94	5.33	3.54	0.37	0.55	1.58
Cotton	Low	0	0	--	0	8.40	11.95	--	9.82
	Med	0	0	0	0	2.22	6.59	9.92	5.67
	High	--	0	0	0	--	0	12.61	--
	All	0	0	0	0	6.34	8.71	12.01	9.04
Tobacco	Low	2.13	0.86	--	1.65	0	0	--	0
	Med	2.62	2.50	0.27	2.15	0	0	0	0
	High	--	4.81	2.10	2.64	--	0	0	0
	All	2.37	2.47	1.73	2.18	0	0	0	0
Perenial Crops	Low	9.31	9.89	--	9.53	0	0	--	0
	Med	0.59	1.32	0	0.74	0	0	0	0
	High	--	0	3.79	3.03	--	0	0	0
	All	4.95	3.88	3.03	3.96	0	0	0	0
Number of households	Low	4	4	--	8	6	4	--	10
	Med	5	5	1	11	3	2	2	7
	High	--	1	9	10	--	1	7	8
	All	9	10	10	29	9	7	9	25

Source: Survey Data

Table 7.2 Adjusted acreage of each major crop grown as a percentage of total acreage, Ipetu and Odo-Ore, 1974

Variable	Cropped Land Per Consumer Classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Total adjusted acres	Low	1.69	2.51	4.01	2.15	1.22	3.85	0	2.68
	Med	2.65	2.72	4.28	3.29	2.91	3.20	1.17	2.91
	High	--	5.89	7.14	6.83	2.21	4.96	8.14	6.77
	All	1.89	3.25	5.97	3.70	2.19	3.54	7.36	4.36
Early Maize	Low	25.24	17.73	16.96	21.97	11.04	8.84	14.33	12.96
	Med	23.04	29.50	15.37	22.59	12.54	14.53	15.38	13.88
	High	--	13.24	21.37	19.34	6.79	16.13	14.05	12.92
	All	24.80	20.36	19.13	21.43	10.03	14.66	14.20	12.96
Late Maize	Low	15.14	26.47	32.42	20.42	3.32	26.90	--	12.75
	Med	21.70	13.19	20.15	17.93	6.10	17.28	0	11.65
	High	--	12.74	17.10	16.01	16.78	17.94	5.25	8.50
	All	16.45	19.74	19.55	18.58	7.55	19.49	4.67	10.57
Guinea Corn	Low	5.62	12.47	9.73	8.36	8.39	14.56	--	10.86
	Med	15.20	7.38	9.04	9.96	20.46	16.61	16.24	17.97
	High	--	3.93	10.33	8.73	21.79	16.13	18.27	18.71
	All	7.58	9.23	9.88	8.88	16.73	16.10	18.04	16.96
Cowpeas	Low	1.33	6.81	0	3.19	9.42	0	--	5.65
	Med	0	2.70	6.53	3.46	4.55	4.11	26.50	6.31
	High	--	4.50	0.69	1.64	6.33	2.82	6.83	6.37
	All	1.06	5.12	2.37	2.85	6.57	3.06	9.01	6.21

Table 7.2 (cont'd)

Variable	Cropped Land Per Consumer Classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Yam bean	Low	0	0	0	0	0	0	--	0
	Med	0	0	0	0	0	0	0	0
	High	--	0	0	0	0	0	0	0
	All	0	0	0	0	0	0	0	0
Groundnut	Low	0	0	0	0	0	0	--	0
	Med	0	0	0	0	0	0	0	0
	High	--	0	0	0	0	0	0	0
	All	0	0	0	0	0	0	0	0
Yam	Low	45.31	28.74	32.67	38.49	29.40	30.70	--	29.92
	Med	27.70	26.96	35.55	30.36	17.95	16.09	41.88	19.11
	High	--	44.37	45.26	45.04	22.00	21.17	31.23	28.64
	All	41.79	31.33	41.09	38.07	22.67	19.90	32.42	24.99
Cassava	Low	5.71	6.67	6.99	6.07	40.64	13.51	--	29.79
	Med	0	4.14	9.57	5.14	30.01	30.37	0	27.48
	High	--	19.30	3.32	7.32	26.31	11.09	15.25	16.89
	All	4.57	8.43	5.46	6.15	32.73	24.48	13.56	23.59
Cocoyam and Sweetpotato	Low	0	0	0	0	0	0	--	0
	Med	10.11	0	0	2.53	0	0	0	0
	High	--	0	0	0	0	0	0	0
	All	2.02	0	0	0.67	0	0	0	0

Table 7.2 (cont'd)

Variable	Cropped Land Per Consumer Classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Vegetables	Low	0.23	1.11	2.24	0.69	0	0	--	0
	Med	2.25	0.82	1.28	1.35	3.50	0.76	0	1.69
	High	--	0	1.03	0.77	0	0	3.03	2.20
	All	0.63	0.80	1.23	0.89	1.55	0.51	2.69	1.58
Cotton	Low	0	0	0	0	0	0	--	--
	Med	0	0	0	0	4.90	0.25	0	1.92
	High	--	0	0	0	0	14.72	6.09	5.76
	All	0	0	0	0	2.18	1.80	5.41	3.13
Tobacco	Low	0	0	--	0	0	0	0	0
	Med	0	0	2.50	0.94	0	0	0	0
	High	--	1.93	0.90	1.16	0	0	0	0
	All	0	0.39	1.29	0.56	0	0	0	0
Perenials	Low	1.43	0	--	0.82	0	0	--	0
	Med	--	15.32	0	5.74	0	0	0	0
	High	--	0	0	0	0	0	0	0
	All	1.15	4.60	0	1.91	0	0	0	0
Number of households	Low	8	5	1	14	3	2	--	5
	Med	2	3	3	8	4	6	1	11
	High	--	2	6	8	2	1	8	11
	All	10	10	10	30	9	9	9	27

Source: Survey Data

the adjusted acreage under maize is taken as one acre and the adjusted acreage under guinea corn is similarly taken as one acre. The total adjusted acreage under maize for the household is the sum of the adjusted acreages under maize from all the fields on which maize was grown for that year. In an effort to identify ppssible differences among income and land classes in the cropping patterns, the adjusted acreage of each crop has been further disaggregated by both income and land classes and by villages.

It can be seen that cropping patterns were strikingly similar among all households regardless of land or income status. The value of each group as a percentage of total was also broken by income and land classes as a further step in establishing differences in cropping patterns (Appendix Tables A-14 and A-15) and again there were no clear changes in cropping patterns across either the land or income strata. Yam commanded the greater percentage of value of all crops grown in both villages and years, representing as much as 70 percent of the total harvest. Maize was next in importance with about 13 percent followed by guinea corn in Odo-Ore with about 11 percent.

Mixed cropping, as mentioned earlier, was a popular practice. Norman (41,pp.87-101) has reported that net returns per acre are higher in crop mixtures than sole

cropped fields. The scope of the present study cannot examine this aspect of sole crops versus mixtures, but Tables 7.3 and 7.4 show how the percentages of sole cropped acreage and the various combinations of crop mixtures varied by income and land classes. In Ipetu in 1969 approximately 46 percent of the land was sole cropped compared with the 18 percent in Odo-Ore. In the same year Ipetu farmers devoted about 30, 20, 2 and 2 percent of their land to two-crop, three-crop, four and five-crop mixtures respectively. In Odo-Ore, as much as 38 percent of cultivated land was put into two-crop mixtures, followed by 29 percent for three-crop, 11 and 4 for four and five-crop mixtures respectively.[1] In 1974, the pattern was similar except that the two-crop mixture had the greater share in both villages.

We set out the hypothesis that land short households would try to maximize returns to land through intercropping. However, careful examination of Tables 7.3 and 7.4 show that in all but Ipetu in 1969 the highest sole cropping was among the lowest income class. In 1969 in Odo-Ore 24 percent of the cropped land was sole cropped by the low income households compared to 12 percent by the highest income households. In 1974 in Odo-Ore

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[1]For his one year study, Norman (41,p.73) found that about 23 percent was sole cropped while about 77 percent of the cropped land was in mixtures.

Table 7.3 Cropping patterns by cropped land and net farm income per consumer classes, Ipetu and Odo-Ore, 1969

Variable	Cropped land per consumer classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-ore			
		Low	Med	High	All	Low	Med	High	All
Sole cropped land as a percent of total cropped land	Low	45.09	48.23	--	46.27	33.53	30.16	--	32.18
	Med	41.20	31.78	56.14	40.49	10.88	4.94	5.93	7.77
	High	--	62.68	45.72	49.12	--	36.29	13.64	16.48
	All	43.75	44.13	49.81	45.66	24.31	23.83	11.93	17.92
Two-crop mixtures as a percent of total cropped land	Low	35.70	22.83	--	30.87	39.74	48.56	--	40.27
	Med	31.68	35.08	33.58	33.26	33.75	55.95	72.09	48.90
	High	--	19.62	21.97	21.50	--	29.44	30.91	30.73
	All	33.69	31.18	26.29	30.55	25.41	48.94	40.46	38.43
Three-crop mixture as a percent of total cropped land	Low	11.16	21.39	--	15.00	26.96	9.55	--	20.00
	Med	16.74	30.43	8.51	20.22	34.80	14.83	0.94	19.42
	High	--	17.71	26.22	24.52	--	34.27	37.57	37.16
	All	13.95	24.59	23.63	20.57	30.57	14.39	29.43	29.33
Four-crop mixture as a percent of total cropped land	Low	8.05	0	--	5.03	11.35	10.92	--	11.18
	Med	0	0	0	0	0	5.58	21.05	7.61
	High	--	0	0.34	0.27	--	0	12.57	11.00
	All	4.03	0	0.27	1.64	8.57	7.80	16.45	11.12

Table 7.3 (cont'd)

Variable	Cropped Land Per Consumer Classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Five-cropped mixture acreage percent of total cropped land	Low	0	0	—	0	1.71	0	--	1.02
	Med	9.17	0	0	4.17	0	18.71	0	5.34
	High	--	0	0	0	--	0	2.23	1.95
	All	4,58	0	0	1.58	1.14	5.04	1.73	3.20
Number of households	Low	4	4	--	8	6	4	-	10
	Med	5	5	1	11	3	2	2	7
	High	--	1	9	10	3	1	7	8
	All	9	10	10	29	9	7	9	25

Source: Survey Data

Table 7.4 Cropping patterns by cropped land and net farm income per consumer classes, Ipetu and Odo-Ore, 1974

Variable	Cropped land per consumer classes	Net Farm Income per Consumer Strata							
		Ipetu				Odo-ore			
		Low	Med	High	All	Low	Med	High	All
Sole cropped land as a percent of total cropped land	Low	49.94	10.18	18.88	33.52	70.02	9.80	--	45.29
	Med	14.89	45.29	22.65	29.20	50.00	26.95	0	32.88
	High	--	49.79	45.00	46.19	49.28	0	31.39	31.79
	All	42.93	28.64	35.68	35.75	57.28	20.14	27.90	35.10
Two-crop mixtures as a percent of total cropped land	Low	34.34	54.33	69.13	43.97	16.35	72.94	--	38.99
	Med	62.57	42.29	51.19	50.69	31.19	43.04	52.99	39.63
	High	--	20.32	35.42	31.64	50.72	19.56	35.26	36.64
	All	39.99	43.92	43.52	42.48	30.58	47.07	37.23	38.29
Three-crop mixtures as a percent of total cropped land	Low	10.12	33.87	11.99	18.74	11.34	0	--	6.81
	Med	18.18	11.58	19.95	16.37	18.82	30.02	47.01	27.49
	High	--	7.27	15.38	13.35	--	74.60	17.46	19.48
	All	11.74	21.86	16.41	16.67	12.14	28.29	20.75	20.40
Four-crop mixtures as a percent of total cropped land	Low	5.59	0.48	0	3.36	0	17.26	--	6.91
	Med	4.37	0.85	6.21	3.74	0	0	0	0
	High	--	0	4.20	3.15	--	5.85	12.32	9.49
	All	5.34	0.49	4.39	3.41	0	4.49	10.95	5.15

Table 7.4 (cont'd)

Variable	Cropped Land Per Consumer Classes	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Five-crop mixtures as a percent of total cropped land	Low	0	1.14	0	0.41	0	0	--	0
	Med	0	0	0	0	0	0	0	0
	High	--	22.63	0	5.66	0	0	3.57	2.60
	All	0	5.09	0	1.70	0	0	3.18	1.06
Number of households	Low	8	5	1	14	3	2	--	5
	Med	2	3	3	8	4	6	1	11
	High	--	2	6	8	2	1	8	11
	All	10	10	10	30	9	9	9	27

Source: Survey Data

again the low income households devoted as much as 57 percent of their land to sole cropping while the high income group devoted 30 percent. Similarly in Ipetu in 1974 the low income group devoted 43 percent to sole cropping versus 36 percent devoted by the highest income households. Examination of the cells show that the percentage of sole cropping was highest among land short-low income households. As high as 34 percent was reported in 1969 in Odo-Ore for the land-short lowest income households compared with 14 percent for the land rich-highest income households. Also in 1974 the land-short low income households devoted 70 percent to sole cropping in Odo-Ore compared with 32 percent for the land-rich highest income households. Similar figures for Ipetu in 1974 were about 50 to 45 percent respectively for the land-short lowest income households and land-rich highest income households respectively. The apparent tendency of low income households to follow a management practice shown to reduce returns to land should be kept in mind as we examine productivity differences in the next section.

During 1969 Ipetu had a greater percentage in sole cropping than Odo-Ore which may reflect the fact that land pressure was more acute in Odo-Ore than in Ipetu. Moreover, guinea corn is grown mostly in Odo-Ore and this is usually grown in mixture with early maize. On

the other hand, at Ipetu as a result of the agroclimatic conditions guinea corn is not grown extensively with the result that early maize tended to be grown in sole stands.

B. The Farm Budget Components Defined

In earlier chapters we have considered the resource endowment and resource use components of our conceptual framework. The following section considers returns to factors and how they differ among income classes. This is accomplished through an analysis of farm budgets. We will begin by defining the components of the budgets.

The value of output is defined as the value of the total yield of each crop. Variable costs are the sum of the value of seed, fertilizer and hired labor. With the exception of one farmer, farmers used neither organic nor inorganic fertilizer.[1] As much as 80 percent of the seeds were saved from the previous year. Moreover, yam accounted for nearly 80 percent of cost of the seed. The seeds were valued at the average market price. Hired labor was generally paid in kind.[2]

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[1]For the single farmer who used fertilizer, inorganic fertilizer was valued at the 1969 price of ₦0.90 per cwt.for superphosphate and ₦1.10 for sulphate of ammonia, after government subsidy.

[2]Items paid in kind were valued in each village at the mean market price applied to the harvest (See Appendix Tables A-1 and A-2. Meals were valued at the cost of ₦0.05 and ₦0.10 depending on the type.

Gross margin was defined as gross farm income less total variable costs. Return to household land, management and labor per hour was found by deducting the fixed costs from the gross margin and dividing it by the total number of man-hours input.[1] Fixed costs have been calculated as an estimate of the annual service charge on the capital stock. It is defined as $\frac{rV}{1-(1+r)^{-n}}$ where V is the original cost of asset, r is the discount rate taken as 15%, and n is the expected life of the asset.[2] The return to land and management was found by valuing family labor at the opportunity of using it as hired labor, that is, at the average wage rate in each village.[3]

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[1]Return to management alone could not be found because land was not exchanged for payment in the study villages, hence there was no basis on which to value land.

[2]The average life of the tools and equipment was found to be 9.6 years.

[3]These were ₦.0438 in Ipetu, ₦.0516 in Odo-Ore in 1969 and ₦.2203 and ₦.1375 in Ipetu and Odo-Ore, respectively in 1974. The substantial wage differentials between the two years in Ipetu and Odo-Ore were partly due to price increases. The weighted village market price indeces were 194 and 190 in Ipetu and Odo-Ore respectively using 1969 as base year. The deflated wage rates in 1974 were ₦.1136 in Ipetu and ₦.0724 in Odo-Ore. Ipetu which had the greater price increases also had the greater wage differential in nominal and real terms. A greater real wage increase in Ipetu is probably due to general increase in demand for labor in citites (as shown by National Plans) hence real wages have to increase in rural areas also.

C. Technical Efficiency

Production efficiency can be disaggregated into economic and technical efficiency components. Perfect allocative efficiency is achieved, in general, at the point of production where the factor/product price ratio equals the marginal physical product of the resource. Many studies have shown that on average traditional farmers tend to be allocatively efficient (41 ,p.71-101). Technical efficiency, on the other hand, is measured by the magnitude of the physical ratio of output to factor input (27,p.97).

The technical efficiency measure used in this study in effect combines the single factor measures of productivity--average productivities of labor and land--into a single index. In order to calculate an index of technical efficiency, an average production function was fitted to each year's production data. The point representing the production of each household around this function was then expressed as the percentage deviation from the expected level of production.

Figure 8.1 illustrates how technical efficiency is calculated for a single household given only the factors land and labor. At the available level of labor input, L_1, holding other inputs such as land and capital constant, output Q_1 is produced by the average farmer. If a farmer produces Q_2 given the same level of factor use, he

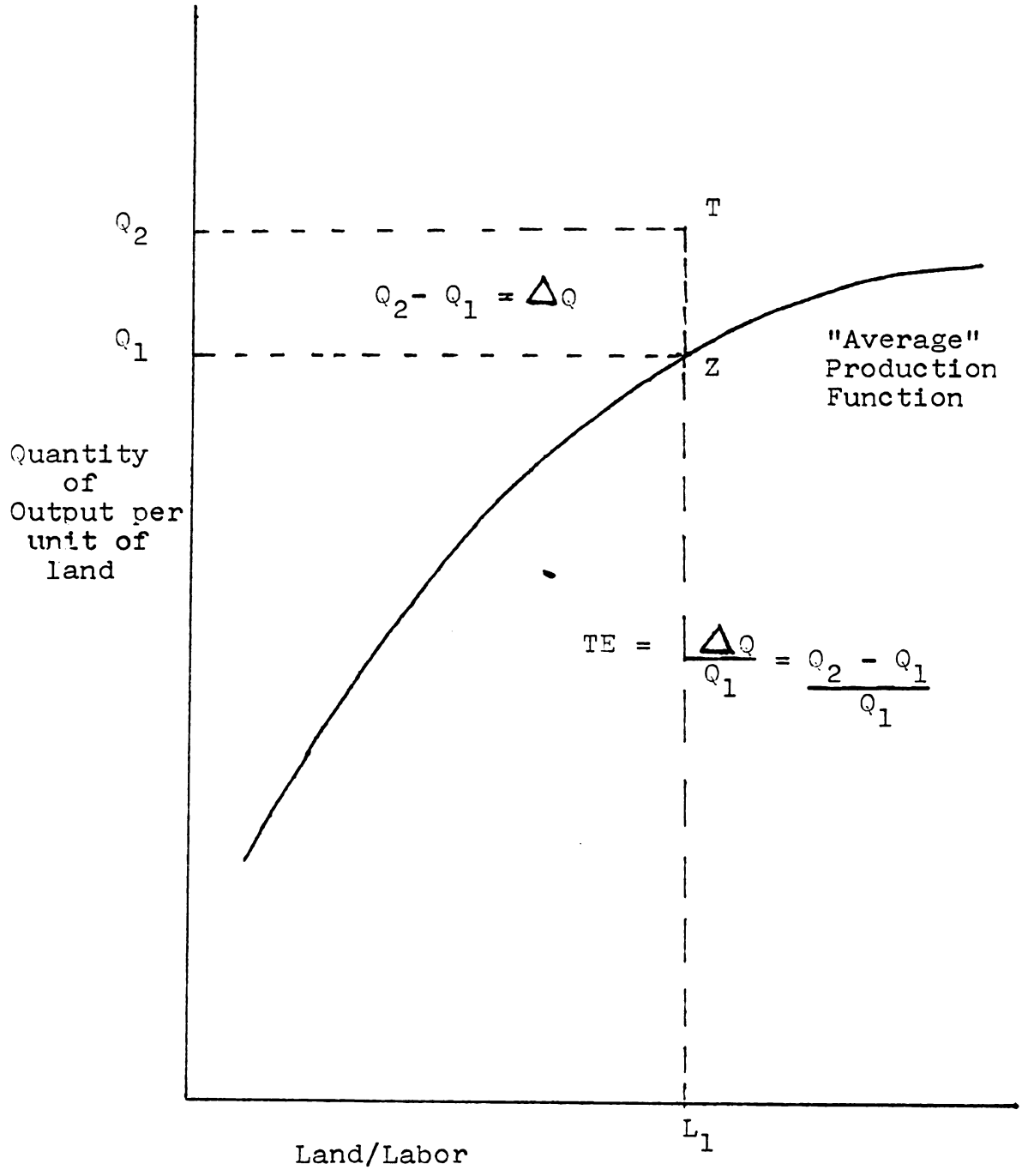

Figure 7.6. Illustration of how **technical efficiency** is calculated

produces above the average, by the amount of $Q_2 - Q_1$. The technical efficiency index, TE, is given in percentage terms by

$$TE = \frac{Q_2 - Q_1}{Q_1}$$

In short the measure simply reflects each household's production as a residual from an average production function expressed in percentage terms.

A Cobb-Douglas farm production function was fitted for each year by pooling the data from both villages. The coefficients estimated for each year, shown in Table 7.5, were then used to calculate expected gross farm income for each household. Mean technical efficiency scores were subsequently calculated for each income and land strata as the simple average of household indexes.

D. Results of the Budget Analysis

1. Average Product of Land

With reference to Table 7.6 the average product of land was about ₦98 and ₦80 in Ipetu and Odo-Ore in 1969 respectively. The labor input per acre was respectively 380 and 314 man-hours in Ipetu and Odo-Ore the same year. Thus Ipetu households on the average used more labor per acre and generated higher return to land. It is important to note that the difference in average productivity of land between

Table 7.5 Results of farm production functions, fitted to pooled data for both villages, 1969 and 1974

Year	Variable	Coefficient B	Standard error of B	t-Value	Significance
1969	Total cropped acres	0.636732690	0.17054827	3.733445	0.000
	Total man-hours	0.08936665	0.13429716	0.66543961	0.549
	Non-labour farm expense[a]	0.34721452	0.12577190	2.76066848	0.008
	Constant	2.8325427	0.77207222	3.66875355	0.001
			R^2 = 0.76902	Adjusted R^2 = 0.75516	
	F-Value of whole equation = 55.48876				
	Significance 0.000				
1974	Total cropped acres	0.27172941	0.12455710	2.18156500	0.034
	Total man-hours	0.31506007	0.12405374	2.53970634	0.014
	Non-labour farm expense[a]	0.56499040	0.08325435	6.78631687	0.00
	Constant	0.79915957	0.82113597	0.97323659	0.335
			R^2 = 0.87991	Adjusted R^2 = 0.87311	
	F-Value of whole equation = 129.43992				
	Significance 0.000				

[a]Non-labor farm expense is the non-labor farm variable cost consisting of the value of seed (and fertilizer for the single farmer who used it).

Source: Survey Data

Table 7.6 Costs and returns per acre in cropping enterprises by land and net farm income per consumer classes, Ipetu and Odo-Ore, 1969

Variable	Cropped land per consumer class	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
A. Basic Data									
1. No. of cases	Low	5	3	-	8	6	4	-	10
	Med	5	4	2	11	3	2	2	7
	High	-	2	8	10	-	1	7	8
	All	10	9	10	29	9	7	9	25
2. Ave.size (acres)	All	3.77	4.90	5.42	4.69	2.54	2.92	4.65	3.41
B. Costs and returns per acre (Naira)									
3. Value of output (gross farm income)	Low	67.63	157.25	--	101.24	63.52	109.22	--	81.80
	Med	76.81	109.15	132.49	98.69	45.92	85.51	108.33	74.20
	High	--	63.31	101.68	94.41	--	42.34	90.20	84.21
	All	72.22	115.44	107.84	97.92	57.92	92.89	93.56	80.45
4. Variable costs									
a.Seed	Low	22.21	27.44	--	24.18	18.01	19.41	--	18.57
	Med	27.27	28.16	22.49	26.73	14.82	18.84	17.72	16.80
	High	--	21.04	25.75	24.81	--	14.81	18.62	18.14
	All	24.74	26.34	25.10	25.36	16.94	18.59	18.42	17.94
b.Hired labor	Low	2.12	1.55	--	1.90	0.82	0.92	--	0.86
	Med	1.78	4.16	1.98	2.68	0.46	0	3.04	1.07
	High	--	1.58	0.95	1.07	--	0	0.58	0.51
	All	1.95	2.71	1.15	1.91	0.70	0.52	1.13	0.80

Table 7.6(cont'd)

Variable	Cropped land per consumer class	Net Farm Income Per Consumer Strata: Ipetu Low	Ipetu Med	Ipetu High	Ipetu All	Odo-Ore Low	Odo-Ore Med	Odo-Ore High	Odo-Ore All
c. Total	Low	22.05	19.77	25.85	23.23	17.19	18.50	--	17.71
	Med	25.16	23.92	20.52	23.86	14.36	18.84	14.69	15.73
	High	--	19.47	24.48	23.47	--	14.81	18.04	17.64
	All	22.46	23.57	23.69	23.23	16.24	18.07	17.30	17.13
5.Gross margin	Low	42.98	128.22	--	74.94	44.70	88.89	--	62.37
	Med	47.42	76.74	108.01	69.10	30.64	66.66	84.57	56.34
	High	--	42.69	74.66	68.27	--	27.53	70.99	65.56
	All	45.20	86.33	81.33	70.42	40.01	73.79	74.01	61.70
6.Tools & equipment (Usercost)	Low	1.26	0.55	--	0.99	1.50	0.76	--	1.21
	Med	0.94	0.70	1.67	0.94	0.59	0.69	1.33	0.82
	High	--	0.81	0.74	0.76	--	1.76	1.01	1.11
	All	1.10	0.67	0.93	0.91	1.20	0.88	1.08	1.07
7.Return to household mgt.,land and labor per hour	Low	0.06	0.14	--	0.09	0.05	0.13	--	0.08
	Med	0.04	0.09	0.05	0.06	0.07	0.07	0.11	0.08
	High	--	0.02	0.06	0.05	--	0.03	0.08	0.07
	All	0.05	0.09	0.06	0.07	0.06	0.10	0.09	0.08
8.Return to mgt. and land	Low	25.72	115.15	--	59.26	21.98	73.78	--	42.70
	Med	32.94	57.55	84.18	51.20	20.85	49.97	66.40	42.18
	High	--	27.55	62.00	55.11	--	9.56	57.26	51.30
	All	29.33	70.08	66.44	54.77	21.60	57.80	59.29	45.31
C.Other Measures									
1.Gross farm income per hour	Low	0.19	0.56	--	0.32	0.16	0.42	--	0.26
	Med	0.22	0.24	0.27	0.24	0.22	0.27	0.38	0.28
	High	--	0.17	0.36	0.32	--	0.13	0.41	0.38
	All	0.20	0.33	0.34	0.29	0.18	0.34	0.40	0.31

Table 7.6 (cont'd)

Variable	Cropped land per consumer class	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
2.Net farm income per hour	Low	0.12	0.45	--	0.25	0.12	0.34	--	0.21
	Med	0.13	0.16	0.21	0.16	0.15	0.21	0.31	0.21
	High	--	0.11	0.26	0.23	--	0.09	0.33	0.30
	All	0.11	0.28	0.24	0.21	0.13	0.27	0.32	0.24
3.Net farm income per acre	Low	42.79	128.06	--	74.76	44.34	88.54	--	62.02
	Med	47.26	76.54	107.60	68.88	30.41	66.21	84.29	56.03
	High	--	42.55	74.55	68.15	--	27.05	70.74	65.28
	All	45.02	86.16	81.16	70.25	39.70	73.37	73.75	61.39
4.Technical efficiency index	Low	- 0.25	0.60	--	0.07	-0.22	0.29	--	-0.01
	Med	- 0.22	0.04	0.49	0.00	-0.37	0.02	0.28	-0.07
	High	--	-0.31	0.05	-0.02	--	-0.44	0.10	0.03
	All	- 0.24	0.15	0.14	0.01	-0.27	0.11	0.14	-0.02
5.Total farm labor (family + hired) per acre	Low	433.14	319.18	--	390.40	441.12	289.09	--	380.31
	Med	343.51	486.81	528.92	429.33	205.11	322.86	334.13	275.62
	High	--	376.17	300.47	315.61	--	315.39	257.63	264.85
	All	388.33	406.35	346.16	379.78	362.45	302.50	274.63	314.05

Source: Survey Data

the high and low income households was about ₦36 in both Ipetu and Odo-Ore in 1969.

In 1974 the average product of land was ₦195 and ₦151 in Ipetu and Odo-Ore respectively. The respective labor input per acre was 397 and 483 man-hours in Ipetu and Odo-Ore the same year. Thus, Odo-Ore households on the average expended more labor per acre but generated lower returns to land. The difference in the average product of land between the high and low income households was ₦88 (a 59 percent difference) in Ipetu and ₦101 (a 111 percent difference) in Odo-Ore in 1974. In short, Odo-Ore high income households displayed a relatively wider margin in land productivity than Ipetu. The net farm income per acre shows similar relationships across income classes.

2. Average Product of Labor

The average product of labor was approximately ₦0.29 in Ipetu and ₦0.31 in Odo-Ore in 1969. In 1974 the values were ₦0.51 and ₦0.35 in Ipetu and Odo-Ore respectively. Reasons for the low average product of labor in Odo-Ore are not clear. The average product of labor varied between ₦0.20 and ₦0.34 (a 70 percent difference) in Ipetu and between ₦0.18 and ₦0.40 (a 122 percent difference) in Odo-Ore between the low and high income classes in 1969.

And in 1974 these differences were 111 percent in Ipetu and 172 percent in Odo-Ore.

In short the data show that in both years and both villages, the average product of labor reflected a strong direct relationship with income. More importantly, this positive relationship also holds when land is controlled implying that land alone is not the only factor limiting labor's productivity. For example, examing the middle land strata we can see that the low income households had an average product of labor of ₦0.22 in Ipetu compared with ₦0.27 for the high income class in 1969. In the same year in Odo-Ore, among the middle land strata the low income households had an average product of labor of ₦0.22 compared with ₦0.38 for high income households.

3. Gross Margin Per Acre

The data in Tables 7.6 and 7.7 also show that the high-income class achieved greater gross margins per acre both years and in both villages. In 1969 gross margins per acre for the high income households was 80 percent greater than that of low income households in Ipetu and 85 percent greater in Odo-Ore. In 1974, the percentage differences were even wider at 117 in Ipetu and 143 in Odo-Ore. Despite the fact that within each income class Odo-Ore farmers had lower gross

Table 7.7 Costs and returns per acre in cropping enterprises by land and net farm income per consumer classes, Ipetu and Odo-Ore, 1974

Variable	Cropped land per consumer class	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
A. Basic Data									
1. No. of cases	Low	8	5	1	14	3	2	-	5
	Med	2	3	3	8	4	6	1	11
	High	--	2	6	8	2	1	8	11
	All	10	10	10	30	9	9	9	27
2. Ave.size (acres)	All	1.89	3.27	5.95	3.70	2.19	3.54	7.36	4.36
B. Cost and returns per acre (naira)									
3. Value of output (gross farm income)	Low	159.40	241.93	302.25	199.08	93.62	274.55	--	165.99
	Med	113.95	163.91	285.52	197.03	96.10	138.10	255.30	133.48
	High	--	127.30	204.13	184.92	77.75	146.05	184.61	161.67
	All	150.31	195.60	238.36	194.76	91.19	169.30	192.46	150.99
4. Variable costs									
a. Seed	Low	65.59	67.79	72.43	66.86	37.32	69.74	--	50.29
	Med	51.56	44.43	70.43	55.97	28.83	29.17	99.45	35.44
	High	--	54.75	66.38	63.47	30.46	30.46	59.82	48.74
	All	62.78	58.17	68.20	63.05	32.01	41.59	54.38	42.66
b. Hired labor	Low	12.46	3.73	2.00	8.59	1.11	6.36	--	3.21
	Med	4.39	7.80	6.45	6.44	8.48	0.55	17.04	4.93
	High	--	4.89	3.25	3.66	0	0.15	2.86	2.09
	All	10.84	5.18	4.08	6.70	4.14	1.80	4.44	3.46

Table 7.7 (cont'd)

Variable	Cropped land per consumer class	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
c.Total	Low	53.13	64.06	70.43	58.27	36.21	63.38	--	47.08
	Med	47.17	36.64	63.99	49.53	20.34	28.62	82.41	30.50
	High	--	49.85	63.13	59.81	30.46	59.67	45.88	44.33
	All	51.94	52.99	64.11	56.35	27.88	39.80	49.94	39.20
5.Gross margin	Low	81.36	170.42	227.82	123.63	55.19	198.45	--	112.49
	Med	58.00	111.68	208.64	134.62	58.79	108.37	138.80	93.11
	High	--	67.67	134.50	117.80	47.29	86.08	133.01	113.16
	All	76.69	132.25	166.08	125.00	55.03	125.91	133.65	104.87
6.Tools and equipment (Usercost)	Low	2.85	2.49	0.96	2.59	5.11	1.96	--	3.84
	Med	1.30	1.47	1.58	1.30	2.70	2.88	2.92	2.82
	High	--	1.28	0.96	1.04	3.12	2.25	1.70	2.01
	All	2.54	1.94	1.15	1.88	3.59	2.60	1.84	2.68
7.Return to household land,mgt.& labour per hour	Low	-0.16	0.13	0.19	0.15	0.12	0.12	--	0.12
	Med	0.08	0.11	0.15	0.12	0.06	0.07	0.10	0.07
	High	--	0.06	0.08	0.07	0.05	0.05	0.06	0.06
	All	0.14	0.11	0.11	0.12	0.07	0.08	0.07	0.07
8.Return to management and land	Low	-4.89	15.34	158.50	14.00	-27.89	122.19	--	32.14
	Med	-27.10	18.86	130.50	49.23	- 4.24	32.23	-26.85	13.60
	High	--	19.30	73.32	59.82	-13.99	37.83	80.55	59.48
	All	-9.33	17.19	98.99	35.62	-14.29	52.84	68.62	35.72
C.Other Measures									
1.Gross farm income per hour	Low	0.38	0.35	0.94	0.41	0.16	0.51	--	0.30
	Med	0.28	0.40	0.79	0.52	0.20	0.26	0.21	0.23
	High	--	0.53	0.71	0.66	0.18	0.44	0.53	0.46
	All	0.36	0.40	0.76	0.51	0.18	0.34	0.49	0.34

Table 7.7 (cont'd)

Variable	Cropped land per consumer class	Net Farm Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
2. Net farm income per hour	Low	0.19	0.24	0.71	0.24	0.09	0.37	--	0.20
	Med	0.14	0.27	0.55	0.34	0.12	0.20	0.11	0.16
	High	--	0.28	0.46	0.42	0.11	0.26	0.38	0.32
	All	0.18	0.26	0.51	0.32	0.11	0.25	0.35	0.23
3. Net farm income per acre	Low	79.13	168.46	226.72	121.68	52.51	197.28	--	110.42
	Med	57.00	110.73	207.67	133.65	57.60	107.01	136.91	91.76
	High	--	66.83	133.84	117.09	46.00	85.67	132.27	112.35
	All	74.85	130.82	165.28	123.65	53.33	124.70	132.79	103.60
4. Technical efficiency index	Low	- 0.21	0.03	0.53	- 0.07	- 0.06	0.31	--	0.08
	Med	- 0.37	0.04	0.26	0.02	- 0.18	0.08	- 0.19	- 0.04
	High	--	- 0,21	0,02	- 0,04	- 0,35	- 0,17	0,13	0,02
	All	- 0.24	- 0.02	0.14	- 0.04	- 0.18	0.10	0.10	0.01
5. Total farm labour per acre (family + hired)	Low	453.04	720.42	321.30	539.12	575.40	572.02	--	574.04
	Med	400.93	456.07	382.60	414.74	480.27	535.34	1213.99	577.01
	High	--	239.93	290.84	278.11	423.02	335.38	383.14	386.05
	All	378.92	513.46	299.31	397.23	478.04	512.48	459.61	483.38

Source: Survey Data

margin figures than Ipetu, the range in gross margins between the low and high income classes was wider. This may be a partial factor explaining the results shown earlier that inequality as measured by the Gini coefficient was greater in Odo-Ore than in Ipetu.

4. Technical Efficiency

The data show that households in the high income class had consistently greater technical efficiency. Holding land constant, the technical efficiency tended to increase with income status during both years and in both villages. At each income level, the technical efficiency tended to decrease with greater land holdings except for the high income households in Odo-Ore in 1974. This implies that in general technical efficiency is a strong correlate of income.

5. Average Returns to Land and Management

The average return to land and management was on average ₦55 in Ipetu in 1969 and ₦45 in Odo-Ore. Similar return figures were about ₦36 in each village in 1974. These return figures varied directly with income status during both years. In fact, low income households in 1974 had negative returns to management and land in both villages. Return to management and

land and per man-hour of labor were on average ₦0.07 in Ipetu in 1969 and ₦0.08 in Odo-Ore. In 1974 similar figures were ₦0.12 in Ipetu and ₦0.07 in Odo-Ore, with a strong direct association with income class.

6. Variation in factor use and variable costs.

In an effort to explain these differences in factor returns among income classes, we examined variation in factor use. Separating the effects of factor use among income classes enabled us to see what caused the variation in factor returns. For example, while total variable cost per acre remained fairly stable as one moves from low to high income classes in 1969, the gross farm income per acre increases rapidly. The net effect is that gross margin per acre increases as one moves from low to high income groups as a result of higher crop yields among the high income households. Returns to factors all follow along the same pattern. In 1974, however, the total variable costs per acre increased steadily but the gross farm income per acre increased even more rapidly as one moves from low to high income classes. The net effect again is increasing returns to factors as one moves from low to high income classes due to greater yields per acre among the high income households.

E. Summary

Thus far we have considered all the aspects in our earlier conceptual framework. The use of land and labor have been found to be highly correlated with income status whereas capital stock did not show such a close correlation. A strong direct relationship has also been observed between income and factor returns regardless of land use.

The low income households were found to devote a greater proportion of their land to sole crops than the high income households. Under traditional technology it has been found that returns to factors are greater for crop mixtures than sole crops. Hence, the practice of sole cropping might be one of the reasons for low productivity among the low income households. These productivity differences might also be due to other management quality differences; either reflected in allocative or technical inefficiencies. Since data is not available to investigate these further, we will attempt in the next chapter to measure the relative importance of each set of factors set out in the conceptual framework as income determinants.

CHAPTER VIII

CORRELATES OF INCOME

In earlier chapters it has been demonstrated that cropped land is closely correlated with income. Similarly labor use generally tended to be positively associated with income both in terms of labor use per unit of land and per worker. Substantial productivity differences not entirely related to levels of factor use were also found among income classes. Moreover, no substantial differences were found in the cropping techniques or in cropping pattern except that the poor income households appeared to devote a greater percentage of their land to sole cropping. It was clear in the preceeding descriptive analysis, however, that a number of household variables were intercorrelated thereby restricting inferences of more fundamental association with income.

This chapter aims at separating the interactions of individual factors by fitting several econometric models to the data in order to measure the partial correlation of different factors with gross farm income. The analysis was conducted separately for each year and for each village to test the stability of the income correlates over time and between villages.

A. The Variables

The dependent variable in each model was gross farm income. Gross household income could not be used because there was no information on capital (a key independent variable) for off-farm occupation. Moreover, in 1974 data on off-farm activities was not collected making gross farm income the only measure that affords comparison between the two years. Our inability to use gross household income limits our conclusions to farm earnings only which, though a major part of the household income, permits only qualified conclusions. The set of independent variables considered were:

X_1 - Lowland (all of which was mixed cropped) in acres,

X_2 - Upland plus forest land which was devoted to 2 or more crop mixtures in acres,

X_3 - Upland plus forest land devoted to sole crops in acres,

X_4 - Number of adult male worker equivalents,

X_5 - Value of capital stock (tools and equipment) in naira,

X_6 - Total manhours per household

X_7 - Family labor per worker, and

X_8 - Non labor variable costs in farming in Naira.

It is expected that the greater the total cropped land the greater would be both gross and net farm income. Breaking land which was devoted to crop mixtures into

X_1 and X_2 is to separate land quality differences. It is expected that the lowland, being more productive due to greater natural fertility and soil moisture would show a larger coefficient than upland devoted to crop mixtures. Invariably all lowland fields were devoted to crop mixtures.[1] The acreage under sole crops versus acreage under mixtures have been incorporated as a partial measure of management. It is expected that both upland under crop mixtures and under sole crops would show positive relationship with income but the size of the coefficient for the sole cropped land would be expected to be smaller.

Labour availability (the work force endowment of the household) has been measured in terms of the number of adult male worker equivalents. Again it is expected that the relationship between the worker equivalents and income would be positive both because of the larger work force and due to greater consumption requirements. The value of capital may or may not be an important correlate of income given the traditional technology but the relationship would be expected to be positive.

Comparing the two study villages, Ipetu has closer access to Omu-Aran market and is expected to receive

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[1] Norman (41) found that returns to factors were greater with crop mixtures than sole crops.

heavier rainfall. However, our survey data for 1974 showed that Ipetu received less rainfall than Odo-Ore hence making it difficult to predict whether the **constants** obtained for Ipetu models would be expected to be greater than those obtained for Odo-Ore.

The variables reflecting resource endowment X_1 to X_5 and resource use variables X_6 to X_8 were combined in the equation in two forms. Variable X_6 (total manhours) was entered separately with X_1, X_2, X_4 and X_{10} simply to determine marginal effect of labor on gross farm income. Variables X_4 and X_9 were entered together in subsequent equations to separate labor effects into two possible components, the number of workers (family composition) and hours per worker (intensity of labor effort). Each of these variables is expected to be positively related to income. Non-labor variable costs reflect the intensity of land use and was expected to show a positive relationship with income.

The means and standard deviations of the variables used in the regression models are reported in Tables 8.1 and 8.2.[1]

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[1]Worker quality was introduced into earlier models as the age of the household head. The quadratic form was introduced to test the hypothesis that management and physical strength first increases and decreases with age. Thus age was expected to have a positive coefficient and the age square to have a negative coefficient. However, since age and age squared gave opposite signs and were generally not significant they were eliminated from the models.

Table 8.1 Means and standard deviations of variables used in regression models, Ipetu 1969 and 1974

Variables (Natural Logarithm)	1969			1974		
	Mean		Standard Deviation	Mean		Standard Deviation
	Logarithm	Anti-Log		Logarithm	Anti-Log	
Gross Farm income	5.96	387.61	0.56	6.32	555.57	0.76
Total Manhours	7.31	1495.18	0.56	7.10	1211.97	0.52
Upland acres (sole)	0.50	1.65	0.85	-0.04	0.96	0.97
Lowland acres (mixed)	-1.97	0.14	0.92	-1.70	0.18	1.05
Upland acres (mixed)	0.68	1.97	0.54	0.51	1.67	0.88
Value of Capital stock	1.77	5.87	0.63	2.86	17.46	0.49
Non-Labor Farm Expenses	4.62	101.49	0.65	5.21	183.09	0.74
Family Labor per worker	5.58	265.07	0.69	5.45	232.76	0.59
Worker-Units	1.58	4.85	0.53	1.53	4.62	0.37

Source: Survey Data

Table 8.2 Means and standard deviations of variables used in regression models, Odo-Ore 1969 and 1974

Variables (Natural Logarithm)	1969			1974		
	Mean		Standard	Mean		Standard
	Logarithm	Anti-Log	Deviation	Logarithm	Anti-Log	Deviation
Gross Farm Income	5.39	219.20	0.76	6.11	450.34	0.97
Total Manhours	6.73	837.15	0.42	7.33	1525.38	0.61
Upland acres (sole)	-0.64	0.53	0.82	0.12	1.13	0.85
Upland acres (mixed)	0.83	2.29	0.63	0.75	2.12	0.90
Capital Stock	1.88	6.55	0.50	2.59	13.33	0.71
Non-Labor Farm Expenses	3.89	48.91	0.71	4.81	122.73	0.99
Family Labor Per Worker	5.03	152.93	0.60	5.96	387.61	0.54
Worker-Units	1.64	5.16	0.63	1.33	3.78	0.52

Source: Survey Data

B. Correlation Coefficients

In Tables 8.3 to 8.6 are presented the correlation coefficients for all variables. It is clear that some of them were quite high indicating likely problems of collinearity. In particular we should note the high correlation (greater than 0.6) between cropped upland, the non-labor variable costs and total man-hours in both villages and for both years. With such a high degree of multicolinearity of course the estimates of the regression coefficients may be highly imprecise because of the large variances of the least square estimates. This implies that the absolute values of the regression coefficients should be used with caution.

C. The Results of the Regression Models

Several forms of income generating functions have been used in the literature. For our purposes in this chapter the Cobb-Douglas form has been reported because it gave a better fit than the linear form and because it displays diminishing returns to factors, an expected property of the present farming system.[1]

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[1]The same functional form was used in Chapter VII for the whole farm production function fitted for the purpose of estimating the technical efficiency index.

Table 8.3 Correlation coefficients of variables used in regression models, Ipetu 1969

Variables (Natural Logarithm)	Gross Farm Income	Total Man-hours	Upland acres (sole)	Lowland acres (mixed)	Upland acres (mixed)	Value of Capital Stock	Non-labor farm expenses	Family labor per worker
Total man-hours	.65							
Upland acres (sole)	.42	.35						
Lowland acres (mixed)	.26	.47	-.01					
Upland acres (mixed)	.62	.64	-.06	.30				
Value of Capital Stock	.35	.59	.13	.54	.28			
Non-Labor Farm Expenses	.73	.67	.41	.34	.64	.34		
Family Labor per worker	.48	.63	.17	.15	.39	.33	.47	
Worker Units	.14	.36	.14	.39	.20	.30	.18	-.47

Source: Survey Data

Table 8.4 Correlation coefficients of variables used in regression models, Ipetu 1974

Variables (Natural Logarithm)	Gross Farm Income	Total Man-hours	Upland acres (sole)	Lowland acres (mixed)	Upland acres (mixed)	Value of Capital Stock	Non-Labor Farm Expenses	Family Labor per worker
Total man-hours	.80							
Upland acres (sole)	.30	.15						
Lowland acres (mixed)	-.01	-.10	.03					
Upland acres (mixed)	.79	.79	.03	-.04				
Value of Capital Stock	.46	.55	.07	-.23	.40			
Non-Labor farm expenses	.90	.75	.33	-.06	.85	.46		
Family labor per worker	.49	.72	.17	-.19	.44	.33	.42	
Worker Units	.53	.49	.09	.05	.58	.38	.52	-.22

Source: Survey Data

Table 8.5 Correlation coefficients of variables used in regression models, Odo-Ore, 1969

Variable (Natural Logarithm)	Gross Farm Income	Total Manhours	Upland acres (sole)	Upland acres (mixed)	Capital Stock	Non-Labor farm expenses	Family labor per worker
Total manhours	.68						
Upland acres (sole)	.37	.36					
Upland acres (mixed)	.85	.66	.11				
Value of Capital Stock	.44	.33	-.08	.37			
Non-Labor farm expenses	.85	.70	.44	.75	.51		
Family labor per worker	.13	.26	-.19	.18	-.29	.14	
Worker Units	.36	.43	.40	.29	.04	.34	-.75

Source: Survey Data

Table 8.6 Correlation coefficients of variables used in regression models Odo-Ore, 1974

Variables (Natural Logarithm)	Gross Farm Income	Total Manhours	Upland acres (sole)	Upland acres (mixed)	Value of Capital Stock	Non-Labor farm expenses	Family labor per worker
Total manhours	.89						
Upland acres (sole)	.28	.25					
Upland acres (mixed)	.86	.76	.10				
Value of Capital Stock	.40	.47	.05	.52			
Non-Labor farm expenses	.92	.84	.23	.76	.39		
Family Labour per worker	.41	.58	.10	.37	.29	.45	
Worker Units	.62	.60	.40	.51	.28	.54	.30

Source: Survey Data

Various models were specified using several combinations of the sets of independent variables. The models reported in Table 8.7 are of this form:

1. $\text{Log } Y = \text{Log } A + B_1 \text{ Log } X_1 + B_2 \text{ Log } X_2 + B_3 \text{ Log } X_3 + B_5 \text{Log } X_5 + B_6 \text{ Log } X_6 + B_8 \text{ Log } X_8$

2. $\text{Log } Y = \text{Log } A + B_1 \text{ Log } X_1 + B_2 \text{ Log } X_2 + B_3 \text{ Log } X_3 + B_4 \text{ Log } X_4 + B_5 \text{Log } X_5 + B_7 \text{ Log } X_7 + B_8 \text{ Log } X_8$

where Y is gross farm income and A is the constant (the intercept) and B_1 to B_8 are the beta coefficients which in the Cobb-Douglas form represent production elasticities. The marginal productivities[1] and their standard errors shown in Table 8.8 are derived from the elasticity figures of Table 8.7.

We shall first present the results of the regressions for each factor and then examine the interaction of independent variables in the various models.

1. Lowland Soils

It will be recalled that lowland soils existed only in Ipetu. For both years and both models in Ipetu, the coefficient- on lowland was not significantly different from zero. In model 2 for both years lowland gave the expected positive coefficient while model 1 gave an unexpected negative sign. This

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[1]See Heady and Dillon (28 p.228-230)

Table 8.7 Regression Coefficients and Test Statistics for two econometric models to examine the influence of all factors on variation in income, Ipetu and Odo-Ore 1969 and 1974

Village	Equation Number	Year	Item	Constant	Lowland acres (mixed) X_1	Upland acres (mixed) X_2	Upland acres (sole) X_3	Value of Capital Stock X_5	Worker Equivalents X_4	Family Labor Per Worker X_7	Total man-hours X_6	Non-Labor Farm Expenses X_8	R^2	$\bar{R}^2$	F-Value of Equation
Ipetu	1	1969	Coeff.	3.77	-0.01	0.42	0.20	-0.06			0.08	0.24	0.65	0.55	6.7
			Std. Error		0.10	0.22 **	0.12 **	0.15			0.24	0.19			****
		1974	Coeff.	-1.15	-0.05	-0.11	-0.01	-0.02			0.51	0.78	0.85	0.82	22.67
			Std. Error		0.06	0.17	0.08	0.15			0.21 ***	0.19 ****			****
	2	1969	Coeff.	3.77	0.002	0.42	0.21	0.04	0.03	0.13		0.21	0.66	0.54	5.72
			Std. Error		0.10	0.23 **	0.11 **	0.15	0.24	0.19		0.19			****
		1974	Coeff.	-0.45	0.05	-0.10	0.03	-0.03	0.63	0.42		0.72	0.86	0.82	19.33
			Std. Error		0.06	0.17	0.08	0.16	0.29 ***	0.15 ***		0.20 ****			****
Odo-Ore	1	1969	Coeff.	3.54		0.70	0.17	0.13			-0.02	0.33	0.95	0.81	21.27
			Std. Error			0.19 ****	0.11 *	0.17			0.24	0.21 *			****
		1974	Coeff.	1.04		0.42	0.10	-0.13			0.43	0.41	0.94	0.92	62.79
			Std. Error			0.10 ****	0.07 *	0.09 *			0.18 ***	0.11 ****			****
	2	1969	Coeff.	3.12		0.68	0.16	0.13	-0.07	-0.05		0.31	0.85	0.69	17.37
			Std. Error			0.20 ****	0.12 *	0.18	0.25	0.24		0.21 *			****
		1974	Coeff.	1.60		0.42	0.06	-0.13	0.45	0.31		0.43	0.94	0.92	49.39
			Std. Error			0.11 ****	0.07	0.09 *	0.20 ***	0.17 **		0.11 ****			****

*Significant at 20 percent level ** Significant at 10 percent level *** Significant at 5 percent level **** Significant at 1 percent level
Source: Survey Data

Table 8.8 Marginal Productivities and test statistics of variables in the two econometric models, Ipetu and Odo-Ore 1969 and 1974

Village	Equation Number	Year	Item	Constant (Antilog)	Lowland acres (mixed) X_1	Upland acres (mixed) X_2	Upland acres (sole) X_3	Value of Capital Stock (₦)X_5	Worker Equivalent (Number) X_4	Family Labor per worker (manhours) X_7	Total man-hours X_6	Non-Labor Farm Expenses (₦) X_8
Ipetu	1	1969	Marg.Prod	43.38	-27.69	82.64	46.98	-3.96			0.02	0.92
			Std. Error		276.86	43.29 **	28.19 ***	9.90			0.06	0.73
		1974	Marg.Prod	0.32	-154.33	-36.59	-5.79	-0.64			0.23	2.37
			Std. Error		189.19	56.55	46.30	4.77			0.10 ***	0.58 ****
	2	1969	Marg.Prod	43.38	5.54	82.64	49.33	2.64	2.40	0.19		0.80
			Std. Error		276.86	45.16 **	25.84 **	9.90	19.18	0.28		0.73
		1974	Marg.Prod	0.64	154.33	-33.27	17.36	-0.95	75.76	1.00		2.18
			Std. Error		189.19	56.56	46.30	5.09	34.87 ***	0.38 ***		0.61 ****
Odo-Ore	1	1969	Marg.Prod.	34.47		67.00	70.31	4.35			-0.01	1.48
			Std. Error			18.19 ****	45.49 *	5.69			0.06	0.94 *
		1974	Marg.Prod.	2.83		89.21	39.85	-4.39			0.13	1.50
			Std. Error			21.24 ****	27.90 *	3.04 *			0.05 ***	0.40 ****
	2	1969	Marg.Prod.	22.65		65.09	66.17	4.35	-2.97	-0.07		1.39
			Std. Error			19.14 ****	49.63 *	6.02	10.62	0.34		0.94 *
		1974	Marg.Prod.	4.95		89.22	31.88	-4.39	53.61	0.36		1.58
			Std. Error			23.37 ****	27.30	3.04 *	23.83 ***	.20 **		0.40 ****

*Significant at 20 percent level **Significant at 10 percent level ***Significant at 5 percent level ****Significant at 1 percent level

Source: Survey Data

implies that lowland acreage was not a strong correlate of income.

2. Upland Soils Devoted to Crop Mixtures

Upland soils devoted to crop mixtures showed a significantly positive association with income in 1969 and a highly significant association in Odo-Ore during both years. In Ipetu, however, this variable gave an unexpected negative coefficient which was not significant.

3. Upland Soils Devoted to Sole Crops

For both villages in 1969 upland acreage devoted to sole crops was found to be significantly and positively related to income. In 1974, however, the pattern was not very clear. For the first model in Ipetu the 1974 result showed a negative effect on income but a positive effect in the second model. Moreover, neither coefficient was significant. In Odo-Ore a positive effect was shown in both models but was only significant in the first model. It is particularly important to note that in 1969 in Ipetu and in 1974 in Odo-Ore upland soils devoted to crop mixtures gave significantly higher marginal productivity figures than upland devoted to sole crops. On the other hand, inconsistent though insignificant results were obtained in the other year. As would be recalled these

two variables X_2 and X_3 were incorporated as a partial reflection of management. But as those results indicate whether planting crops in mixtures give higher productivity or not depends on the year and also on the location.

4. Labor

Because the marginal product of total manhours was significant in both villages only in 1974 the separation of labor correlation with income into its two component parts appears to be meaningful only in that year. The results for that year in both villages indicate that the number of workers per household was more closely correlated with income than the intensity of family labor use. This implies that family structure is perhaps a better explanation of income than the duration of effort. Although the number of workers and family hours per worker are negatively correlated the correlation is not high enough to affect values of the coefficients.

5. Capital Stock

With the exception of Odo-Ore in 1974 none of the capital stock coefficients were significant and in five of the equations reported the sign was negative. It is important to recall that given the traditional technology there were no major qualitative differences in the capital stock.

6. Non-Labor Farm Expenses

Operating capital, unlike capital stock, showed a high correlation with income and a stable coefficient value of at least 0.22 in 1974. In Ipetu in 1974 about ₦2.28 gross farm income could be generated from an additional naira of non-labor farm variable costs. This represents an approximate annual return to capital of 128 percent. In Odo-Ore in 1974 an additional naira expenditure on variable costs could generate an additional ₦1.50 gross farm income. This represents approximately 50 percent annual return to capital. During 1969, however, the association was not significant in Ipetu and only significant at the 20 percent level in Odo-Ore.

D. Comparison Between Models and Years

In general, the models display high R^2 for cross-sectional data. The high R^2 can largely be attributed to high correlation between gross farm income and odan land devoted to crop mixtures (0.62 in Ipetu and 0.85 in Odo-Ore in 1969, 0.79 in Ipetu and 0.86 in Odo-Ore in 1974). There is no appreciable difference between the R^2 for either model, however, in both villages 1974 data gave much higher R^2 values.

An important result was that there are notable inter-year variations both in terms of the magnitude of the

coefficients and in the significance of the variables. In terms of the size of the coefficients the variables were fairly stable between models each year given a particular village. But the coefficients varied widely between villages for each model. For example, the results indicated that an acre of upland in mixture could generate an additional ₦83 gross farm income for Ipetu in 1969 and ₦66 in Odo-Ore with these relatives reversing in 1974. The labor variables also gave substantial inter-year variation.

E. Summary

In conclusion, this analysis shows that:

1. Use of upland soils in both years is consistently and highly correlated with income while lowland gave no significant results.
2. Having used acreage under mixed cropping versus sole cropping as a partial proxy for management, the results indicate that the superiority of crop mixtures over sole cropping as correlates of income is highly variable according to time (year) and village location.
3. Operating capital, in contrast to value of capital stock appeared to be a high correlate of gross farm income. The rate of return on operating capital is high indicating that if cash shortage is experienced

by low income groups especially at critical production periods, the effect on income can be significant.

4. When labor is separated into its two components, number of workers (family composition) seems to be more clearly correlated with income than intensity of labor use.
5. The substantial differences observed for different years appears to suggest that analysis of a single year alone for determining factors associated with income may give unreliable results. Different factors or combinations of factors may be critical in determining the distribution of income in any given year. This points to the necessity of making longitudinal studies for the purpose of deriving firm conclusions on income determinants.

The fact that one year's study cannot be expected to give generalizable results, leads us to the examination of inter-year variation in the next chapter. Chapter IX examines the movement of households between income strata and describes which of the factors stipulated in our conceptual framework are responsible for relative gain or loss in income status between the two survey years.

CHAPTER IX

INTER-YEAR VARIATION IN INCOME DISTRIBUTION

Among the 54 households interviewed in 1969 and 1974 a total of 42 households remained in the sample both years. Twenty of these were in Ipetu and 22 in Odo-Ore. A unique aspect of this study is that two years of data were available for examination of income changes over time. The change in rankings of households between 1969 and 1974 is examined in this chapter. Due to a range of factors, the underlying income distribution might differ between years and households may move substantially with respect to their relative income standing. The characteristics of the households which display wide inter-year changes are therefore examined to determine possible causes of movement.

The 42 households with data for both years were ranked according to each year's income per consumer within their respective villages and within the total sample. The change in their rankings were found by subtracting the 1974 ranking from that of 1969. The percentile change was found by dividing the change in rank by the total two year sample size in Odo-Ore (22) and in Ipetu (20) and multiplying the result

by 100 (see Appendix Tables A-19 and A-20). The results are shown in Table 9.1 and in Figure 9.1.

The relative stability of the interhousehold distribution is clear in Figure 9.1. Within each village 60 percent of the households changed by 20 percentile or less. Examining the pooled sample, that is both villages, about 47 percent of the households changed by 20 percentile or less.

A. Characteristics of Households with Large Income Changes Between Years

Two groups of households were singled out for more detailed analysis, those whose relative income ranking improved by more than 20 percentile between years, and those whose relative ranking declined by more than 20 percentile. In an attempt to understand what is associated with these changes, the characteristics of the households concerned were examined as case studies (Table 9.2 and 9.3).

1. Households Whose Relative Income Ranking Increased by Greater Than 20 Percentile

Four households in Ipetu and 5 in Odo-Ore experienced more than 20 percentile increase in their relative income rankings between 1969 and 1974. The data suggests that productivity improvement was the most common contributing factor. All of the 9 households in this group experienced an increase in gross farm income per hour and all but one had an increase in

Table 9.1 **Changes in relative income status of households between 1969 and 1974 by village**

Village	Per-centile Change	Households: Positive Change Number	Positive Change Percent of house-holds	Negative Change Number	Negative Change Percent of house-holds
Ipetu	0	2	10	--	--
	.1-20	5	25	5	25
	21-40	1	5	0	0
	41-60	1	5	3	15
	61-80	1	5	1	5
	81-100	1	5	0	0
Odo-Ore	0	1	5	--	--
	1-20	5	23	7	32
	21-40	3	14	1	5
	41-60	1	5	3	14
	61-80	1	5	--	--
	81-100	--	--	--	--

Source: Survey Data. Calculated from Appendix Tables A-19 and A-20.

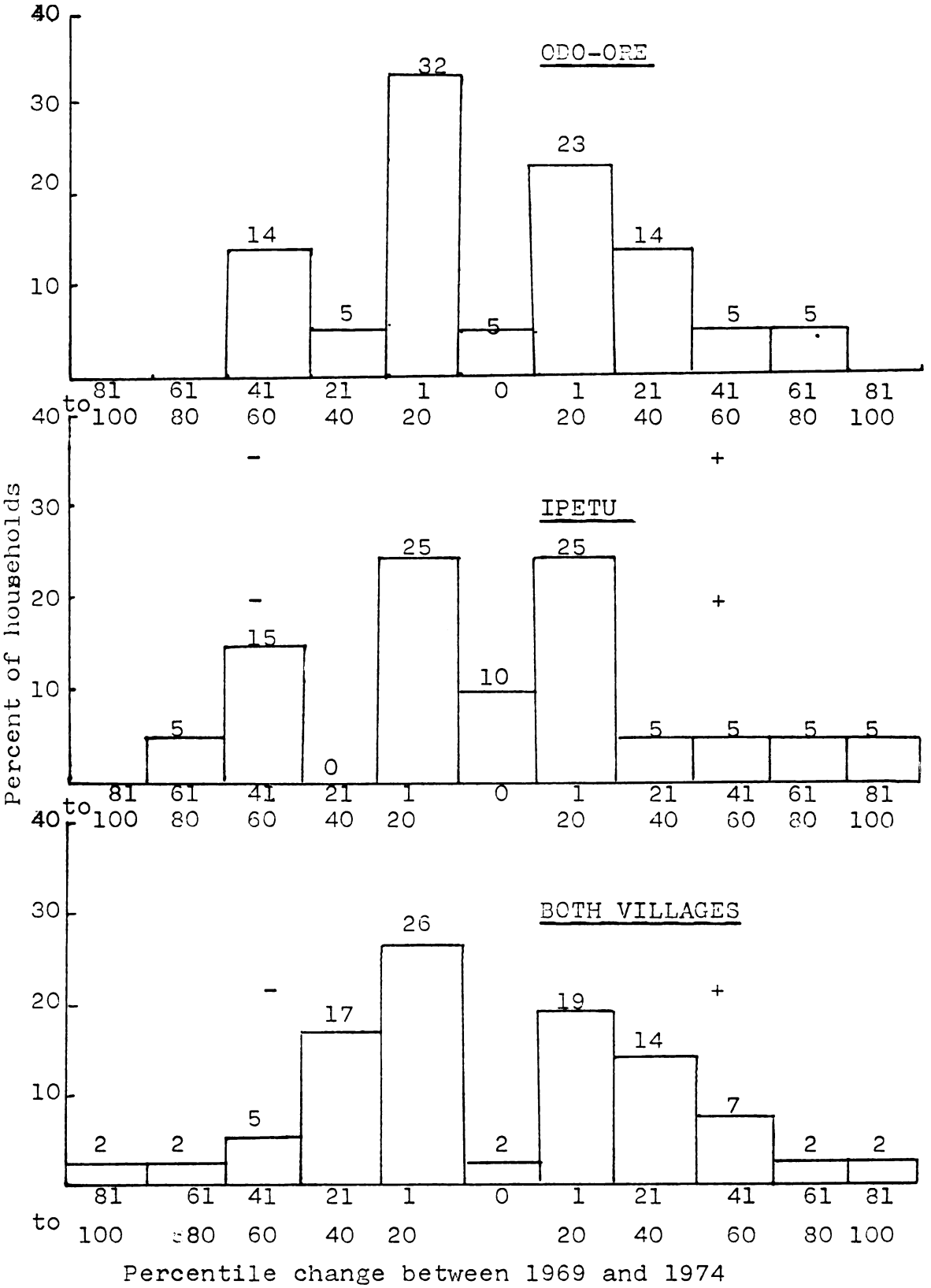

Figure 9.1 Percent change in relative ranking between 1969 and 1974 with 1969 as base year

gross farm income per acre. Finally all but one of them experienced an increase in technical efficiency.

The data, however, suggest that changes in family structure may also have played a key role. For example, all but one of these households had a decrease in the number of consumers, and 5 out of 9 had a decrease in dependency ratio. Moreover in 6 out of 9 of these cases changes in land holdings were such that cropped land per consumer also increased. This might have contributed to the increase in labor productivity, but since land productivity and technical efficiency also increased a more general improvement in production efficiency must have been experienced by this set of households.

Thus no single cause, but rather a set of factors underlies the interyear improvements in ranking with the greatest consistency in the productivity measures. This again emphasizes the need for a better understanding of factors contributing to production efficiency both in a static and dynamic frame.

2. Households Whose Relative Income Ranking Decreased by Greater Than 20 Percentile

There were a total of 8 households, 4 in each village, that experienced a decrease of more than 20 percentile in their relative income ranking. All 8 households in this group had a decline in gross farm income per hour while all but one of them had a decline in gross

farm income per acre. Finally all of them suffered a decrease in productivity. This implies that a decline in production efficiency was closely associated with decline in relative income status.

Four out of the 8 households also had a worsening in their dependency ratio, two had no change, while only two had an improvement in their dependency ratio. These results again tend to show that changes in family structure probably contributes to the fall in income status even over relatively brief periods of only five years.

Finally, in 5 out of 8 households whose positions deteriorated cropped land decreased and in 6 out of 8 cropped land per consumer also fell. In short, again no single factor would appear to explain the decline in income status of these households over time. Of the factors considered, however, productivity changes again show the most consistent results.

B. Case Studies

The immediately preceeding analysis (Section A) has demonstrated that productivity changes as well as family structure were closely associated with inter-year income variation. The following section examines the nature of households structural changes and possible factors contributing to changes in farm productivity. Each of the households in Table 9.2 and Table 9.3 are examined in depth on a case by case basis.

Table 9.2 Percentage change in levels of variables between 1969 and 1974 (using 1969 as base year), Ipetu

Percentile Change in Income	Household number	Income Percentile Change (Value)	Resource Endowment: Total Cropped Acres	Resource Endowment: Number of Worker	Resource Endowment: Cropped Land per Consumer	Household Structure: Number of Consumers	Household Structure: Consumer to worker ratio	Resource Use: Family Labor per Worker	Resource Use: Family Labor per acre	Resource Use: Variable cost per acre	Productivity: Gross Farm Income Total	Productivity: Gross Farm Income Per Acre	Productivity: Gross Farm Income Per hour	Productivity: Technical Efficiency
Positive	27 (1)	85	14*	-48	152*	-56*	-15*	71*	-21	- 9	272*	157*	245*	309*
Percent-	29 (1)	65	2*	-21	26*	-19*	- 3*	47*	113*	-19	129*	77*	89*	80*
ile	10 (1)	45	-43	-41	-2	-42*	- 2*	-31	-28	30	14*	61*	141*	1375*
Change	32 (1)	25	2*	-14	-7	-21*	- 8*	-24	-11	- 4	35*	45*	100*	633*
Retative	17 (1)	45	-74	-52	-41	-56*	- 8*	34*	245*	60	-82	-46	-76	-95
Percent-	17 (2)	45	-416	43*	-79	44	1	-47	251*	-36	-65	- 9	-55	-60
ile	9 (1)	55	-56	20*	-68	38	15	9*	195*	297	-30	25*	-52	-158
Change	26 (2)	80	28*	40*	-18	56	12	-9	0	-22	-59	-75	-71	-183

* Change in factors associated with increase in income ranking
— Change in factors associated with decrease in income ranking

Source: Survey Data

Table 9.3 Percentage change in levels of variables between 1969 and 1974 (using 1969 as base year), Odo-Ore

Percentile change in income	Household Number	Income Percentile Change (Value)	Resource Endowment			Household Structure		Resource Use			Productivity			
			Total Cropped Acres	Number of Workers	Cropped Land per Consumer	Number of Consumers	Consumer to worker ratio	Family Labor per worker	Family labor per acre	Variable cost per acre	Gross Farm Income: Total	Gross Farm Income: Per Acre	Gross Farm Income: Per hour	Technical Efficiency
Positive Percentile Changes	17 (1)	77	150*	-65	520*	-59*	16	531*	-9	-2	114*	8*	109*	123*
	4 (1)	50	43*	-41	126*	-37*	8	335*	33*	-55	29*	17*	50*	4450*
	20 (1)	32	-10	-67	177*	-67*	0	203*	154*	48	24*	7*	156*	58*
	31 (1)	27	29*	68*	-22	65	-2*	4*	36*	28	120*	108*	157*	187*
	6 (1)	23	94*	-29	164*	-26*	3	162*	-8	-23	20*	-21	41*	-30
Negative Percentile Changes	1 (1)	36	18*	0	17*	0	0	103*	72*	-27	-66	-64	-60	-213
	7 (1)	50	-26	18*	-123	1	-10*	114*	243*	-71	-363	-52	-75	- 71
	9 (1)	50	8*	0	8*	0	0	182*	164*	9	-58	-50	-70	-137
	12 (3)	50	-10	29*	-33	34	4	33*	90*	-35	-55	-36	-41	-20

* Change in factors associated with increase in income ranking
— Change in factors associated with decrease in income ranking

Source: Survey Data

In order to thoroughly analyse the nature of the inter-year changes in the household structure, complete census data for the two years are needed. Unfortunately, complete census data for only one year was at hand while the other years census data was available only in summary form. The analysis that follows makes use of the available scanty data.

1. Causes of Inter-year Changes in Household Structure

A. Outmigration

During the 1950's there was a mass movement of people out of Igbomina/Ekiti Division into the Western State of Nigeria in quest for forest land to grow cocoa trees.[1] Ipetu and Odo-Ore was no exception for the outmigration to the Western State. Farmers were purchasing land for the production of cocoa, residing on their cocoa farms and returning to their home villages on special occasions only once or twice a year.

During the census surveys each household head was asked to enumerate all members of their household who were living outside of their village. These included the following categories of people:

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[1]The author was born in this study area and knows this to be true though there is no written work to cite as reference.

a. outmigrants to the cocoa farms in the Western State.

b. educated persons working in other cities like Ibadan, Lagos, Kano, etc.

c. traders in the cities and other towns like Ilorin.

d. those who were gone to other places in search of employment.

e. females who were married to men outside of Odo-Ore and Ipetu

In 1969 the census survey data showed that about 33 percent of the enumerated household members in Ipetu lived outside Ipetu village and approximately 55 percent of the Odo-Ore population were similarly reported living outside of that village. By 1974 the census survey data showed that the outmigration had increased--the percentage of Ipetu population living outside was 45 while 64 percent was reported in Odo-Ore. It is expected that the change in the composition of the outmigration between the two years would affect the structure of the households in the village samples. Due to lack of the age/sex breakdown of the outmigrants for both years the impact of the change in the composition of the outmigration on the households in the villages

cannot be examined directly. However, it should be noted that the analysis show that there was no apparent correlation between outmigration changes and the dependency ratio nor between positive or negative percentile changes in income ranking.

B. Family Structure Changes Among Households Whose Relative Income Ranking Increased by More Than 20 Percentile

It was noted earlier that 5 out of the 9 households which experienced a greater than 20 percentile increase in income rank experienced a decrease in the consumer-to-worker ratio. Examination of the change in the number of children for each of those 5 households reveals that 3 of them--27 (1), 10 (1) and 32 (1) in Ipetu--experienced a decline in the number of children reported between 1969 and 1974 using 1969 as the base. For these 3 households the decrease in the dependency ratio may be partly due to the children joining the work force. This is further substantiated by the average age of the 3 household heads which was 65 years in 1969. As noted at the bottom of Table 9.4 the average age of head of households which had a decrease in their number of children was 64 years compared to 48 years for those whose number of children increased.

Table 9.4 Changes in household structure between 1969 and 1974, Ipetu and Odo-Ore.

Change In Income	Village	House-hold Number	Age of house-hold head in 1969 in Years	Change in Number of (1969 as base) Children	Out-migrants	Percentage Changes (1969 as base) Children	Out-migrants	Depend-ency Ratio
Positive Percentile Change in Income[b]	Ipetu	27 (1)	65	-9	-6	-90[d]	-27	-15
		29 (1)	50	0	+1	0	+20	- 3
		10 (1)	65	-6	+4	-75	+33	- 2
		32 (1)	65	-3	+3	-60	+300	- 8
	Odo-Ore	17 (1)	45	+1	+10	+20	+63	+16
		4 (1)	55	-1	-11	-50[a]	-41	+ 8
		20 (1)	65	0	-19	NR	-61	0
		31 (1)	75	0	- 9	NR	-37	- 2
		6 (1)	70	0	+12	NR	+600	+ 3
Negative Percentile Change in Income[c]	Ipetu	17 (1)	75	-2	-2	-100[e]	-100	- 8
		17 (2)	35	+1	0	50	0	+ 1
		9 (1)	65	+2	+1	50	+100	+15
		26 (2)	45	+1	+3	50	+300	+12
	Odo-Ore	1 (1)	65	0	+11	NR	+200	0
		7 (1)	75	0	+2	NR	+67	-10
		9 (1)	75	0	+8	NR	+114	0
		12 (2)	75	-1	+15	-100	+42	+ 4

[a] NR = None reported

[b] Average age of household heads with positive percentile income ranking change was 62 years

[c] Average age of household heads with negative percentile income ranking change was 63 years

[d] Average age of household heads with decreased number of children between 1969 and 1974 was 64 years

[e] Average age of household heads with increased number of children was 48 years

Source: Survey Data

Hence it appears that these 3 household heads had stopped bearing children between 1969 and 1974, and persons reported to be nonworking children in 1969 were active workers in 1974.

C. Family Structure Changes Among Households Whose Relative Income Ranking Decreased by More Than 20 Percentile

It was mentioned above that children joining the work force could be a possible cause for the decreased dependency ratio among households which had greater than 20 percentile increase in their income ranking. It was also observed that 4 of the 8 households with greater than 20 percentiles decline in income ranking, experienced an increase in their dependency ratio. Three of these 4 households (17 (2), 9 (1) and 26 (2)) in Ipetu each had a 50 percent increase in the number of children. The average age of the household heads was 48 years for the three households implying that they were still probably bearing children between 1969 and 1974. It would also appear that because the number of children increased the number of consumers increased relatively more than workers hence contributing to lower incomes per consumer.

2. Causes of Inter-year Changes in Productivity Measures

The importance of changes in productivity measures to the inter-year income variation has been emphasized

repeatedly in previous sections. Factors which could be hypothesized to cause inter-year variations in household productivity measures among others include the following:

a. quality of inputs like seeds, land and labor
b. timely performance of operations
d. the incidence of insects, pests and crop diseases
d. changes in cropping pattern

Differences between years in the quality of inputs like seed can result in important changes in productivity. The fertility of the farmers fields have been assumed uniform. However, factors like erosion, slope and soil texture would affect the rate at which any field losses its fertility over time. Moreover, substantial micro-variation in soil fertility unrelated to previous use was also undoubtedly present. Changes between two years in the health of household workers can also be expected to cause inter-year productivity changes.

Untimely performance of operations such as weeding due to illness or poor time allocation in a year can result in obtaining less than maximum yield. Insects, pests and diseases can cause partial or complete loss of harvests during any year. Differences in damage caused by such occurrences over time can, of course,

lead to productivity changes. Lastly, the cropping patterns may differ between years. Earlier we looked at cropping pattern variation among income groups but found no significance difference between years. However, the presence or absence of some high yielding crops in the crop rotation system in a certain year could be expected to cause interyear productivity changes.

The above factors need to be carefully examined in order to be able to pinpoint causes of interyear productivity changes. Unfortunately, the data at hand cannot be used to explore such causes in the interyear productivity measures. Detailed data is required on (a) changes in time allocation between the years and (b) the incidences of crop failure (c) germination rates, plant population densities (d) records of illnesses and number of working days lost as a result of the illnesses. These are essential topics for further research.

D. Summary

This chapter has examined possible causes of interyear income changes. No single factor has been found to explain all changes, but productivity improvement was the most consistent. Changes in family structure were also found to be important. Furthermore the same set of factors appear to be

responsible for both increases and decreases in the household's income status between years. However, it was not possible with the available data to identify with certainty the underlying factors which contributed to changes in either farm productivity or family structure. The next chapter contains a summary of results, concluding remarks, policy implications of the study and suggestions for further research.

CHAPTER X

SUMMARY AND CONCLUSIONS

The primary purpose of this study has been to document the distribution of personal incomes among farmers in Kwara State, Nigeria. The study has been designed to examine factors associated with the level and distribution of income within rural areas. Factors correlated with income have been placed in a framework encompassing inter-relationships among resource endowments, resource use and resource productivity. Through this model it has been possible to examine separate factors contributing to income variation among households. Two years of data enabled us to examine inter-year differences in the levels and distribution of income and factors associated with variation in income.

A. Distribution of Income

The mean net household income in 1969 was ₦337 for both villages, ₦397 in Ipetu and ₦269 in Odo-Ore. Off-farm income data was not collected in 1974 hence net household income could not be reported. However, net farm income was obtained for both years. In 1969 the mean net farm income per family was ₦274 for both villages, ₦320 in Ipetu and ₦222 in Odo-Ore. In 1974, the undeflated mean

net farm income was about ₦463 in each village while the deflated figures (1969 as base year) were ₦239 in Ipetu, ₦244 in Odo-Ore and ₦241 for both villages. The lower incomes in 1974 were due in large part to lower rainfall compared with 1969 especially in Ipetu. Average per capita net farm income was ₦37 in 1969 for both villages and ₦62 in 1974 in nominal terms and ₦32 in constant 1969 naira. There were also differences between villages in the net farm income per capita which was ₦43 in Ipetu and ₦31 in Odo-Ore in 1974. The deflated values of net farm income per capita in 1974 were ₦28 in Ipetu and ₦37 in Odo-Ore, again expressed in constant 1969 value.

Several measures of income distribution were presented and showed that incomes were in general equitably distributed. A Gini coefficient of 0.40 on net farm income per capita was found in 1969 while the net household income after off-farm income has been added had a Gini coefficient of 0.35. While the poorest third of the sample population obtained only 11.6 percent of net income generated in farming enterprises, with the addition of off-farm income the share of the poorest third increased to 19.7 percent while the share of the richest third dropped from 61 to 42 percent. Thus it was found that off-farm income tended to reduce inequality since lower income households allocated a greater percentage of their time to off-farm employment.

The mean net farm income per capita for households in the poorest third in 1969 was ₦11 and ₦72 for the richest third. In 1974 the poorest third had ₦22 net farm income per capita compared to ₦111 for the richest third. When the 1974 income figures were deflated to constant 1969 prices, the poorest third had a mean net farm income per capita of ₦12 and the richest third had ₦58. Hence in real times, income decreased between 1969 and 1974 for the high income class.

Some inter-village and inter-year differences in the distribution of income were observed. In 1969 Ipetu showed a Gini coefficient of 0.38 on net farm income per capita while Odo-Ore had 0.43. These coefficients imply that inequality was generally higher in Odo-Ore, In 1974, however, Ipetu had a Gini coefficient of 0.35 on net farm income per capita while Odo-Ore had 0.36. When examining the other inequality coefficients it was revealed that Ipetu the larger village situated on the better road and closer to Omu-Aran, displayed a relatively greater income inequality at the low levels while Odo-Ore showed higher inequality at the higher and middle income levels. Factors underlying the differences in distribution between villages and between years were not able to be identified.

B. Correlates of Income

Through tabular and regression analysis the effects of five sets of variables on income were examined. The explanatory factors included (1) village location (2) resource endowment (3) worker quality (4) resource use and (5) resource productivity. These variables were examined across net farm income per consumer strata and the following relationships were found.

1. Income classes have not been found to divide themselves into distinct family types. An analysis of the dependency ratio, family size and composition, percent literacy and number of wives showed that these demographic factors did not appear to be consistently related to income differentials. The size of the household shown in terms of number of residents, consumer equivalents and worker equivalents showed conflicting patterns with income in the two survey years. In 1969 the poorest households were larger than average but in 1974 they were smaller. Family size reported on the whole was greater in 1969 than in 1974. The larger family size reported in 1969 and the apparent reversal in the association between family size and income may have been due to errors in reporting family size as discussed in Chapter III.

The dependency ratio, a measure of the household's work force relative to consumer requirements, was relatively stable between years. Contrary to expectations, however, the dependency ratio did not show a strong or consistent association with income.

It was assumed that management quality in farming is related to the age and experience of the farm manager. The mean age of household heads was 58 in 1969 and 61 in 1974 but there was no consistent relationship between age and income.

The data also showed no association between percent literacy and income. The percent literacy was defined as the percentage of family members who either could read or write at least in Yoruba and/or those going to school. Overall literacy was low. The lack of correlation was not suprising given the fact that only the children in the households were educated and their influence on farming decisions were negligible.

2. Among the resource endowment variables land, labor and value of capital stock, only cropped land was found to be consistently related to income. An analysis of the distribution of three land types akuro (lowland), igbo (forest) and odan (upland)

revealed that there was no significant differences in the proportion of either type held among income classes.

3. The intensity of resource use was examined through the analyses of family labor per worker and non-labor farm variable costs per acre. Operating capital (non-labor variable costs) showed a consistently high correlation with income. Regression analysis showed that the annual return to operating capital was approximately 128 percent in Ipetu and 50 percent in Odo-Ore. The results suggest that the liquidity position of the household during key production periods may critically affect farm income generation. This points to the credit needs of lower income farmers.

In general males were found to work more hours on the farm while the females worked more on off-farm activities. The low income group generally spent a greater percent of time in the off-farm activities and they in turn farmed their land less intensively than the high income group when examined within the same land category.

As expected farm employment was low both years and in both villages among the land short poor households. But some low income households

which had medium land holdings still had low farm employment. This suggests that there are two types of poverty households (1) those land short households who worked their land very intensively and (2) households with adequate land who for reasons which were not identified did not work particularly hard--the latter had very low hours per acre.

4. The last and the most important explanatory variable in our conceptual framework was variation in resource productivity. No matter what other factors were associated with poverty, low productivity was a common feature to all poor households. Ill health, insects, pests and diseases, poor quality input like seeds and poor management and micro-climatic differences might be possible causes of low productivity among the poor income classes. Regression analysis results showed that the superiority of crop mixtures over sole cropping as a correlate of income depends on the year and village location.

C. Inter-Year Variation in Income Distribution

The income distribution was found to be fairly stable between the five year period as shown by the Gini coefficients of 0.40 in 1969 and 0.38 in 1974 for net farm income per capita. Moreover, within each village

more than 60 percent of the households changed their relative income position by 20 percentile or less. The households which changed their relative positions in their village rankings by more than 20 percentile were examined to determine possible causes. Productivity changes appear to be most critical in overall income ranking. Those households whose income ranking increased by greater than 20 percentile had all experienced an improvement in their farm productivity. Similarly households whose income ranking had decreased by greater than 20 percentile had generally experienced a decrease in productivity. The data also suggested that changes in family structure affecting the dependency ratio may also have played a key role in income rank changes. Households which had an increase in their income rankings also tended to have experienced a decrease in their dependency ratio and vice versa.

Case studies of the households whose income ranking changed by more than 20 percentile were also carried out to determine possible causes. Among households which experienced improvement in income ranking a decrease in the dependency ratio was associated with a decrease in the number of children between the two survey years. These children probably joined the work force. Households which experienced a decline in income ranking experienced an increase in the dependency ratio,

probably due to an increase in number of children relative to workers. It appeared that household heads for this group were in the child bearing age which would further substantiate the observation.

Causes of inter-year changes in productivity were also examined. Several factors which were speculated as possible causes of productivity change included: (1) quality of input like seeds, land and labor; (2) timely and untimely operations; (3) insects, pests and disease and; (4) the cropping pattern. However, the available data prevented further analysis of these relationships.

D. Policy Implications

1. Implications of the Income Levels

The income levels obtained in the present study are comparable with those found by other studies of traditional farming systems. The income levels, however, are low compared with wages in urban areas. By 1974 the unskilled labourer employed by the Nigerian government was earning at least ₦720 per annum while undeflated mean net farm income for both villages was only ₦463 in 1974. Even the high income rural households would be considered relatively low income by national standards. The implication of this for policy design is that policies which will raise farmers' income level must be pursued. In order to raise farm income levels in general,

improved technology is a must in the form of improved seed varieties, fertilizer use, technology to alleviate the weeding bottleneck and curb insect, pests and disease damage.

2. Implications of the Income Distribution

The fact that the income distribution among farmers at the rural level has been found to be relatively equitable does not imply policy designers should not be concerned with income distribution. Experience in other countries, has shown that income disparity generally worsens with the introduction of technical change. Thus the policy approaches suggested here are for the purposes of minimizing the potential widening of income inequalities as a result of technical changes.

As mentioned earlier improved technology is essential for raising the general level of incomes. Introduction of improved technology like fertilizer use, improved seed varieties, etc. is a way of improving farm productivity. However, the situation is not that simple because this study also shows that production efficienty was lower among the low income classes given the traditional technology. If this is a reflection of poorer management quality on

the part of the poorer households given the traditional technology, it would be expected that productivity may also be lower among the low income classes even under the improved technology. Untimely and poorer application of the improved techniques could lead to lower production efficiency among the low income households in the future.

We have, however, not been able to examine the factors causing variations in the technical efficiency, given the traditional technology. If these factors are known we would be able to suggest ways to improve on the technical efficiency among the poor income classes under the traditional technology. It could be expected, however, that the same factors causing variations in technical efficiency under the traditional system may prevail or even magnify under the improved technology. This points to the need for further research on the causes of productivity variations.

The policy implication of the income distribution results imply that the extension of improved technology cannot be done among farmers as a blanket application. It has to be done in such a way as to consider the circumstances peculiar to lower income households. At a minimum this requires making available improved inputs to the poor farmers in

sufficient quantities and at the right time. The inputs should not only be made available, poor farmers should also be properly instructed and guided on their use to maximize results.

3. **Constraints to the Low Income Farmers**

The above discussion on the implications of the income distribution ties in closely with the constraints faced by low income farmers. Operating capital may be a limiting constraint for low income farmers. The liquidity position of the low income households especially during the production periods can critically affect farm income generation. While the improved inputs can be made available on credit to the poor farmers, the richest farmers should be made to pay for theirs. This, however, could be a politically sensitive issue and must be used with caution. Lower interest rates would be helpful to the poorer farmers as well as making the time and the form of payment as flexible as possible. For example, payment in kind rather than cash could be more helpful to the poorer households. The potential difficulties, however, should be noted.

The results of this study also suggested that there were two poverty groups. Low productivity was common to both but in addition one of the groups seemed to be constrained by limited access to

cropped land which they worked very intensively. The other group seemed to possess adequate cropped land but applied low labor per acre. It is clear that different policy measures would be needed to meet the needs of each of them.

Given the existing traditional land tenure system, where every male had access to farm land, and the fact that there was sufficient unused arable land in the study villages, it would appear that the first group could increase their land holdings without much friction. However, this calls for more study of land tenure relations to see if lower income farmers were being discriminated against. Lack of operating capital may be one reason why they did not crop more land hence pointing to their credit needs. The second group, however, which had a medium land holdings but low intensity of labor use poses a different policy question. The reasons for the low labor intensity could be diverse. Inadequate calorie intake, sickness and lack of motivation could be possible reasons. Again this calls for consumption and nutrition related studies and provision of adequate health care system as well as adequate extension system.

4. Implications of the Inter-Village and Inter-Year Variations

Important differences have been found between villages in several factors like labor use, family size, correlation of variables with income and productivity. This points to the danger of making blanket applications or recommendations over wide geographic areas.

It has also been noted at several points in this study the danger of placing heavy reliance on results of one year's data. Even given the medium-term span of five years between the two surveys, wide differences have been observed in effects of variables included in our conceptual framework.

5. Implications for Further Research Priorities

a. Of utmost importance is the recognition of the necessity for further research to fully understand reasons for productivity variation. Factors causing variation in production efficiency both between income groups and over long periods of time have to be known in order to develop improved technical packages which are truly compatible with the circumstances of poor households. Moreover, acceptable improved technological packages need to be developed through an inter-disciplinary approach comprising of both social and technical scientists.

b. As a follow-up of the finding that some poor households had limited access to cropped land, further studies of land tenure institutions are needed. Answers could be found in the institutional class structure as to which clans have right over what type of land. If the poor households are discriminated against studies should be conducted to determine how to minimize the discrimination. If those poor households decided to crop low acreages out of choice, management issues will need to be addressed.

c. Low labor use among some poor households point to the need for consumption and nutrition studies to determine the adequacy of colorie intake among poor households. There is also a need to determine the adequacy of and ways to improve rural health care systems to meet the needs of poor households in particular.

d. Further analysis is needed of the relationship between household structural changes and income status. The contribution of outmigrants to the economic position of households was not documented in this study. It could be found that some poor households were, in fact, not relatively poor if all remittances from outmigrants were added to net farm income.

e. Finally, the strong association between operating capital and income points to the credit needs of the poor households. There has been no study done on credit in the survey area. The actual amount, conditions of repayment, time to extend credit, etc. are possible questions that need to be addressed.

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APPENDIX

Table A-1 Retail prices of crops in Omu-Aran[a] market, 1969 and 1974

Crop	1969 Retail Price K/lb	1969 Weight[e]	1969 Weighted Value[f] K/lb	1974 Retail Price K/lb	1974 Weight[e]	1974 Weighted Value[f] K/lb	Inter-Year Percentage[h] Change in nominal retail price
Guinea Corn	3.51	0.31	1.09	7.61	2.87	21.84	117
Maize	2.70	13.76	16.46	5.58	13.19	73.50	107
Rice	NA	--	--	16.28	--	--	NA
Cowpeas[b]	6.38	6.13	39.11	20.49	2.75	56.35	221
Groundnuts[c]	6.18	NA[g]	--	16.52	NA	--	167
Cassava	1.65	1.32	2.18	7.45	3.44	25.63	352
Yams[d]	2.04	70.95	144.74	3.18	73.22	232.84	56
Peppers	27.63	NA	--	23.29	NA	--	16
Tomatoes	NA	NA	--	14.24	NA	--	NA
Tobacco	NA	NA	--	8.41	NA	--	NA
Okra	7.47	2.48	18.53	13.48	1.61	21.70	80
Melon	7.55	NA	--	13.66	NA	--	81
Cotton	7.96	NA	--	10.73	NA	--	35
Garden egg	2.38	NA	--	NA	NA	--	NA
Cocoa	17.86	NA	--	NA	NA	--	NA
Kolanut	25.00	NA	--	NA	NA	--	NA
Banana & Plantain	12.50	NA	--	NA	NA	--	NA
Orogbo	50.00	NA	--	NA	NA	--	NA
			222.11			431.86	

[a]Omu-Aran is the market place for Ipetu

[b]Includes yam beans

[c]Includes bambara nuts

[d]Includes cocoyams

Table A-1 (cont'd)

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[e]Weights are the value of each crop as percent of total value of crops grown by the household. Obtained from Tables E-3 and E-4.

[f]The weighted values are obtained by multiplying retail price by the weight. The weighted values are summed up for each year. The weighted sum was 222.11 for 1969 and 431.86 for 1974. The change between the weighted sum for the two years is 209.75. The weighted village market price index is 209.75 ÷ 222.11 = 94 i.e. using 1969=100; 1974=194

[g]NA = not available

[h]1969 was used as base year. Average percentage change in the nominal retail prices was +123.2

--Information incomplete to make the calculations

Source: Survey Data

Table A-2 Retail prices of crops in Ora[a] market, 1969 and 1974

Crop	1969 Retail Price K/lb	1969 Weight[e]	1969 Weighted Value[f] K/lb	1974 Retail Price K/lb	1974 Weight[e]	1974 Weighted Value[f] K/lb	Inter-Year[h] Percentage Change in nominal retail price
Guinea corn	3.07	13.32	40.89	5.52	10.28	56.75	80
Maize	2.91	12.64	36.78	4.64	9.91	45.98	59
Rice	NA	NA	--	16.21	NA	-	NA
Cowpeas[b]	7.01	1.28	8.97	18.05	3.28	59.20	157
Groundnuts[c]	6.18	NA[g]	--	15.29	NA	--	147
Cassava	0.99	2.74	2.71	2.99	8.26	24.70	202
Yams[d]	1.36	64.36	87.53	3.09	66.05	204.09	127
Peppers	28.86	NA	--	31.34	NA	--	4
Tomatoes	NA	NA	--	11.43	NA	--	--
Tobacco	NA	NA	--	31.28	NA	--	--
Okra	4.94	0.08	0.40	8.55	0.43	3.68	73
Melon	6.75	NA	NA	9.18	NA	--	36
Cotton	7.64	5.20	39.73	10.14	1.79	18.15	33
			217.01			412.55	

[a]Ora is the market place for Odo-Ore

[b]Includes yam beans

[c]Includes bambara nuts

[d]Includes cocoyams

[e]Weights are the value of each crop as percent of total value of crops grown by the household. Obtained from Tables E-3 and E-4.

[f]The weighted values are obtained by multiplying retail price by the weight. The weighted values are summed up for each year. The weighted sum was 217.01 for 1969 and 412.55 for 1974. The change between the weighted sum for the two years is 195.54. Hence the weighted village market price index is 195.54 ÷ 217.01 = 90. i.e., Using 1969=100, 1974=190.

Table A-2 (cont'd)

[g]NA = not available

[h]1969 was used as base year. Average percentage change in the nominal retail prices was +91.80.

--Information incomplete to make the calculations

Source: Survey Data

Table A-3 Off-farm wage rates for both villages, 1969

Type of Off-Farm Activity	Assumed per manhour average wage rate
Traditional primary occupation	₦ 0.25
Manufacturing	0.28
Traditional services	0.30
Trading	0.26
Modern services	0.50

Source: Survey Data

Table A-4 Consumer price indices for food at Kaduna, Sokoto-Gusau and Ilorin, 1965-1974

Year	Kaduna	Sokoto-Gusau	Ilorin
1965	113	102	124
1966	133	131	150
1967	122	120	130
1968	111	94	114
1969	135	129	132
1970	159	139	172
1971	200	NA	236
1972	214	NA	240
1973	246	223	262
1974	271	257	301

NA = Not available

Source: Annual Abstract of Statistics 1974, Federal Office of Statistics, Lagos, Republic of Nigeria, (P.115-116) (1957 = 100).

Table A-5 Monthly rainfall distribution, Omu-Aran area, 1957-1967 (inches)

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1957[1]	1.73	0.43	2.80	6.48	10.63	8.87	11.44	6.46	11.79	9.66	5.43	0.83	76.55
1958[1]	1.05	1.33	1.65	6.18	6.22	11.53	0.60	7.03	9.08	7.61	5.97	--	58.25
1961[1]	1.59	--	0.63	5.70	4.68	4.93	2.35	2.40	10.62	7.75	--	--	40.65
1962[1]	--	--	0.80	7.12	9.77	8.38	8.35	5.20	11.98	9.12	5.48	0.24	66.44
1963[1]	--	1.08	4.42	3.97	6.06	10.96	11.28	9.25	12.31	14.77	0.27	--	74.37
1967[2]	0.56	0.10	2.62	3.08	8.55	3.36	4.56	1.66	10.63	11.71	1.13	0.76	48.72
1968[2]	1.56	1.60	1.36	4.48	3.99	6.50	12.00	9.72	13.09	3.12	0.90	0.19	58.51
1969[2]	0.13	0.79	4.21	7.49	8.69	10.94	7.88	6.86	7.89	12.64	2.36	--	69.88
8 yr ave.	0.83	0.67	2.06	5.74	7.32	8.18	7.31	6.24	10.92	9.55	3.08	0.40	62.30
Ipetu[3] 1974	--	--	--	4.02	4.58	8.80	2.99	1.95	11.95	5.82	--	--	40.11
Odo-Ore[3] 1974	--	1.36	2.83	1.39	4.77	5.59	2.69	4.94	13.28	5.69	--	--	42.54

Sources: --not reported
[1]Women's Teachers College, Omu-Aran
[2]Ministry of Agriculture, Omu-Aran
[3]Survey Data

Table A-6 Average and cumulative incomes, number of residents and consumer units by net household income strata, Total sample, 1969.

Net house income strata[a]	Average income per house hold (Naira)	Cumula-tive % of income	Average income per cap-ita (Naira)	Average income per con-sumer (Naira)	Average no. of persons per house hold	Culula-tive % of persons	Ave. no. of con-sumers per house-hold	Cum-ula tive % of con-sumer	No. of Ob-ser-vations
Low	199.40	19.7	17.66	24.90	12.17	42.0	8.46	42.2	18
Medium	389.16	58.2	36.71	51.74	10.61	78.7	7.11	77.6	18
High	423,51	100,0	80,87	110,32	6,17	100,0	4,49	100,0	18

[a]The assignment of households into income strata was accomplished by arranging total sample households according to the net house income per consumer and allocating the poorest third of the pots to the low stratum, the second third to medium stratum and the richest third into the high stratum.

Source: Survey Data

Tables A-7 Average and cumulative net household incomes, number of residents and consumer units by income strata within each village, 1969

Village	Stratum	Number of house-holds	Average income per house-hold (Naira)	Cumula-tive percent of income	Average income per capita (Naira)	Average income per consumer (Naira)	Average number of residents	Cumula-tive percent of residents
	Low	10	267.76	23.3	22.21	33.35	12.90	43.7
Ipetu	Medium	9	499.51	62.4	40.47	62.23	12.89	83.1
	High	10	432.50	100.0	89.99	126.00	5.00	100.0
	Low	9	161.54	23.3	14.62	19.92	12.22	48.7
Odo-Ore	Medium	7	204.03	46.2	32.32	40.55	9.00	76.6
	High	9	372.75	100.0	65.57	83.17	5.89	100.00

Source: Survey Data

Table A-8 Cultivated land holdings by village and net household income per consumer strata, 1969

Variable	Village	Village Mean	Net Household Per Consumer Strata Low	Med	High
Cropped acres per household	Ipetu	4.69	4.82	3.77	5.38
	Odo-Ore	3.41	2.54	2.92	4.66
	All	4.10	3.14	3.91	5.25
Cropped acres per worker	Ipetu	1.07	0.76	0.61	1.80
	Odo-Ore	0.68	0.38	0.56	1.06
	All	0.89	0.51	0.70	1.46
Cropped acres per consumer	Ipetu	0.92	0.66	0.50	1.57
	Odo-Ore	0.63	0.35	0.51	0.99
	All	0.79	0.45	0.60	1.31
odan and igbo land	Ipetu	4.48	4.67	3.52	5.16
	Odo-Ore	3.41	2.54	2.92	4.66
	All	3.99	3.08	3.77	5.11
akuro land	Ipetu	0.21	0.15	0.25	0.22
	Odo-Ore	0	0	0	0
	All	0.11	0.06	0.14	0.13
odan land percent of total	Ipetu	90.78	88.88	90.22	93.19
	Odo-Ore	99.85	100.00	100.00	99.58
	All	94.98	95.41	95.78	93.75
akuro land percent of total	Ipetu	4.30	3.68	5.37	3.97
	Odo-Ore	0	0	0	0
	All	2.31	1.53	2.94	2.47
igbo land percent of total	Ipetu	4.91	7.44	4.41	2.84
	Odo-Ore	0.15	0	0	0.42
	All	2.71	3.06	1.28	3.78

Source: Survey Data

Table A-9 Age of household head, percent literacy and family composition by net household income per consumer strata, 1969.

		Net Household Income Per Consumer Strata			
Variable	Village	Low	Med	High	All
Age of household head (years)	Ipetu	54.50	59.44	49.90	54.45
	Odo-Ore	56.67	62.14	66.11	61.60
	All	58.89	57.78	56.61	57.76
Percent literacy in household	Ipetu	8.00	15.44	8.10	10.34
	Odo-Ore	3.33	3.86	3.67	3.60
	All	5.39	9.78	6.50	7.22
Number of adult males	Ipetu	2.60	2.56	1.30	2.14
	Odo-Ore	3.22	3.00	1.78	2.64
	All	2.83	2.72	1.56	2.37
Number of adult females	Ipetu	3.70	3.33	1.60	2.86
	Odo-Ore	5.11	2.00	2.33	3.24
	All	4.28	2.39	2.44	3.04
Number of male children	Ipetu	2.60	3.44	1.40	2.45
	Odo Ore	1.67	2.14	1.00	1.56
	All	2.22	2.67	1.22	2.04
Number of female children	Ipetu	4.00	3.56	0.70	2.72
	Odo-Ore	2.22	1.86	0.78	1.60
	All	2.83	2.83	0.94	2.20
Number of wives	Ipetu	2.40	2.11	1.20	1.90
	Odo-Ore	2.11	1.71	1.67	1.84
	All	2.00	2.28	1.33	1.87

Source: Survey Data

Table A-10 The percentage distribution of households within net farm and net household income per consumer, 1969 and 1974

Income Measure	Range of Income per Capita ₦	Households											
		1969						1974					
		Ipetu		Odo-Ore		All		Ipetu		Odo-Ore		All	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Net farm income per consumer	0-20	4	13.79	9	36.00	13	20.07	3	10.00	3	11.11	6	10.54
	21-40	7	24.14	7	28.00	14	25.93	5	16.67	2	7.41	7	12.28
	41-60	6	20.69	3	12.00	9	16.67	5	16.67	4	14.81	9	15.79
	61-80	5	17.24	3	12.00	8	14.81	7	23.33	5	18.52	12	21.05
	81-100	2	6.90	2	8.00	4	7.41	2	6.67	5	18.52	7	12.28
	101-120	0	0	0	0	0	0	1	3.33	1	3.70	2	3.51
	121-140	4	13.79	1	4.00	5	9.26	0	0	1	3.70	1	1.75
	141-160	0	0	0	0	0	0	5	16.67	0	0	5	8.77
	161-180	0	0	0	0	0	0	0	0	0	0	0	0
	181-200	0	0	0	0	0	0	1	3.33	2	7.41	3	5.26
	201+	1	3.45	0	0	1	1.85	1	3.33	4	14.82	5	8.77
	Total	29	100.	25	100.	54	100.	30	100.	27	100.	57	100.
Net household income per consumer	0-20	1	3.45	4	16.00	5	9.26						
	21-40	5	17.24	7	28.00	12	22.22						
	41-60	9	31.03	7	28.00	16	29.63						
	61-80	6	20.69	3	12.00	9	16.67						
	81-100	2	6.90	2	8.00	4	7.41						
	101-120	1	3.45	1	4.00	2	3.70						
	121-140	0	0	0	0	0	0						
	141-160	4	13.79	1	4.00	5	9.26						
	161-180	0	0	0	0	0	0						
	181-200	0	0	0	0	0	0						
	200+	1	3.45	0	0	1	1.85						
		29	100.	25	100.	54	100.						

Source: Survey Data

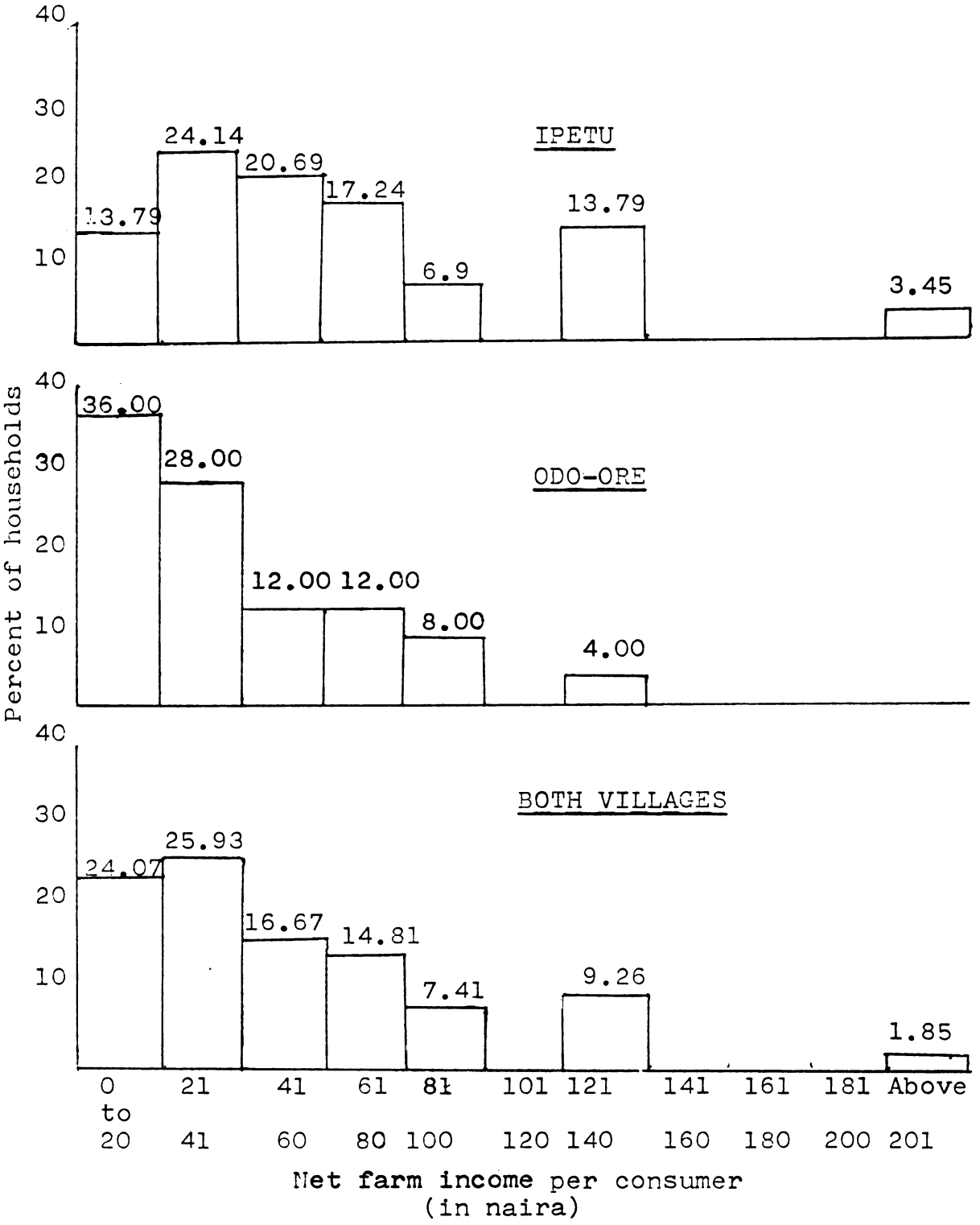

Figure A-1 The percentage distribution of households based on net farm income per consumer, 1969

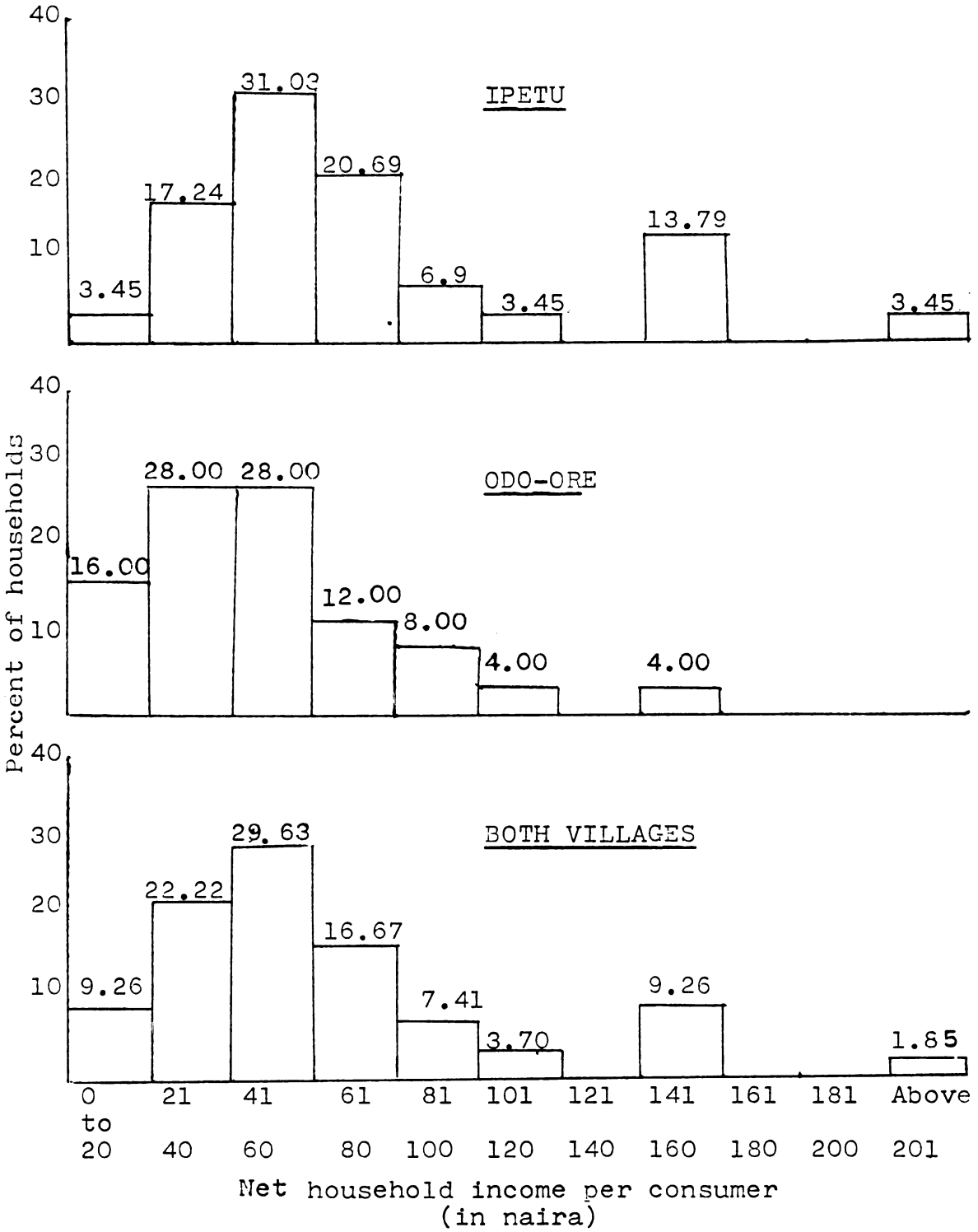

Figure A-2 The percentage distribution of households based on net household income per consumer, 1969

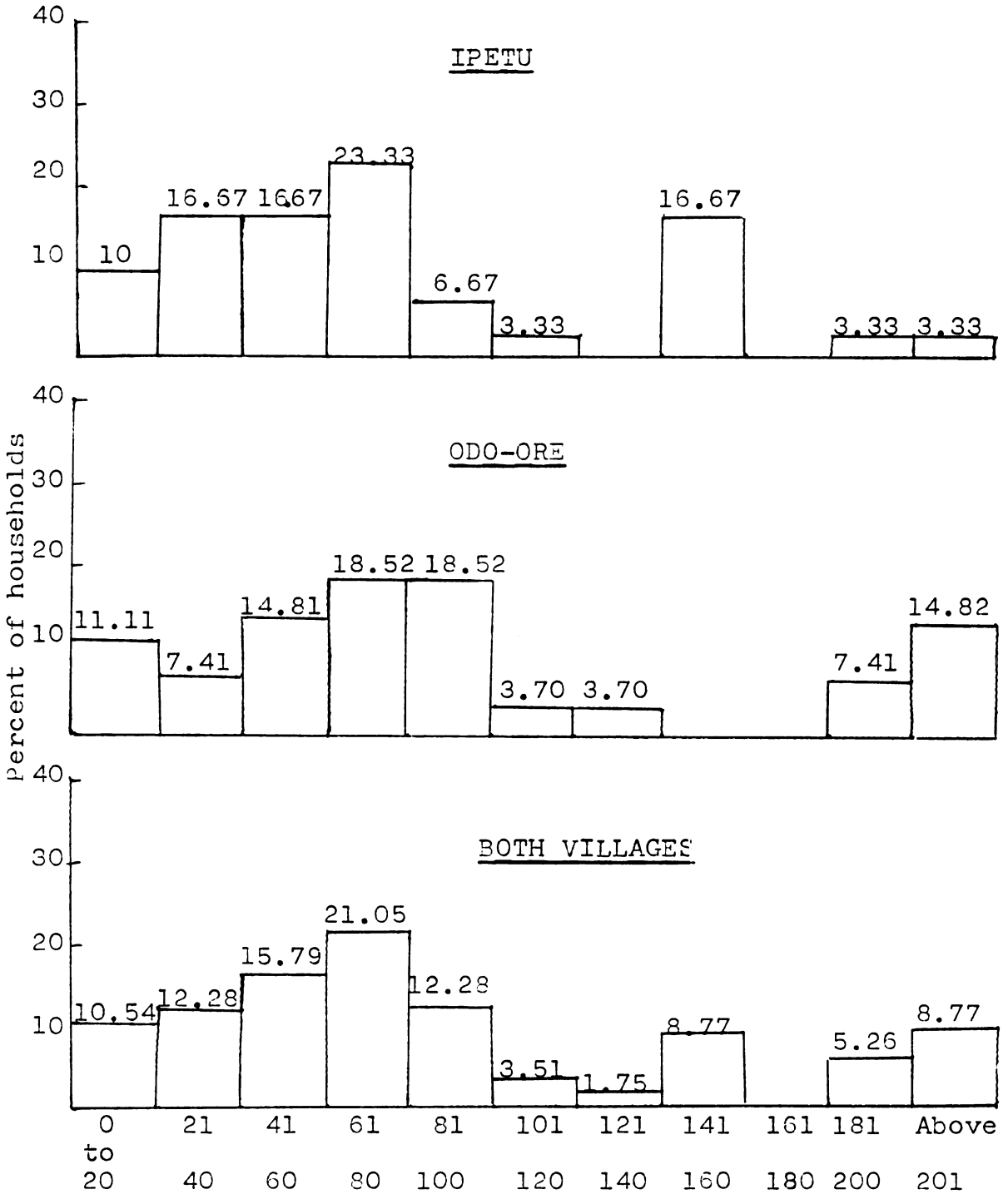

Figure A - 3 The percentage distribution of households based on net farm income per consumer, 1974

Table A-11 The percentage distribution of households within net farm and net household income per household, 1969 and 1974.

Income Measure	Range of Income Per Consumer	Households											
		1969						1974					
		Ipetu		Odo-Ore		All		Ipetu		Odo-Ore		All	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Net Farm Income Per Household	0-100	3	10.34	6	24.00	9	16.67	4	13.34	5	18.52	9	15.80
	101-200	8	27.59	8	32.00	16	29.63	6	20.00	4	14.81	10	17.54
	201-300	6	20.69	4	16.00	10	18.52	3	10.00	3	11.11	6	10.53
	301-400	4	13.79	3	12.00	7	12.97	3	10.00	2	7.41	5	8.77
	401-500	3	10.34	3	12.00	6	11.11	2	6.67	3	11.11	5	8.77
	501-600	1	3.45	0	0	1	1.85	3	10.00	2	7.41	5	8.77
	601-700	2	6.90	0	0	2	3.70	1	3.33	2	7.41	3	5.26
	701-800	2	6.90	0	0	2	3.70	1	3.33	1	3.70	2	3.52
	801-900	0	0	1	4.00	1	1.85	3	10.00	0	0	3	5.26
	901-1000	0	0	0	0	0	0	1	3.33	2	7.41	3	5.26
	1001-1100	0	0	0	0	0	0	1	3.33	2	7.41	3	5.26
	1101+	0	0	0	0	0	0	2	6.67	1	3.70	3	5.26
	All	29	100.00	25	100.00	54	100.00	30	100.00	27	100.00	57	100.00
Net Household Income Per Household	0-100	0	0	2	8.00	2	3.70						
	101-200	5	17.24	9	36.00	14	25.93						
	201-300	6	20.69	6	24.00	12	22.22						
	301-400	7	24.14	4	16.00	11	20.37						
	401-500	2	6.90	2	8.00	4	7.41						
	501-600	3	10.34	1	4.00	4	7.41						
	601-700	4	13.79	0	0	4	7.41						
	701-800	0	0	0	0	0	0						
	801-900	2	6.90	1	4.00	3	5.56						
	901-1000	0	0	0	0	0	0						
	1001-1100	0	0	0	0	0	0						
	1101+	0	0	0	0	0	0						
	All	29	100.00	25	100.00	54	100.00						

Source: Survey Data

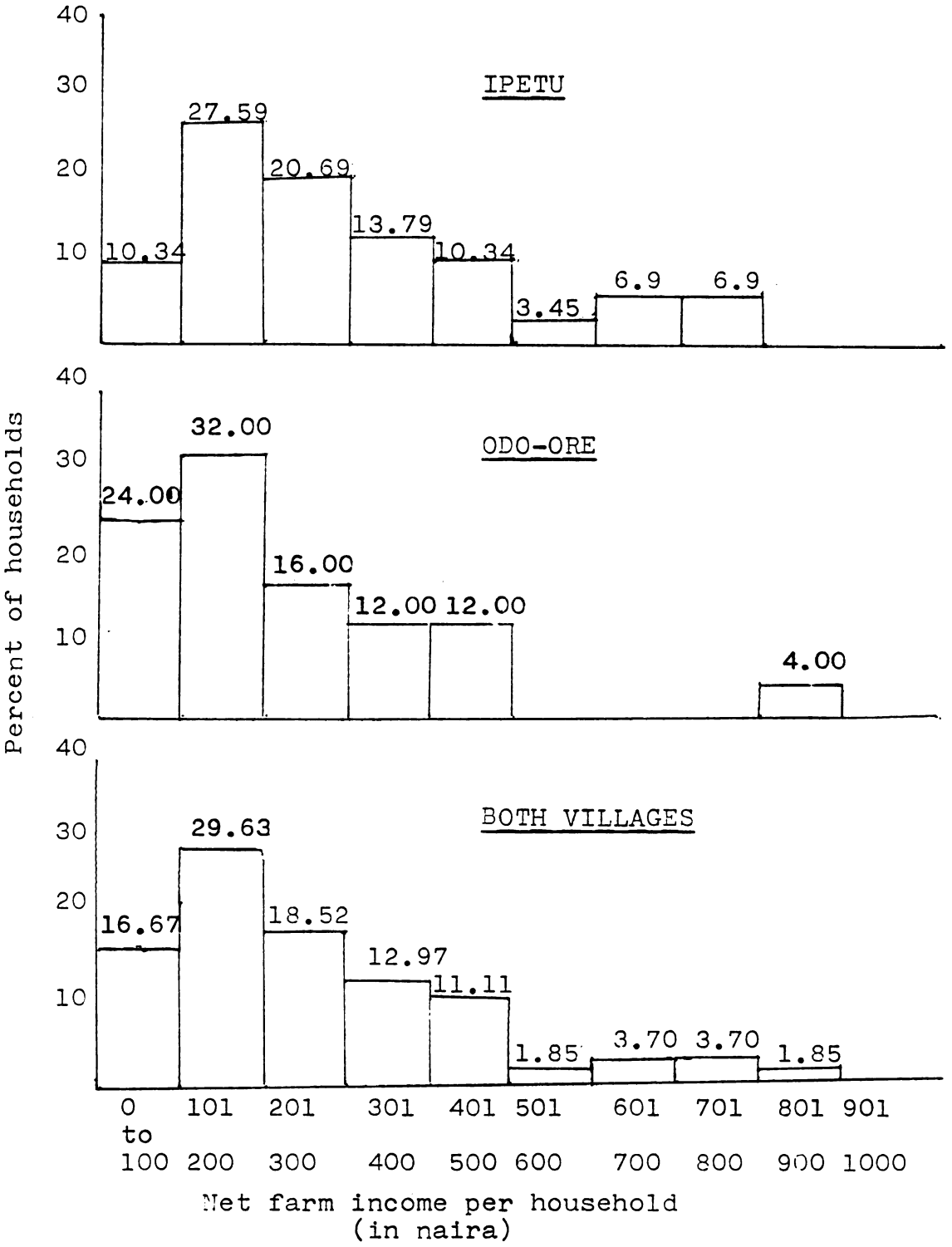

Figure A-4 The percentage distribution of households based on net farm income per household, 1969

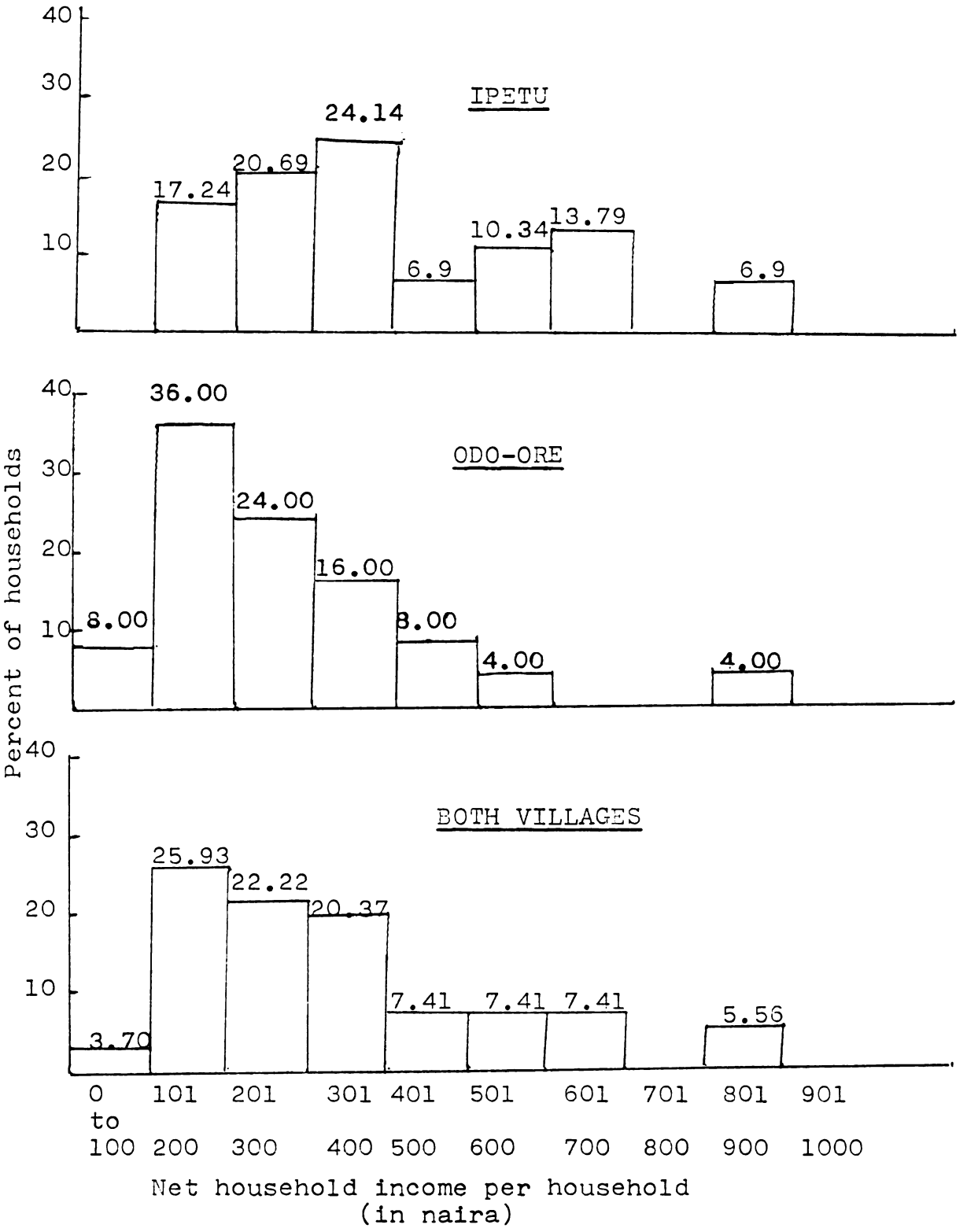

Figure A_4-5 The percentage distribution of households based on net household income per household, 1969

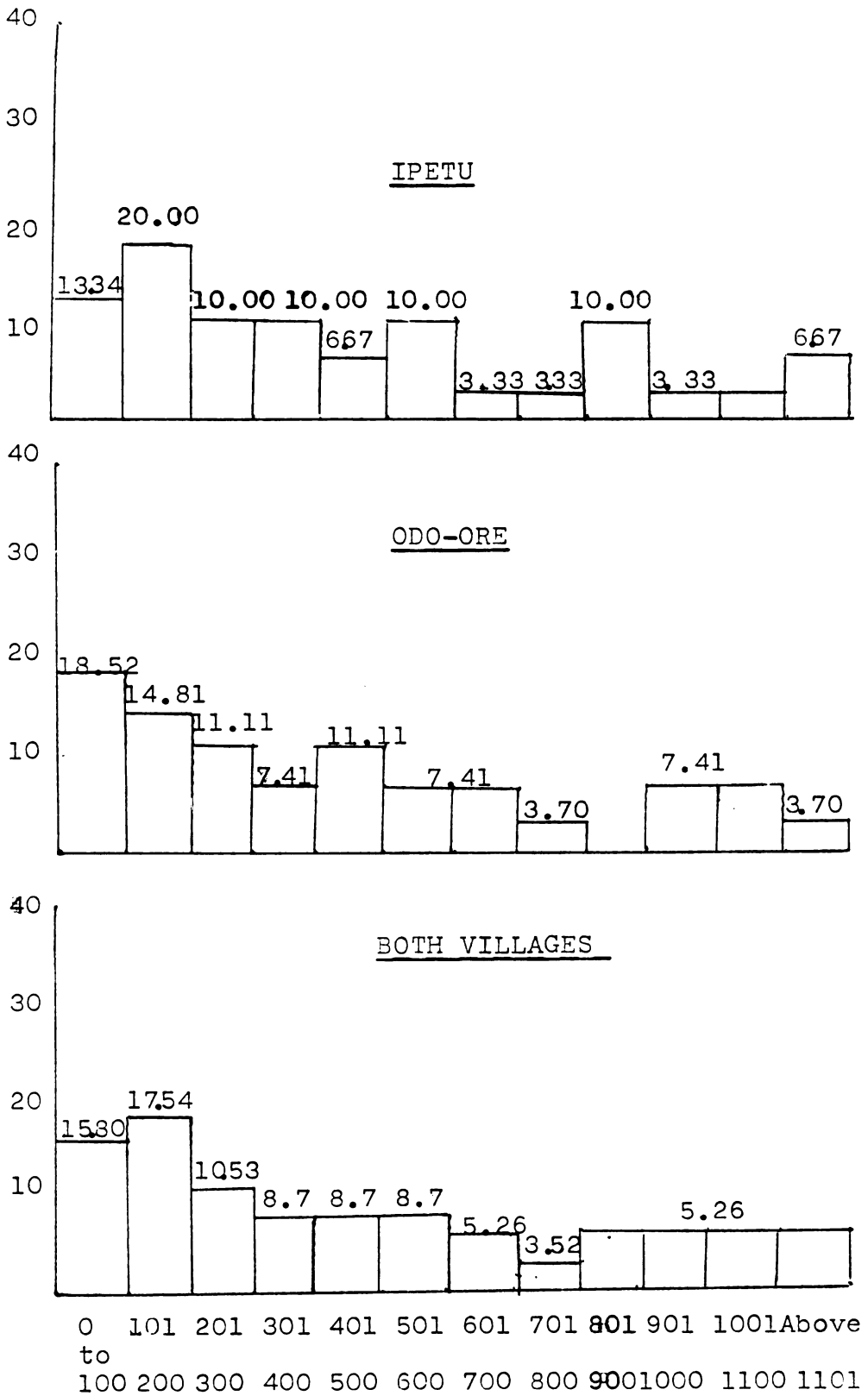

Figure A-6 The percentage distribution of households based on net farm income per household, 1974

Table A-12 Land and labor use intensities by land and net household income per consumer classes, 1979

Variable	Cropped Land Per Consumer Class	Net Household Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Man-Hours family farm labor per male adult	Low	386.42	183.25	--	284.84	216.59	197.85	--	209.10
	Med	563.76	636.40	1224.52	656.85	302.03	329.21	676.49	416.78
	High	431.25	--	1016.95	958.38	--	779.16	663.11	677.62
	All	479.57	435.00	1037.71	658.20	245.07	318.43	666.08	417.18
Man-hours family farm labor per female adult	Low	16.54	12.51	--	14.53	3.98	4.64	--	4.25
	Med	47.69	45.18	132.95	54.30	8.22	12.44	9.71	9.85
	High	86.81	--	46.54	50.56	--	--	16.52	14.46
	All	39.14	30.66	55.18	42.04	5.40	6.21	15.01	9.08
Man-hours family farm labor per large child	Low	75.08	72.20	--	73.64	94.09	11.08	--	60.89
	Med	119.74	149.78	93.91	131.05	1.83	68.20	38.35	31.23
	High	8.00	--	105.23	95.51	--	--	67.77	59.03
	All	90.70	115.29	104.10	102.96	63.34	25.82	61.23	52.07
Man-hours off-farm labor per male adult	Low	20.52	119.08	--	69.80	1.78	1.49	--	1.67
	Med	96.53	222.60	40.00	148.69	18.17	30.29	2.50	17.15
	High	93.50	--	61.43	64.63	--	84.57	13.03	21.97
	All	65.82	176.59	59.28	97.94	7.24	21.59	10.69	12.50
Man-hours off-farm labor per female adult	Low	232.68	246.27	--	239.48	254.64	603.95	--	394.37
	Med	264.59	191.71	120.56	218.37	70.25	192.91	149.65	127.98
	High	284.31	--	338.51	332.96	--	247.66	466.67	439.29
	All	253.85	215.96	316.53	263.71	193.15	435.61	396.22	334.15

Table A-12 (cont'd)

Variable	Cropped Land Per Consumer Class	Net Household Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Man-hours off-farm labor per large child	Low	65.21	61.54	--	63.37	0	0	--	0
	Med	3.81	37.83	34.08	22.02	0	0	0	0
	High	0	--	0.33	0.30	--	0	0	0
	All	27.99	48.37	3.71	25.94	0	0	0	0
Total man-hours (Family + hired)	Low	1652.09	1307.42	--	1479.75	917.89	738.59	--	846.17
	Med	2002.70	1658.53	1747.20	1823.04	576.35	995.71	751.57	746.23
	High	2048.31	--	1783.84	1810.29	--	782.16	1203.31	1150.67
	All	1867.02	1502.48	1780.17	1723.94	804.04	818.28	1102.92	915.62
Total man-hours per consumer	Low	184.12	114.88	--	149.50	90.15	108.39	--	97.44
	Med	238.47	262.61	442.33	267.98	124.55	167.80	221.51	164.61
	High	386.47	--	494.47	483.67	--	325.90	289.50	294.05
	All	231.53	196.95	489.26	309.67	101.62	156.43	274.39	179.16
Total man-hours per acre	Low	482.59	298.22	--	390.40	441.12	289.09	--	380.31
	Med	377.70	440.21	663.04	429.33	205.11	322.86	334.13	275.62
	High	215.38	--	326.75	315.61	--	315.39	257.63	264.85
	All	403.43	377.10	357.38	379.38	362.45	203.50	274.63	314.05
Family labour manhours per consumer	Low	153.82	101.66	--	127.74	83.88	104.38	--	91.48
	Med	217.76	229.15	414.99	240.87	106.90	161.69	216.38	153.83
	High	263.50	--	442.30	424.42	--	324.65	277.57	283.45
	All	196.76	172.49	439.57	272.95	90.89	152.22	263.97	170.37

Table A-12 (cont'd)

Variable	Cropped Land Per Consumer Class	Net Household Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Family labour percent of total man-hours	Low	80.17	83.81	--	81.17	92.05	96.36	--	93.77
	Med	91.40	85.66	92.83	89.01	87.06	96.71	98.27	93.02
	High	68.18	--	90.01	87.82	--	99.62	96.29	96.70
	All	84.58	84.84	90.39	86.66	90.39	96.93	96.73	94.50
Off-farm hours	Low	1153.00	1489.72	--	1321.36	1256.82	955.65	--	1136.35
	Med	980.75	822.68	262.81	843.63	218.07	377.90	213.11	262.32
	High	565.40	--	617.94	612.69	--	332.23	612.06	577.08
	All	1008.12	1119.14	582.43	895.78	910.57	701.52	523.40	712.66
Number of households	Low	4	4	--	8	6	4	--	10
	Med	5	5	1	11	3	2	2	7
	High	1	--	9	10	--	1	7	8
	All	10	9	10	29	9	7	9	25

Source: Survey Data

Table A-13 Efficiency measures by net household incomes and by land per consumer classes, 1969

Variable	Cropped Land Per Consumer Class	Net Household Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Net Farm income per acre	Low	42.01	107.52	--	74.76	44.34	88.54	--	61.39
	Med	46.68	83.53	106.63	68.88	30.41	66.21	84.29	56.03
	High	21.87	--	73.30	68.15	--	27.05	70.74	65.28
	All	42.33	94.19	76.63	70.25	39.70	73.37	73.75	61.39
Net farm income per hour	Low	0.12	0.45	--	0.25	0.12	0.34	--	0.21
	High	0.13	0.16	0.21	0.16	0.15	0.21	0.31	0.21
	High	0.11	--	0.26	0.23	--	0.09	0.33	0.30
	All	0.11	0.28	0.24	0.21	0.13	0.27	0.32	0.24
Gross farm income per hour	Low	0.16	0.49	--	0.32	0.16	0.42	--	0.31
	Med	0.20	0.28	0.19	0.24	0.22	0.27	0.38	0.28
	High	0.15	--	0.34	0.32	--	0.13	0.41	0.38
	All	0.18	0.37	0.32	0.29	0.18	0.34	0.40	0.31
Gross farm income per acre	Low	68.62	133.86	--	101.24	63.52	109.22	--	81.80
	Med	75.76	117.29	120.39	98.69	45.92	85.51	105.33	74.20
	High	32.69	--	101.26	94.41	--	42.34	90.20	84.21
	All	68.60	124.65	103.18	97.92	57.65	92.89	93.56	80.45
Gross margin per acre	Low	42.22	107.66	--	74.94	44.70	88.89	--	62.37
	Med	46.82	83.75	107.25	69.10	30.64	66.66	84.57	56.34
	High	21.93	--	73.42	68.27	--	27.53	70.99	65.56
	All	42.49	94.38	76.80	70.42	40.01	73.78	74.01	61.70

Table A-13 (cont'd)

Variable	Cropped Land Per Consumer Class	Net Household Income Per Consumer Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Return to management (and land)	Low	22.91	95.61	--	59.26	21.98	73.78	--	42.70
	Med	30.65	66.28	78.61	51.20	20.85	49.97	66.40	42.18
	High	15.21	--	59.55	55.11	--	9.56	57.26	51.30
	All	26.01	79.32	61.45	54.77	21.60	57.80	59.29	45.31
Return to management, land and per hour family labor	Low	0.05	0.13	--	0.09	0.05	0.13	--	0.08
	Med	0.27	0.09	0.06	0.06	0.07	0.07	0.11	0.08
	High	0.02	--	0.06	0.05	--	0.03	0.08	0.07
	All	0.03	0.11	0.06	0.07	0.06	0.10	0.08	0.08
Technical Efficiency	Low	- 0.23	0.51	--	0.14	0.36	0.14	--	0.06
	Med	- 0.20	0.20	0.81	0.08	-0.33	0.06	0.35	-0.03
	High	- 0.51	--	0.09	-0.03	--	- 0.42	0.12	0.05
	All	- 0.36	0.15	0.03	-0.18	-0.16	0.14	0.16	-0.04
Number of households	Low	4	4	--	8	6	4	--	10
	Med	5	5	1	11	3	2	2	7
	High	1	--	9	10	--	1	7	8
	All	10	9	10	29	9	7	9	25

Source: Survey Data

Table A-14 Value of each crop as percentage of total, 1969

Variable	Cropped Land per Consumer Classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Early Maize	Low	8.31	2.88	--	6.27	11.03	5.36	--	8.76
	Med	10.40	6.04	2.43	7.36	3.40	10.52	11.14	7.65
	High	--	14.49	10.28	11.13	--	1.52	6.50	5.88
	All	9.35	6.87	8.71	8.36	8.49	6.29	7.53	7.53
Late Maize	Low	9.52	0.81	--	6.25	3.42	6.05	--	4.47
	Med	4.17	9.75	5.74	6.48	6.66	8.82	4.05	6.53
	High	--	6.38	2.83	3.54	--	2.22	5.01	4.67
	All	6.84	6.02	3.41	5.40	4.50	6.29	4.80	5.11
Guinea Corn	Low	0	0	--	0	15.14	11.09	--	13.52
	Med	0.52	0.91	0	0.57	12.99	16.68	14.73	14.54
	High	--	0	0.36	0.29	--	24.70	10.18	11.99
	All	0.26	0.40	0.29	0.31	14.42	14.63	11.19	13.32
Cowpeas	Low	8.08	3.40	--	6.32	1.43	0.27	--	0.96
	Med	2.58	3.32	9.52	4.11	1.48	7.20	0	2.69
	High	--	4.49	9.12	8.19	--	0	0.49	0.43
	All	5.33	3.60	9.20	6.13	1.45	2.21	0.38	1.28
Yam bean	Low	0.20	0	--	0.12	0	0	--	0
	Med	0	0	0	0	0	0	0	0
	High	--	0.76	0.02	0.17	--	0	0.09	0.08
	All	0.10	0.17	0.02	0.09	0	0	0.07	0.02

Table A-14 (cont'd)

Variable	Cropped Land per Consumer Classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Groundnut	Low	0.06	0	--	0.04	0.07	0	--	0.04
	Med	0	0	0.03	0.01	0	0	0	0
	High	--	0	0.02	0.16	--	0	0	0
	All	0.03	0	0.17	0.07	0.05	0	0	0.02
Yam	Low	59.96	81.46	--	68.02	59.16	73.06	--	64.72
	Med	73.85	73.99	79.09	74.85	71.95	50.18	61.85	62.85
	High	--	68.77	69.05	68.99	--	70.88	64.44	65.24
	All	66.90	75.32	71.06	70.95	63.42	66.21	63.86	64.36
Cassava	Low	0.20	3.54	--	1.45	3.44	1.21	--	2.55
	Med	1.92	0.18	2.11	1.32	2.23	3.67	0.07	2.03
	High	--	0	1.52	1.22	--	0.68	4.02	3.60
	All	1.06	1.26	1.64	1.32	3.04	1.84	3.15	2.74
Cocoyam and Sweet potato	Low	0	0	--	0	0	0	--	0
	Med	0	0	0	0	0	0	0	0
	High	--	0	0	0	--	0	0	0
	All	0	0	0	0	0	0	0	0
Vegetables	Low	7.07	0.50	--	4.61	1.26	0.18	--	0.83
	Med	1.32	1.97	0.96	1.49	0.54	0	0	0.23
	High	--	1.35	2.00	1.87	--	0	0.11	0.10
	All	4.19	1.34	1.79	2.48	1.02	0.10	0.08	0.43

Table A-14 (cont'd)

Variable	Cropper Land per Consumer Classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Cotton	Low	0	0	--	0	5.02	2.79	--	4.15
	Med	0	0	0	0	0.74	2.92	8.15	3.48
	High	--	0	0	0	--	0	9.16	8.01
	All	0	0	0	0	3.61	2.43	8.93	5.20
Tobacco	Low	2.17	0.31	--	1.47	0	0	--	0
	Med	2.38	2.89	0.12	2.15	0	0	0	0
	High	00	3.76	4.36	4.24	--	0	0	0
	All	2.27	2.22	3.51	2.69	0	0	0	0
Perenial crops	Low	4.43	7.10	--	5.43	0	0	--	0
	Med	2.88	0.95	0	1.65	0	0	0	0
	High	--	0	0.26	0.21	--	0	0	0
	All	3.65	2.79	0.21	2.20	0	0	0	0
Number of Households	Low	4	4	--	8	6	4	--	10
	Med	5	5	1	11	3	2	2	7
	High	--	1	9	10	--	1	7	8
	All	9	10	10	29	9	7	9	25

Source: Survey Data

Table A-15 Value of each crop as percentage of total value product, 1974

Variable	Cropped Land per Consumer Classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Early Maize	Low	12.83	10.33	5.26	11.40	7.00	6.06	--	6.62
	Med	11.02	9.83	6.23	8.78	2.92	7.88	4.10	5.73
	High	--	11.34	7.25	8.27	3.95	8.82	6.95	6.58
	All	12.47	10.38	6.75	9.87	4.51	7.58	6.63	6.24
Late Maize	Low	3.42	3.38	5.51	3.56	3.00	7.00	--	4.60
	Med	3.73	2.54	4.58	3.60	2.57	6.02	0	4.22
	High	--	1.99	2.86	2.64	6.05	7.50	1.25	2.69
	All	3.49	2.85	3.64	3.32	3.49	6.40	1.11	3.67
Guinea Corn	Low	3.61	2.86	3.73	3.35	12.79	3.27	--	8.98
	Med	2.95	2.60	0.68	1.96	11.58	10.52	6.15	10.51
	High	--	3.65	2.71	2.94	13.81	14.37	9.39	10.65
	All	3.48	2.94	2.20	2.87	12.48	9.33	9.03	10.28
Cowpeas	Low	0.69	7.43	0	3.05	1.09	0.56	--	3.28
	Med	0	2.49	0.09	0.97	0.80	5.27	12.81	4.33
	High	--	15.30	0.23	4.00	0.22	1.32	4.49	3.43
	All	0.55	7.52	0.16	2.75	0.77	3.66	5.42	3.28
Yam	Low	76.54	60.94	78.43	71.10	68.35	78.00	--	72.24
	Med	74.37	77.48	68.37	78.28	61.63	60.78	76.93	62.56
	High	--	63.26	81.42	76.88	66.66	58.28	67.82	66.74
	All	76.10	66.37	77.20	73.20	64.99	64.35	68.83	66.05

Table A-15(cont'd)

Variable	Cropped Land per Consumer Classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Cassava	Low	2.04	1.02	7.07	2.04	7.78	5.60	--	6.91
	Med	0	2.11	17.79	7.46	15.16	9.34	0	10.61
	High	--	1.46	2.03	1.89	9.31	4.75	6.04	6.52
	All	1.63	1.44	7.26	3.44	11.40	8.00	5.37	8.26
Cocoyam and Sweet potato	Low	0	0	0	0	0	0	--	0
	Med	4.20	0	0	1.05	0	0	0	0
	High	--	0	0	0	0	0	0	0
	All	0.84	0	0	0.28	0	0	0	0
Vegetables	Low	0.42	4.00	0	1.67	0	0	--	0
	Med	3.73	1.36	2.05	2.21	2.48	0	0	0.90
	High	--	0	1.23	0.92	0	0	0.21	0.16
	All	1.09	2.40	1.35	1.61	1.10	0	0.19	0.43
Cotton	Low	0	0	0	0	0	0	--	0
	Med	0	0	0	0	2.85	0.19	0	1.14
	High	--	0	0	0	0	4.96	3.84	3.25
	All	0	0	0	0	1.27	0.68	3.42	1.79
Tobacco	Low	0	10.04	0	3.59	0	0	--	0
	Med	0	0	0.22	0.08	0	0	0	0
	High	--	3.00	2.28	2.46	0	0	0	0
	All	0	5.62	1.43	2.35	0	0	0	0

Table A-15 (cont'd)

Variable	Cropped Land per Consumer Classes	Net Farm Income Per Consumer Classes							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Perenial	Low	0.45	0	0	0.24	0	0	--	0
	Med	0	1.60	0	0.60	0	0	0	0
	High	--	0	0	0	0	0	0	0
	All	0.36	0.48	0	0.28	0	0	0	0
Number of households	Low	8	5	1	14	3	2	--	5
	Med	2	3	3	8	4	6	1	11
	High	--	2	6	8	2	1	8	11
	All	10	10	10	30	9	9	9	27

Source: Survey Data

Table A-16 Net farm and net household incomes per consumer classes, by total cropped land per household strata, 1969

Variable	Consumer Classes	Total Cropped Land Per Household Strata: Ipetu Low	Ipetu Med	Ipetu High	Ipetu All	Odo-Ore Low	Odo-Ore Med	Odo-Ore High	Odo-Ore All
Net Farm Income per house	1	341.27	237.17	514.75	319.50	173.12	89.89	227.16	258.51
	2	147.48	220.88	373.84	247.40	78.73	261.34	122.17	163.20
	3	481.93	212.89	496.50	332.35	121.20	--	475.89	298.55
	4	98.24	317.97	624.03	396.45	56.46	154.23	409.21	322.39
	All	220.50	238.90	490.68	319.50	85.93	231.39	351.24	222.17
Net Farm income per consumer	1	83.60	--	160.53	112.45	33.24	85.66	68.03	58.44
	2	28.55	39.32	81.37	49.78	18.20	46.01	18.65	30.18
	3	61.00	28.45	55.15	40.73	17.19	--	54.39	35.79
	4	8.97	28.94	44.47	31.16	4.36	14.15	34.57	27.33
	All	57.39	32.18	92.49	61.67	23.24	58.45	42.44	40.01
Net Farm income per acre	1	91.64	--	67.42	82.56	52.81	67.57	60.57	59.45
	2	52.53	52.86	48.71	51.37	50.24	78.87	28.81	59.45
	3	155.46	50.53	86.54	75.81	55.09	--	72.00	63.54
	4	45.91	73.14	95.88	76.79	43.77	61.20	70.28	65.20
	All	81.71	56.33	71.32	70.25	51.20	71.50	63.71	61.39
Total hours per acre	1	388.07	--	258.43	339.45	337.37	295.01	293.18	313.43
	2	403.04	457.14	291.16	383.78	397.60	289.80	222.58	326.39
	3	297.62	404.79	458.97	404.96	333.07	--	115.51	224.29
	4	235.33	408.13	472.98	399.51	676.51	365.61	250.98	328.15
	All	368.24	422.98	351.27	379.38	394.65	302.86	242.15	314.05

Table A-16 (cont'd)

Variable	Consumer Classes	Total Cropped Land Per Household Strata							
		Ipetu				Odo-Ore			
		Low	Med	High	All	Low	Med	High	All
Net household income	1	276.14	--	572.36	387.22	114.60	266.79	296.99	205.86
	2	220.41	287.82	414.39	307.54	133.08	295.79	144.64	204.46
	3	566.18	280.71	546.70	397.49	144.58	--	539.48	342.03
	4	660.82	388.44	706.30	570.06	215.68	292.47	448.57	393.00
	All	326.89	307.02	546.62	396.49	135.32	282.89	391.22	268.76
Net household income per consumer	1	98.05	--	179.18	128.48	41.86	101.57	78.16	69.83
	2	42.21	51.78	90.13	61.37	30.67	51.97	22.08	38.57
	3	71.67	37.33	60.70	48.91	20.51	--	61.65	41.08
	4	60.34	35.09	50.27	46.21	16.65	26.83	37.52	33.01
	All	74.89	41.65	102.99	74.26	32.96	69.64	47.52	48.47
Farm Income Percent of household income	1	84.03	--	88.65	78.87	79.95	82.15	87.13	82.28
	2	66.94	65.72	87.43	73.37	54.99	87.26	87.46	73.03
	3	85.12	78.28	91.05	81.19	83.83	--	88.21	86.02
	4	14.87	79.53	87.61	69.83	26.18	52.73	86.72	73.22
	All	72.10	73.04	88.55	78.07	66.09	80.14	86.73	77.45
Off-Farm income per household	1	38.97	--	57.61	45.96	24.71	39.62	38.49	32.75
	2	72.92	66.94	40.55	60.14	54.35	34.45	22.47	41.27
	3	84.25	67.82	50.20	65.13	23.38	--	63.59	43.48
	4	562.58	70.47	82.27	173.61	159.22	138.24	39.35	70.60
	All	106.04	68.11	55.94	77.00	49.39	51.50	39.98	46.59

Source: Survey Data

Table A-17 Net farm income by consumer classes by total cropped land per household strata 1974

Variable	Consumer Classes	Total Cropped Land Per Household Strata: Ipetu Low	Ipetu Med	Ipetu High	Ipetu All	Odo-Ore Low	Odo-Ore Med	Odo-Ore High	Odo-Ore All
Net farm income per house	1	153.18	--	658.08	236.50	94.37	378.69	683.21	238.21
	2	200.41	308.19	863.82	472.59	320.98	366.40	861.79	565.21
	3	--	601.14	792.67	696.90	--	--	1055.29	1055.29
	4	--	252.67	--	--	--	--	763.35	763.35
	All	176.30	390.52	821.90	462.90	144.73	371.86	873.96	463.52
Net farm income per consumer	1	46.34	--	188.02	--	44.59	123.99	244.00	87.67
	2	--	59.13	135.44	81.71	51.24	65.61	166.68	105.33
	3	--	73.77	101.09	87.43	--	--	121.15	121.15
	4	--	23.95	--	23.95	--	--	70.68	70.68
	All	46.34	60.00	130.39	78.91	46.07	91.56	154.49	97.37
Net farm income per acre	1	97.52	--	88.45	96.01	69.68	113.14	79.72	85.00
	2	138.62	96.01	167.55	133.79	146.71	102.54	126.27	119.79
	3	--	163.33	90.82	127.07	--	--	100.02	100.02
	4	--	96.44	--	96.44	--	--	139.81	139.81
	All	74.85	130.82	165.28	123.65	53.33	123.70	132.79	103.60
Total hours per acre	1	525.81	--	209.58	473.10	578.60	576.70	338.04	498.66
	2	585.96	389.82	329.60	426.26	695.17	558.95	334.96	289.76
	3	--	616.01	261.61	438.81	--	--	289.76	259.71
	4	--	372.71	--	372.71	--	--	329.35	329.35
	All	555.88	455.97	297.20	436.35	604.51	566.84	324.63	498.66

Source: Survey Data

Table A-18 Net farm income, net house income, off-farm percent of house income by village by land strata

Variable	Village	Strata	Acres Range 1969	Acres Range 1974	Net Farm Income: Per house 1969	Per house 1974	Per capita 1969	Per capita 1974	Per consumer 1969	Per consumer 1974	Off-Farm Income: Per house	Per consumer	% house Income	Net Farm Income: Per house	Per capita	Per consumer
Cropped land per worker strata	Ipetu	Low	0.22-0.60	0.21-0.53	300.60	188.78	21.82	26.83	--	--	125.63	14.13	30.75	426.22	31.74	--
		Med	0.71-0.90	0.53-0.84	276.51	583.78	26.09	68.19	--	--	53.99	9.05	21.77	330.50	31.74	--
		High	1.10-3.39	0.85-2.98	377.09	616.15	78.46	65.43	--	--	49.07	14.24	13.27	426.16	88.32	--
		All	0.22-3.39	0.21-2.98	319.50	462.90	42.68	53.48	--	--	77.00	12.59	21.93	396.49	51.25	--
	Odo-Ore	Low	0.11-0.37	0.31-0.71	186.27	295.45	14.03	41.79	--	--	72.48	8.16	34.55	258.75	20.15	--
		Med	0.44-0.75	0.72-0.94	168.15	316.67	27.22	54.80	--	--	32.17	7.43	19.12	200.32	53.21	--
		High	0.79-1.52	1.02-3.55	300.09	778.23	51.93	114.97	--	--	31.92	9.56	13.22	332.01	59.40	--
		All	0.11-1.52	0.31-3.55	222.17	463.52	31.37	70.52	--	--	46.59	8.46	22.55	268.76	37.92	--
	All	Low	0.11-0.51	0.21-0.58	177.38	248.28	15.92	30.67	--	--	96.10	11.28	34.99	330.86	24.20	--
		Med	0.54-0.83	0.58-0.88	286.30	429.36	27.66	60.10	--	--	50.07	8.28	18.69	281.78	33.37	--
		High	0.85-3.39	0.88-3.55	359.64	711.94	68.75	93.89	--	--	42.59	12.48	12.98	399.43	77.67	--
		All	0.11-3.39	0.21-3.55	274.44	463.19	37.44	61.55	--	--	62.92	10.68	22.22	337.36	45.03	--
Cropped land per consumer strata	Ipetu	Low	0.20-0.54	0.21-0.44	317.98	230.07	--	--	32.07	39.19	124.72	12.74	29.02	442.69	--	44.81
		Med	0.56-0.76	0.47-0.73	257.20	481.40	--	--	49.53	85.68	55.00	10.60	23.69	312.20	--	53.12
		High	1.00-2.72	0.77-2.13	377.09	677.24	--	--	108.50	111.89	49.07	14.24	13.27	426.16	--	122.74
		All	0.20-2.72	0.21-2.13	319.50	462.90	--	--	61.67	78.91	77.00	12.59	21.93	396.49	--	74.26
	Odo-Ore	Low	0.10-0.36	0.31-0.66	186.27	282.22	--	--	17.75	46.94	72.48	8.16	34.55	258.75	--	25.91
		Med	0.44-0.66	0.66-0.92	160.92	330.10	--	--	31.36	76.14	29.64	6.29	18.09	190.56	--	37.65
		High	0.69-1.43	0.94-3.35	305.71	778.23	--	--	68.99	169.03	33.80	10.45	14.02	339.59	--	79.44
		All	0.10-1.43	0.31-3.55	222.17	463.52	--	--	40.01	97.37	46.59	8.46	22.55	268.76	--	49.47
	All	Low	0.10-0.46	0.21-0.51	231.01	283.62	--	--	23.66	45.06	99.85	11.11	33.54	273.48	--	34.77
		Med	0.48-0.70	0.52-0.82	236.69	355.54	--	--	38.88	72.28	46.10	8.38	19.82	336.37	--	47.35
		High	0.76-2.72	0.84-3.35	356.62	750.42	--	--	92.39	145.62	42.81	12.55	13.29	402.22	--	104.94
		All	0.10-2.72	0.21-3.35	274.44	463.19	--	--	51.64	87.65	62.92	10.68	22.22	337.36	--	65.32
Cropped land per household strata	Ipetu	Low	1.49-3.36	0.82-1.98	220.50	176.30	38.42	31.65	57.39	46.34	106.04	17.50	27.90	326.89	50.38	74.89
		Med	3.38-5.52	2.02-4.00	238.90	390.52	20.18	39.78	32.18	60.00	68.11	9.47	26.96	307.02	26.39	41.55
		High	5.67-9.57	4.33-9.43	490.68	821.90	67.21	89.01	92.40	130.39	55.94	10.50	11.45	546.62	74.50	102.93
		All	1.49-9.57	0.82-9.43	319.50	462.90	42.68	53.48	61.67	78.91	77.00	12.59	21.93	396.49	51.25	74.26
	Odo-Ore	Low	0.78-2.20	0.54-2.23	85.93	144.73	18.60	35.94	23.24	46.07	49.39	9.72	33.91	135.32	26.05	38.79
		Med	2.48-3.57	2.63-3.82	231.39	371.86	45.07	65.09	58.45	91.56	51.50	11.19	19.86	282.89	53.64	69.64
		High	3.67-12.74	4.47-17.76	351.24	873.96	33.48	110.54	42.44	154.49	39.98	5.08	13.27	391.22	37.40	47.52
		All	0.78-12.74	0.54-17.76	222.17	463.52	31.37	70.52	40.01	97.37	46.59	8.46	22.55	268.76	37.92	48.47
	All	Low	0.78-2.76	0.54-2.21	128.16	133.94	26.16	31.24	35.96	42.09	83.42	13.97	34.00	211.58	36.34	49.73
		Med	2.78-4.24	2.23-4.00	235.84	409.09	31.88	54.21	44.27	79.07	49.88	8.80	20.26	285.72	39.15	53.09
		High	4.41-12.74	4.33-17.76	459.31	846.56	54.29	99.21	74.70	141.81	55.46	9.27	12.40	514.77	60.75	83.97
		All	0.78-12.74	0.54-17.76	274.44	463.19	37.44	61.55	51.64	87.65	62.92	10.68	22.22	337.36	45.03	62.32

Source: Survey Data

Table A-19 Income rankings of households in both years' sample, Ipetu.

House-hold number	1969	1974	Change in income ranking	Income Percentile Change +tve	Income Percentile Change -ve
4 (2)	13	12	1	5	
7 (1)	1	4	-3		15
8 (1)	16	18	-2		10
9 (1)	5	16	-11		55
10 (1)	15	6	9	45	
14 (3)	2	2	0	0	0
15 (1)	12	9	3	15	
16 (1)	17	14	3	15	
17 (1)	8	17	-9		45
17 (2)	4	13	-9		45
23 (1)	6	10	-4		20
26 (1)	7	3	4	20	
26 (2)	3	19	-16		80
27 (1)	18	1	17	85	
29 (1)	20	7	13	65	
30 (1)	9	8	1	5	
32 (1)	10	5	5	25	
33 (1)	11	11	0	0	0
41 (2)	14	15	-1		5
43 (3)	19	20	-1		5

Source: Survey Data

Table A-20 Income rankings of households in both years, sample, Odo-Ore

House-hold number	1969	1974	Change in income rank	Income Percentile Change +ve	-ve
1 (1)	13	21	-8		36
3 (1)	16	20	-4		18
4 (1)	21	10	11	50	
4 (2)	1	2	-1		5
4 (3)	15	12	3	14	
5 (1)	7	8	-1		5
6 (1)	6	1	5	23	
7 (1)	2	13	-11		50
8 (1)	12	14	-2		9
9 (1)	5	16	-11		50
11 (1)	11	9	2	9	
12 (1)	20	22	-2		9
12 (2)	18	17	1	5	
12 (3)	4	15	-11		50
13 (1)	9	7	2	9	
16 (1)	14	18	-4		18
17 (1)	22	5	17	77	
19 (1)	8	4	4	18	
20 (1)	10	3	7	32	
21 (1)	3	6	-3		14
22 (1)	19	19	0	0	0
31 (1)	17	11	6	27	

Source: Survey Data