Improving land use in Nigeria through removing defects in land inheritance

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IMPROVING LAND USE IN NIGERIA THROUGH REMOVING 
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by

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CHAPTER ONE: INTRODUCTION

Nigeria, situated on the west coast of Africa, is a federation comprising a district of Lagos and three regions; Eastern, Western, and Northern. Its population was estimated in 1962 to be 40 million (1, p.4). Its area of 356,669 square miles, equivalent to Texas and New Mexico together, has a population density of about 112 people to the square mile (1, p.4). However, the population distribution is very uneven throughout the country. For example, in the Northern region especially in the Bornu area, the population is less than 20 per square mile, while in many rural areas of the Eastern region it is more than 300 per square mile.

The per capita income was estimated in 1960 to be $80 (1, p.4) ranking fifteenth among the 42 African countries and classifying Nigeria as a less-developed nation by United Nation's standards. Perhaps agriculture is partly responsible for the relatively low level of per capita income. Since about 80 percent of the Nigerian population is engaged in agriculture (2, p.192), the growth of the agricultural industry is intimately related to the economic growth¹ of the country. We, therefore, need to examine the structure of the agricultural industry in order to identify defects impeding growth and to suggest improvements that would lead to an increase in the level of income. But first we ask the question, "Do Nigerians recognize the need for improvement in agriculture?" The answer to this question may be given in the affirmative on the basis of the Government of Nigeria's policy statement (3, p.169) that will follow later.

¹Economic growth is a circumstance in which real income is increasing at a more rapid rate than population.
In this study we are interested in studying the means for raising farm income in the process of economic development\(^2\). This involves finding the means of increasing the per capita productivity in agriculture. We want to achieve that level where the marginal revenue product of resources used in agriculture will be equal to that of the resources used in other sectors of the economy. Because of the magnitude and complexity of the problem, our concern in this study is limited to the consideration of structural defects that may exist in agriculture which might have impacts on agricultural output and, consequently, on the growth of the per capita income. Some of these defects might evolve from the intergeneration transfer of property under the tribal system of resource tenure as practiced in Nigeria. This thesis focuses upon 1) defects in the inheritance structures which impede efficient uses of land, labor and capital, and 2) possible means for ameliorating these defects.

In the process of identifying and analyzing these defects, this thesis elaborates an analytical framework which serves to 1) identify certain structural defects and relate them to economic growth, 2) bring together the relevant data available as determined by this framework, and 3) suggest the generation of additional data required by the framework to analyze inheritance structures in relation to agricultural and national development.

Due to the paucity of data this thesis necessarily emphasizes conceptual analysis which constitutes a framework for specifying, gathering, 

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\(^2\)Economic development deals with providing the individual with the opportunity to develop himself in a given society with respect to his productivity potential.
and ordering data on inheritance structures which affect agricultural and national development.

Nature and Setting of the Problem

We orient our study to the following policy statement of the Nigerian government:

"The expansion and modernization of agriculture and related production is of crucial importance to the development of the Nigerian economy. The proceeds from the export products will determine to a large extent the volume of imports which can be made available for economic development in other sectors; the efficient expansion of domestic food production will determine not only whether the Nigerian people will eat better but also whether they can effectively reduce dependence on imported foodstuffs; the increased productivity of agriculture will determine whether the income of the people can be effectively raised and this will in turn determine the size of the domestic market for the new industries which are expected to spring up" (3, p.169).

The Nigerian national goal of "expanding and modernizing" agriculture appears justified (3, p.169). The majority of the people in Nigeria depend on agriculture for their livelihood. The persistence of a low level of per capita productivity is concommitant with a low level of per capital income. Low income offers evidence of inefficiency, especially when a country is richly endowed with natural resources as Nigeria is. It appears that economic development of the nation could proceed if the farm income is increased not by subsidy but by making the farmers more productive. Nigeria
is interested in raising the farm income so that the low income farmers may cease to act as a deterrent to social and economic improvement. Also, in order to maximize the well-being of the society, every member should contribute to and participate in community development, health services and education. But the low income farmers, unless their conditions improve, cannot contribute actively to economic development. Also, as new industries are established, they face the problem of finding a local market for their products and services. Since the bulk of the population is in agriculture, raising the farmers' income through increased per capita productivity would serve to increase their purchasing power and thus spur new businesses in the non-farm sectors of the economy.

We proceed with a further examination of the policy statement (3, p.169) of the Nigerian government. First, the underlying assumption of the development of agriculture being crucial is based on what? Why, if it is crucial, is it so now and not before? Actually, one cannot stress modernizing and expanding agriculture as a rational goal until one has assessed the resource productivity, factor prices, product prices, and the state of technology in both agriculture and non-agriculture. Second, the statement contains words which may embrace ambiguous meanings, for example, "expansion", "modernization", "the people", and "determine". Let us analyze these concepts one by one.

What does the government mean by expansion? Would it be 1) increasing the quantity of inputs, 2) increasing the quality of inputs, 3) increasing the quantity of outputs, and/or 4) increasing the quality of outputs? As for modernization, do we mean substituting capital for labor as in developed agricultural countries, and is it proper to consider
modernization by the United States standard considering the Nigerian resource mix? Would "the people" in this concept refer to the farm people, the non-farm people, or the Nigerian people as a whole? If it refers to the farm people, why should the non-farm people be neglected when the problem of raising productivity and income is being considered, since the per capita income in the country is only $80. Also, why is the word "determine" used instead of "influence" or "affect"? For example, the statement "...the efficient expansion of domestic food production will determine not only whether the Nigerian people will eat better but also whether they can effectively reduce dependence on imported foodstuffs..." (3, p.169) does not readily lend itself to economic logic. The availability of food through increased productivity does not necessarily mean that the people would have the money to buy the food. Furthermore, a country does not reduce dependence on imported food just because she wishes to. There are products which are needed domestically but cannot be produced climatically or economically at home. In such a case, the country can increase her exports through specialization and maintain its dependence on imports of the other needed products. Per capita income throughout a country is not always increased through increased production in one sector of the economy. Income in agriculture on a per capita basis may be lowered through increased production, for example, especially when one considers the low income elasticity of demand for agricultural products in more developed countries. But this may not be true in Nigeria because, according to Schultz (4, p.4), "...a country dependent upon traditional agriculture is inevitably poor and because it is poor it spends much of its income for food". But as Nigeria develops its agriculture the income elasticity of demand for
food may be expected to decline. In support of this reasoning, Schultz says, "...but when a country develops an agricultural sector such as Denmark has in Europe, Israel in the Near East, Mexico in Latin America, and Japan in the Far East, food becomes more abundant, income rises, and less of the income of the country is spent for food" (4, p.4).

Methods of raising farm income include: 1) increasing the quantities of inputs other than labor, 2) enlarging the amount of resources per farmer, i.e. through migration from the farm to non-farm industries and making more land available to the remaining farmer, and 3) providing transportation, health, educational facilities and related social overhead capital. Improved roads are needed to enable the crops produced by the farmer to reach the market. Farm income may also be raised through improved education, nutrition and health. The time that is generally lost through illness and disease may be applied to the production of more products or in taking care of the products which would have fallen prey to insects and deterioration.

However, raising agricultural productivity and farm income in a tribal communal society as exists in Nigeria would require structural changes in land tenure. While agricultural productivity may be said to reflect partly the quality of inputs and partly the state of technology and management,

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3Tribal communal society is a community wherein land is held and controlled by the community as a whole.

4Land tenure is a description of all the relations that exist between and among men with respect to land. It expresses the man-to-man relationship regarding the use, occupation, and control of land.
land use\(^5\) may be said to be intimately related to the existing land tenure. Hence, a brief statement of the nature of the communal tenure\(^6\), and particularly land inheritance\(^7\) structures and their impact upon land use is appropriate.

Tribal communal tenure in Nigeria with its unusually complex rules and practices appears to have produced a land inheritance structure characterized by the following resource inefficiencies:

(a) Fragmentation resulting in non-contiguous holdings. In a communal society every member is entitled to inherit from a deceased's estate. Thus it is possible for a cultivator to inherit as many pieces of land as there are communal members who predeceased him.

(b) Undersized holding. Since there is no minimum ceiling for the size of land that can be held, fragmentation is accompanied by undersized (uneconomic) holdings.

(c) Defective land titles which impair security of expectations. In the communal system land belongs to the entire community. No member can mortgage or sell the land without the consent of all other members. Land, land use expresses man's dependence upon land. It describes a man-to-land relationship. It may also involve all the factors that affect the ability of a unit of land resource to produce a net return as compared with some other unit. Factors such as soil erosion may have a negative effect upon land use while soil-building and resource-development programs usually increase the use capacity.

Communal tenure is a situation in which a community exercises control, occupation, and use of a landed property. The right of transfer and reversion is exercised only by the community.

Land inheritance explains the intergeneration transfer of land resources.
therefore, cannot be used as equity for borrowing. Also because the cultivator's children do not necessarily succeed to his property, the cultivator is not provided incentives to make long-term improvements even if they prove to be economically more appropriate than the short-term ones.

(d) Occupational immobility. Because of a ban on sale of land as imposed by the communal system, the cultivator is forced to stay within his own group. He cannot sell his land and move out. Neither can he buy land elsewhere. Leaving the land for alternative occupational opportunity means surrendering his land to the commune. This holds for his children also.

The purpose pursued in this study is to examine the foregoing resource inefficiencies arising from, and sometimes contributory to defects in land inheritance with a view to suggesting some remedial alternatives. In the process, information is needed on the existence and persistence of the inheritance structures and the problems they create.

In examining the nature and setting of the inheritance structure, it is appropriate to observe the uneven distribution of population throughout the country. The uneven distribution of population may be viewed as both a cause and a result of the defects in land inheritance. If the population has increased in certain tribes to the point where the available land resources could no longer optimally sustain the population, an inheritance structure which restricts occupational mobility definitely aggravates the efficient use of resources.

The problem of uneven distribution of population in relation to land inheritance and land use will be explained by the answers to the following questions:
(1) What caused the population distribution to be so uneven?
(2) Why has the problem of uneven population distribution persisted?

After answering these two questions, another set of questions follows:

(1) What could be done to achieve optimal redistribution?
(2) Would the redistribution improve land use?

The low density of population in the Northern Nigeria may be attributed to the widespread absence of a permanent and dependable water supply. In Bornu and much of the Middle Belt especially the population is below 20 per square mile. But by modern techniques of sinking wells, the carrying capacity of this area in terms of both human beings and livestock may be increased.

In the southern part of Benin, Western Region, extreme porosity of the tertiary sands leads to an absence of surface water over much of the area during the dry season. This is partially responsible for a generally sparse population.

Probably the most important cause of uneven distribution of population in Nigeria was civil wars. It is believed that the civil wars contributed to the formation and growth of the cities in the southern parts of the country, especially in the Western Region. The inhabitants of the villages must have fled to take refuge in the cities where they would add to the strength of the cities in case of attack from the outside (5, p.29). However, the Middle Belt with many topographically difficult areas is not more densely populated than the rest of the Northern Region. Population would have concentrated on the hillsides or in some remote valleys there. In addition, one may argue that the presence of the tsetse fly and other
disease-carrying insects would have decimated the population to a minimum in the forests and swamps of the south (5, p.29).

Why has the problem of uneven population distribution not been overcome? One reason has been language barrier. Until recently, the average Nigerian farmer spoke only one language, i.e., the language of his ethnic group or tribe, and there are over 250 ethnic groups in Nigeria. Migration was difficult if it extended beyond the boundaries of the area occupied by one's language group. The second and probably more important reason for the persistence of uneven distribution of population is that artificial boundaries were set up and rigidly enforced between communal groups. Rules against alienability of land were woven into customary laws which were later upheld by the courts. Lands in the Western and Eastern Regions have been communally owned and alienation, though frowned upon, could be obtained at the consent of every member of the land-owning group. In the Northern Region, the situation has been different. All lands are under the control of, and subject to the disposition of the Governor. The land there is held by the Governor for the use and common benefit of the natives. According to Baldwin (6, p.27) "...land in the Northern Region cannot be alienated to non-natives of that Region except with the express consent of the Governor". And "...it was not the policy of the Government to grant concessions" (6, p.27). This and other policies contributed to restricting migrations between regions. A further complication is found in the attitude of the communal system towards land inheritance in which any member of the group, not necessarily the direct heir to the deceased, may succeed to the land vacated by the death, migration or retirement of the occupier.
Why is the problem of uneven distribution of population of more concern now than ever before? The first reason is simple. The communal system started as a survival rather than a commercial venture. It was geared to a subsistence economy. But, with the introduction of exchange economy, and with contact with other cultures, an attitude of commercialization towards land use gradually developed. People learned through these contacts that changes in food supply and levels of nutrition were necessary for better health and for improved ability to produce the food. The uses of land then expanded both for a variety of food crops and for the newly introduced export crops. The second reason, which is an offshoot of the first, is that the man/land ratio is becoming critical in some sections of the country, especially in the Eastern rural areas where there are over 300 people per square mile. The imaginary boundaries set between and among land-owning groups now become an economically impeding factor to migration and development. It thus becomes necessary to break or modify the barriers to migration, necessary to a better utilization of land resources. This would require a modification of the rules governing land alienability under the inheritance system.

It is realized that total agricultural output will not increase greatly just by making more land available to the cultivators; but this is an initial correlative step in the economic development of the country.

Objectives of the Study

We assume that one of the major goals of Nigeria is to "expand and modernize agriculture" as exemplified in the policy statement of the Nigerian government concerning the 1962 Six-Year plan (3, p.169) as
mentioned above. It is intended here to study means of achieving this goal. We now state the broad and the specific objectives of this study.

The objectives of this study are 1) to identify the major characteristics of the land tenure and land inheritance structures in Nigeria which inhibit the growth within agriculture, 2) to appraise the effects of these characteristics on agricultural productivity (particularly those aspects of land inheritance involving land use and land development) in terms of capital and natural and human resources, 3) to suggest alternatives whereby inheritance arrangements may be improved without violating the value system through examination of such remedial alternatives as would facilitate intergeneration transfers including (a) cooperatives, (b) incorporation, (c) communal tenure with compulsory land bank, (d) elected council replacing the communal landlord and (e) individual ownership, and 4) to reformulate problems and hypotheses in the light of information obtained in this study for the purpose of assisting future inquiries of this nature.

Development of Hypotheses

In pursuing these objectives, we proceed to develop hypotheses to be tested in this study. Initially, we inquire into the nature and functions of hypotheses. Then we state specific hypotheses for directing the study.

Nature and function of hypothesis in directing inquiry

A hypothesis is a supposition about the relationship between sets of conditions such as the outcome which results from use of a specified means. Salter defines a hypothesis as a "...tentative proposed statement of what actions result in postulated consequences..." (7, p.69) and he holds "...it is tentative because it is continuously revised in the process of
inquiry" (7, p.63). As additional knowledge relevant to the problem is disclosed in the progress of inquiry it may make possible the reformulation of improved hypotheses.

Hypotheses may consist of three general types. Timmons describes these three types as delimiting, diagnostic, and remedial hypotheses (8, p.21). The delimiting hypotheses specify the problem being studied and the portion of the problem to be investigated. In discussing the nature and function of delimiting hypotheses Timmons says:

"...it frequently becomes necessary to delimit a segment of a problematic situation for study. The problem delimiting process has two major functions. First, it sets forth the precise problem to be studied. Second, it places limitations on the nature of the results that may come from a segmental inquiry by indicating the part of the whole to be studied" (8, p.21).

When a specific problem has been set off by the delimiting hypothesis, the diagnostic hypothesis postulates why this exists. Timmons says, "Diagnostic hypotheses advance possible reasons and explanations for the development and persistence of the problem previously delimited" and "...the purpose of the diagnostic hypotheses is to lay the foundation for the formulation of remedial hypotheses" (8, p.23).

The remedial hypotheses specify courses of action for solving the problems of overcoming the obstacles which prevent the achievement of norms or ends-in-view. Regarding the purpose of remedial hypotheses and their relationship to the other types of hypotheses, Timmons says:

"Following tests of delimiting and diagnostic hypotheses as a part of the same study or earlier ones, remedial hypotheses may be
formulated. The purpose of remedial hypotheses sometimes termed 'constructs of action' is to propose specific possibilities of remedying the problem as a necessary basis for action" (8, p.23).

Statement of hypotheses directing this study

This study is being guided by a set of four hypotheses. The first hypothesis is a statement of the problematic situation for study. It may be called the introductory hypothesis. Hypothesis two is diagnostic inasmuch as it advances reasons for the existence of the problem. Hypotheses three and four are remedial in nature in that they suggest possible remedial actions or techniques that may apply. These four hypotheses are interrelated and yet distinct. Each one is linked to the other in a way both to support the preceding hypothesis and to point up the need for the succeeding one.

The hypotheses are as follows:

1) Agriculture is not fulfilling its role in the Nigerian economy, the role being that of increasing per capita productivity and income as determined by relative resource productivity, factor prices, product prices, and the state of technology.

2) Inoptimal (i.e. inadequate and inefficient) land use and labor immobility contribute to the relatively deficient role played by agriculture. Fragmented, noncontiguous, and undersized holdings are elements of inoptimal land use as is the lack of a basis for effective provision and productive use of credit.

3) These defective elements in the agricultural sector arise from defects in land inheritance structures, especially as they exist under the
communal land holding system of the country.

4) Defects in land inheritance can be remedied through appropriate educational, legislative, administrative and judicial measures. For example, minimum and maximum limits of land holdings may be set by the legislature. Improved land inheritance may be introduced through individual ownership, cooperatives and incorporation.

**Procedures used in testing hypotheses**

Many economic studies of land inheritance and land use are available. However, these studies do not readily lend themselves to our use in analyzing the interrelationships that exist between land inheritance defects and land use in a communal society. Therefore, this section of the study will be devoted to exploring the rationale followed in deriving and testing the hypotheses used.

**First hypothesis** To explore this hypothesis, a definition of agriculture's role will be necessary. It is realized that world agriculture plays the role of supplying food and fiber for the world population and industry. It is also realized that any particular country's agriculture, depending upon her natural endowment, should not be charged with the responsibility of producing all the food and fiber needed within her boundaries, otherwise there may be a reduction in output available for consumption. However, in an agricultural country such as Nigeria, it is essential to develop agriculture if we want it to make its contribution to the economic growth of the country. Kuznets (9, p.69) states:

"Thus if agriculture itself grows; it makes a product contribution, if it trades with others, it renders a market contribution; if
it transfers resources to other sectors, these resources being productive factors, it makes a contribution".

A subsistence agriculture cannot efficiently contribute labor and raw materials needed by the industry and the food, an every-day need of the people.

The next question concerns how to gauge the needs of food and fiber in a country. This can be done through an analysis of the fulfillment of the dietary needs as produced or imported by the country and by the diseases directly caused by lack of proper and adequate diets. The fiber needs can be measured in terms of the state of technology and the people's income, tastes, and preferences. The Nigerian food products are notably deficient in proteins and other essential food items. This is largely a result of low income and lack of knowledge about adequate nutrition. The per capita income (1960) is $80. But as income rises low nutritional foods give way to balanced nutritional ones. People would then rely on imports to meet the changing pattern of food consumption. Given the attainable technical conditions, the demand for these products--including eggs, meat, milk and fish--may be met more cheaply from the domestic sources. Importing of such food items is a luxury to the Nigerian people at present. On the supply of fiber, a number of processing industries suffered serious set-backs because of insufficient supply of raw materials. This is discussed later in this study. But it may be argued whether it is the processing plant that should adjust its scale to the available flow of raw materials or that agriculture should enlarge its output to take advantage of the growing demand for its raw materials.
Second hypothesis It is not disputed that inoptimal land use contributes to the relatively deficient role played by agriculture especially when inoptimal is defined as inadequate and inefficient. But there are a number of other factors affecting the contribution that agriculture could make towards economic growth. There are such factors as low level of technology and technical improvement, lack of trained labor, absence of markets for products produced resulting in lack of incentive to produce beyond subsistence, lack of capital, etc. Why do we pick out inoptimal land use? Is it more important than the other factors? On an input-output basis, and taking into consideration the present low level of technology and scarcity of capital, it may not be overemphasized if one ascribes a relatively high share to land as an input in the production of a unit of a given output. Since land is still abundant in many areas of Nigeria, it is taken as a free resource and therefore used extensively. In those areas where the high man/land ratio has forced occupiers to apply some improvements the contribution of land relative to other resources in the production of a product may not be as high. Land use would be considered optimal if as much more land as is necessary for production is used and if all cultivated land is used efficiently.

As for the inadequacy of land use, only ten percent of the cultivable land is in agriculture. There is definitely room for expansion, other things being equal (see Table 1). An example of inefficient land use may be found in the "slash and burn" method of preparing land for production. Trees and undergrowths are set on fire. The soil is then exposed to leaching and erosion in addition to the loss of the green vegetation that would
have formed manure. Also tracts become so small and so scattered that they are uneconomical to operate in terms of machinery and travel time between and among tracts. Then, would optimal (as defined) land use increase total agricultural output? The answer should be in the affirmative if we assume that productivity per acre does not decline by putting more land into production and by reorganizing the existing ones into economic units. This assumption is plausible because it is difficult to imagine that productivity would get any lower than what it is now on the subsistence farms.

An efficient credit mechanism would in part facilitate the acquisition of additional capital to optimize the land use. We stress an efficient credit mechanism here because with it credit would pass to the hands of those who genuinely need it. The role of credit on the national level, in economic development and especially its impact on the development of agriculture in two countries, can be appreciated in the building of the Aswan dam in Egypt and in the establishment of the Gezira scheme in Sudan (10, p.246). Credit itself does not create new resources. But, if used under proper conditions, may lead to increased productive power and provide the means for economic growth. It must be used with the awareness of the trend of the demand for the product to be produced. The use of credit should be postponed until the market demand has increased if investment today will lead into a sudden increase in output which cannot be profitably absorbed in the present market. In Nigeria most peasant farmers operate only four or five-acre farm sizes. Farm equipment and technological improvements are not available partly because the farmer is too poor to purchase them and partly because his scale of operation does not justify the
use of such items. Additional capital is necessary to improve his use of agricultural resources to generate economic growth. He can expand his acreage by changing his tools to ploughs and draught animals. He can increase his yield per acre and per unit of investment through better seeds and fertilizer. It is not unjustified to hypothesize that shifting cultivation—a rotation of the land rather than of crops—emerged in part because of lack of credit to acquire such technical improvement as fertilizer. Innovations and entrepreneurship are rare among low income people because they lack the courage to risk that little they possess. With improved tools the returns to labor as well as to land become enhanced. We assume here that the farmer has the freedom to expand his scale of operation as he sees fit and that there are no institutional obstacles.

Third hypothesis These defective elements in the agricultural sector arise from defects in land inheritance structures especially as they exist under the communal land holding system. Among the defects in land inheritance the insecurity of title stands out as a limiting factor in the procurement of credit. Loan agents are interested in some form of collateral, especially land. But in a communal system the land rights revert to the commune at the death or migration of the occupier, and even when the land is in fallow any member of the commune may succeed to its use. This shows that every member is capable of inheriting from any other member of the same commune. The land rights cannot be alienated by the occupier, i.e. the occupier cannot lease, mortgage or devise his use rights. This situation creates a cloud on the planning horizon for both the creditor and the user of credit. Since the communal heir may not necessarily come from among previous user's children the desire to acquire additional
capital to improve land use is strictly curtailed by the length of time the present occupier expects to make a continuous use of the land. While fragmentation and undersized holdings—other defects in land inheritance—discourage the use of credit through internal rationing, insecurity of title discourages both the creditor and the user of credit in the extension and use of credit. It follows then that in order to achieve increased output and productivity through the use of credit, we need, among other things, to modify the land inheritance structure.

Fourth hypothesis Defects in land inheritance can be remedied through appropriate educational, legislative, administrative, and judicial measures. A land ordinance may be enacted to change the legal position of the commune in relation to its land, the title to which may be transformed to merely a "right of occupancy" subject to the control and disposition of an elected body. Agricultural development schemes may specify methods of holding and devising land which would entail departures from the traditional patterns. The positive role of education and communication in changing inheritance pattern must be given due consideration. Farmers' clubs can be organized to teach how the defects in inheritance laws can be removed and how better farming practices can be adopted. Incorporation may be introduced to replace communal ownership and thereby mitigate insecurity in title. But one has to consider the problem of increasing numbers of people in succeeding generations supported from a given acreage held by the corporation, even though the land is not physically split up by inheritance. Finally, laws may be made within the commune to make individual land holding transferable directly to the appropriate heirs.
Synthesis of the hypotheses

If the foregoing logic holds, the means—end continuum will be as follows: By removing the defects in land inheritance we lessen the obstacles to 1) the procurement and use of credit, 2) mobility of labor, 3) consolidation of land holdings, 4) effective land titles and 5) adequate size of holdings. By the use of credit, the peasant is able to invest in land improvements and he is able to expand his acreage to the limit of his newly acquired tools. Through encouraging mobility, labor would shift to non-farm employment thus lessening under- and unemployment within agriculture and providing labor for expansion of non-farm activities. Through consolidation of scattered holdings and increasing size of units, significant efficiencies within farm units should be realized. Through removing defects in land titles and related restraints on property transfers, planning horizons of farmers as well as their security of expectations should be extended and assured. Increased output and productivity would follow. Nigerian agriculture would then be expected to fulfill its role in economic growth more adequately.

Plan of This Study

This study is divided into five parts.

The first chapter contains a statement of the problem, the objectives of the study and the formulation of the hypotheses guiding the study. The uneven distribution of population in Nigeria is explored to shed light on how land inheritance became a problem, especially now that man/land ratio in some areas makes it necessary to re-define the existing land inheritance structure. The end-in-view followed in this study is in line with the
Nigerian government policy statement of expanding and modernizing agriculture. The five hypotheses formulated are geared to analyzing the land use problems and presenting a logical development of a land policy.

The second chapter is a review of growth concepts relevant to the objectives of this study. Ricardo, Marx, Rostow, Schultz, and others are considered. From these concepts a framework of analysis is developed as the basis for testing the hypotheses in pursuit of the study objectives.

The third chapter deals with the organization of the peasant agriculture under the communal system. It goes into the structure of ownership of land and the conditions under which ownership may be acquired or terminated. It explains the interrelationship existing between communal and individual rights in land.

The fourth chapter is divided into two areas. The first describes customary rules and regulations directing land inheritance, i.e., the legal principles of descent and distribution of land in the Nigerian communal society. It shows also how religion, e.g., Islam, or marriage according to some foreign custom, e.g. in the Anglo-Saxon fashion, may alter the traditional rules of descent and distribution. It explores the interrelationship between the land inheritance structure and such defects as fragmentation, undersized holding, defective land titles and occupational immobility. The second area deals with the use of credit and the hinderance that the customary inheritance has placed upon its use and procurement.

The fifth chapter attempts to suggest alternatives by which the defects in land inheritance may be modified or eliminated. Among the alternatives suggested are cooperative settlement, incorporation, individual ownership through compulsory forest reserves and thereby limiting the
scope of communal tenure and shifting cultivation, and ownership of land being vested in an elected group supported by the government to carry out some better-land-use and land transfer measures. A short evaluation of the proposed policy concludes the chapter.

In the final chapter we draw certain conclusions and inferences from the study in addition to summarizing the thesis.
CHAPTER TWO: GROWTH CONCEPTS APPLICABLE TO STRUCTURAL CHANGE WITHIN THE AGRICULTURAL SECTOR

This chapter reviews growth concepts which appear relevant to existing conditions within Nigerian agriculture. Included are ideas suggested by Ricardo (11), Marx (12), Rostow (13), Schultz (4), Hirschman (14), Gill (15) and Tingergen (16). These particular growth concepts are reviewed here because of the expected contributions they can make in explaining the agricultural situations in Nigeria today as well as in suggesting means to economic growth. Ricardo and Marx dealt with conditions existing more than a century ago in Western Europe which approximate conditions of today in Nigeria. They isolate a problem which has striking relevance to Nigeria's problems. As observed by Gill (15, p.25) the description by Ricardo and Marx of the effects of an increase in population can be summarized as follows: An increase in population brings an increased demand for food. The increased demand for food means, in turn, that we have either: 1) to bring new agricultural land under cultivation or 2) to use additional labor in a more intensive cultivation of land already under plow. Rostow and Schultz provide ideas on how advanced theories might help transform traditional agriculture. Their direct application to the Nigerian agricultural situation is explained in a separate section immediately following the review of each growth concept.

Ricardo's Framework

Ricardo considers agriculture a very important sector of the economy in providing food for an expanding population. This interrelationship between population and resources serves as the focal point for his entire
analysis. Ricardo does not appreciate fully the important role that technical progress can play in increasing productivity in agriculture, thereby lessening the difficulty of feeding a growing population. Within the Ricardoian framework economic society consists of three groups of actors: capitalists, laborers, and landlords.

The capitalists direct the production of goods and services and play the key role in the economy. The capitalists rent land from the landlords, furnish the laborers with work tools, food, clothing and other necessaries. They perform two major functions; 1) by attempting to find the most profitable employment opportunities for their capital, they tend to efficiently allocate their resources among the various branches of manufacturing and agriculture; and 2) capitalists initiate the process of economic development. They further the accumulation of capital by re-investing their profits which result in the growth of national income.

Labor, the numerically largest of the three groups, is entirely dependent upon the capitalists for employment. The real wage is fixed at subsistence, above which may cause an increase in the number of workers. The demand for labor is determined by the accumulation of capital and the wage fund made possible thereby. The real wage is just enough for the minimum of basic foodstuffs, shelter and clothing. As economic development progresses through growth in population and capital accumulation, there arises an increasing scarcity of the most fertile types of land. Already cultivated lands are now used more intensively and new but poorer lands are brought into production to sustain the growth in population. Diminishing returns occur as poorer lands are brought into use and this makes competition among the capitalists for better grades of land higher. The landlords
are hereby enriched. The payment made to the landlords is called "rent" or "that portion of the produce of the earth which is paid to the landlord for the use of the original and indestructible powers of the soil" (11, p.35).

Ricardo, recognizing that he must be able to compare the relative values of commodities produced on these lands, employs the labor theory of value. By labor theory of value is meant the prices of two commodities in a perfectly competitive market are the ratio of the comparative quantities of labor employed in producing them. This, as we can see, is not realistic since Ricardo does not consider the skills and training that make up the quality of labor. Another assumption in the theory of value and production is that there is no factor substitution. Fixed coefficients of production in each line of production are assumed. There is only one ratio of labor to fixed capital that is technologically feasible for the production of any particular manufactured commodity. If there is a rise in wage rates relative to the prices of fixed capital goods, a capitalist cannot lower his production costs by employing more capital and less labor, since there is only one production process possible.

In the Ricardian model only capitalists save and what they save is what they invest. The wages and rents received by workers and landlords respectively are re-spent on consumption commodities. Consequently, intended saving always equals intended investment and there is never a deficiency of effective demand.

Ricardo is interested in comparing returns to labor and capital with the relative contribution of both factors in the production of one unit of output. Wages play an active role in determining the division of income between labor and capital. Profits depend absolutely on high or low wages.
Wages are considered as the money price necessary to enable the workers to subsist and perpetuate themselves. This means that as population grows, wage rates in money terms must rise. The rate of profit tends to fall as population grows and capital accumulates. This is because agricultural goods, one of the principal items consumed by labor, is subject to diminishing returns. When the rate of profit is above zero, capitalists save a portion of their income. In order to expand production, they use their saving to hire additional workers. Capital accumulation is therefore the fundamental force in the economy. To secure the additional labor required to expand output the capitalists may have to bid higher wages. The workers spend their additional income partly on agricultural commodities and partly on manufactured goods. In the same process the workers multiply in numbers since they can now afford to feed more children as a substitute for the higher luxury which the added income might offer them. This brings a shift in production towards more agricultural commodities. As the children are old enough, they enter the labor market thereby decreasing the wage rate. Competition among workers lowers wages sufficiently so that all become employed. The capitalists continue to increase output as long as they can secure profits. The economy becomes stationary when neither population nor capital can expand any further. Then the wage rate is at its minimum, the profit rate is near zero, and rents are high.

The contributions of the Ricardian system may be discussed in the light of their relevance to the Nigerian agricultural structure in the following manner: Ricardo's economic society is divided into three groups: capitalists, laborers, and landlords. In the Nigerian agricultural framework we have these three classes except that their interrelationship would be different from what Ricardo described. In Nigeria the government may be
called the capitalists, the cultivators the laborers, and the communes the landlords. The government initiates the process of economic development. The cultivators live at the subsistence level not because the capitalists make them, but because of their poor methods of agriculture and land tenure. The communes collect practically no rent from the users of the land, who, in the main, are cultivators themselves. Ricardo was faced with (just like Nigeria is now) the problem of using the already cultivated land more intensively and bringing into production new but poorer lands to sustain the growth in population. Even though Ricardo suggested a two-sector model, i.e. agriculture and manufacturing, which is similar to the one proposed in the Appendix, his assumption of a fixed labor/capital ratio is not compatible with our concept of resource combination.

Marxian Analysis

Marx predicts the eventual downfall of capitalism and the advent of socialism. The social arrangement of production ("mode of production") in a society has the following components: "1) the organization of labor in a scheme of division and cooperation, the skills of labor, and the status of labor in the social context with respect to degrees of freedom or servitude; 2) the geographical environment and the knowledge of the use of resources and materials; and 3) technical means and processes and the state of science generally" (12, p.47). The mode of production determines the general character of the social, political, and spiritual processes of life. Corresponding to a particular mode of production is an appropriate set of relations of production which determine the society's class structure. A class is defined as "a group of individuals who find themselves in
a similar position both with respect to the degree of ownership of the property essential to the labor processes and to the degree of personal freedom which the group enjoys" (12, p.47). The class structure consists of a dominant, directing class and a toiling, oppressed class. A final classless society evolves under socialism.

**Theory of surplus value**

The theory of surplus value provides a framework on which Marx bases his analysis of economic development under capitalism. The capitalists have and control the means of production while the workers have only their labor power to sell. The economy is capable of producing commodities in excess of what is necessary to maintain the labor supply and the stock of equipment and raw materials intact. The surplus value goes to the capitalist class as profit, interest and rent. In an attempt to explain how the surplus arises and why the capitalists are able to obtain it, Marx contends that labor power possesses the quality of yielding more than its own value as it is used. Excess value created by the labor power becomes the surplus value to the capitalists. The value of the labor power is whatever is necessary for the maintenance of the worker at subsistence level.

The capitalist aims at increasing his mass of surplus value. Since the surplus value is the net gain from labor value, the capitalist can achieve his goal in one of the following ways: 1) workers may be asked to work for more hours per day; 2) wages may be reduced below subsistence; and 3) the productivity of labor can be increased through an increase in capital accumulation. Capitalists have to save to increase the capital stock needed. Marx favors increase in capital stock as a means to improving
labor productivity because the other two approaches have natural limits, i.e. there are only 24 hours in a day and wages can be reduced only to a certain minimum which must still be above zero.

**Economic development under capitalism**

Marx reasons that because of the very nature of capitalist production, the centralization of capital, the capitalists exploit the workers. In addition, stronger capitalists exploit the weaker ones. The capitalist class forms the core of the Marxian analysis. Marx views technological progress as labor-saving inventions. The price of product declines when all capitalists introduce new inventions because relatively less labor is used in the production process. If only one capitalist introduces invention, he can increase his profit and labor productivity without making the price lower. The new inventions create an increasing surplus laboring population. Competition for jobs among the unemployed laborers enables the capitalists to lower wages to near starvation level and also lengthen the working day. More and more people (workers) are brought into a state of abject misery.

As the stock of capital grows, the rate of profit tends to decline. The declining rate of profit causes a decrease in the rate of accumulation. This tendency towards economic stagnation threatens the very foundation of capitalism.

**Marx on colonialism**

When capitalism moves into the monopoly stage, foreign markets become very important. Concentration and centralization of capital eliminate areas of free competition. Imperialism evolves. In order to postpone
their ultimate destruction, the older capitalist countries turn more and more to the foreign sector. Capital export to less developed areas becomes a practice, returns to capital in these areas are higher and this practice may postpone stagnation. Export of capital is accompanied by further domination of the less developed areas. Traditional habits and customs are destroyed. Class conflicts develop among the older capitalist countries while nationalism arises among the colonial areas. The outcome is the destruction of capitalism and the emergence of socialism.

Marx believes that the capitalistic system has a "built-in" doom, and that socialism is bound to emerge. His theory of increasing misery of labor has been disproved in capitalist countries because real wages in these countries have continued to increase. Effects of technological unemployment have been exaggerated. Since investment associated with technology raises aggregate demand and income, the effect of technological progress has been to increase demand for labor rather than decrease it. Lack of consumption demand, created by the poverty of the workers and the desire of the capitalist to save in order to invest, is a basic cause of crisis. But there should not be a problem at all if the capitalists are willing to accumulate irrespective of the rate of profit. Despite its shortcomings, Marx's theory of capitalism challenges poor and rich countries alike. Marx's analysis can be related to Nigerian agriculture.

Marx explains the capitalist economy in a mono-sector model in which the relationship of the capitalists to the workers was only to exploit. He however admits that the exploitation process through asking workers to work longer hours and reducing wages below subsistence has natural limits. He therefore proposes to achieve economic development by increasing the
productivity of labor through an increase in the capital stock. Nigeria's economy is not divided into capitalists and workers as such, but the government plays the role of investing in the initial industries and of introducing technology to improve productivity of both labor and land. Marx stresses the unemployment created by increasing efficiency, but our approach in this study is to improve the tools of the cultivator to enable him to expand his acreage and contribute to the total national output.

Rostow's analysis of the transition will follow that of Marx since, in Rostow's own words, his analysis attempts "to deal with and solve the problems with which Marx wrestled, and to avoid what appear to be Marx's basic errors" (13, p.149).

Rostow's Analysis of the Transition

Rostow argues that "the difference between a traditional and a modern society is merely a question of whether its investment rate is low relative to population increase—let us say under 5 percent of national income; or whether it has risen up to 10 percent or over. With a capital/output ratio of about 3, a 10 percent investment rate will outstrip any likely population growth;..., with a regular increase in output per head" (13, p.20).

In order to get the rate of investment up, he recognizes two problems: 1) the problem of increased productivity in agriculture and the extractive industries, and 2) the problem of social overhead capital. The requirement of the transition, according to Rostow, is to apply quick-yielding changes in productivity to the most accessible and naturally productive resources. In support of the foregoing, Rostow cites the nineteenth century examples of the increases in the production of wool in New Zealand, cotton in South
America, silk in Japan, timber in Sweden, rubber in Malaya, and in the extraction of oil in the Middle East and gold in Australia and Alaska.

He notes that a big social overhead bill is to be met and that a radically increased population is to be fed while this transition takes place. He suggests importation of capital, the servicing of which would require enlarged exports of local produce. He concludes that "it is, therefore, an essential condition for a successful transition that...the hitherto unexploited backlog of innovations be brought to bear on a society's land and other natural resources where quick increases in output are possible" (13, p.22).

Rostow's two main problems, i.e. the problem of increased productivity in agriculture, and the problem of social overhead capital are similar to those considered in this study. Here we seek the means of increasing agricultural productivity through removing defects in land inheritance, especially those defects that prevent the use of additional investment to realize increased productivity. To achieve the general requirement of the transition, Rostow suggests importation of capital which should be serviced by enlarged exports. It may be observed here that Rostow is aware of the problems of the present-day traditional agriculture. However, the ease of capital importation is a little exaggerated. The entrepreneurs in capital-exporting countries can and so always find local sources of profit higher than those from investments in foreign enterprises.

Schultz's "Transforming Traditional Agriculture"

Schultz describes traditional agriculture as "farming based wholly upon the kinds of factors of production that have been used by farmers for
generations" (4, p.3). He contends that a country dependent upon traditional agriculture is inevitably poor and such a country spends much of its income for food.

In order to transform this type of agriculture a more profitable set of factors of production will have to be introduced. This transformation is dependent upon investing in agriculture.

Schultz treats agriculture as a source of economic growth and attempts to analyze how cheaply growth can be realized from transforming traditional agriculture.

He guides his study with the following three questions:

"1) Can low income communities increase agricultural production substantially by an efficient allocation of the agricultural factors of production presently at their disposal?

2) Which agricultural factors of production are primarily responsible for the large differences among countries in the success of the agricultural sector in contributing to economic growth?

3) Under what conditions does it pay to invest in agriculture?" (4, p.14).

His conclusions in response to the above questions are respectively as follows:

1) "...the agricultural sector in a large class of poor countries is relatively efficient in using the factors of production at its disposal" (4, p.16).

2) "...that differences in land are least important, differences in the quality of material capital are of substantial importance, and differences
in the capabilities of farm people are most important in explaining the differences in the amount and rate of increase of agricultural production" (4, p.16).

3) "...it will not pay unless the man who farms has the opportunity and incentive to transform the traditional agriculture of his forebears" (4, p.23).

It can be observed from the foregoing conclusions that Schultz places emphasis on the "man who farms", his capabilities as encouraged or inhibited by opportunity and incentive.

He notes however that new risks and uncertainties must be taken into consideration as a consequence of adopting new factors of production and reaping larger returns. Allowing for risks and uncertainties, Schultz observes that "the rate at which farmers who have settled into a traditional agriculture accept a new factor of production depends upon its profit, ... and ... is similar to that observed by farmers in modern agriculture" (4, p.33).

Regardless of the type of approach used to transform traditional agriculture, i.e., be it command approach (based upon the use of political power not only to recognize agricultural production but to administer farming activities) or market approach (based upon economic incentives), the acquired capabilities of the farm people are of primary importance. Schultz maintains that these capabilities, like capital goods, are "produced means of production" (4, p.175), i.e. an investment in human capital.

He lists such types of investment as schooling, on the job training, and improvements in health. He attributes the attainment of the
transformation of agriculture in Denmark between 1870 and 1900 to a large investment in the schooling of farm people (4, p.189). He also attributes the rapid recovery of the Western European countries after the war to the capabilities of the human capital that survived the bombings.

He suggests that the low income countries could import particular skills and knowledge or produce them at home. For developing skills at home, he suggests (a) demonstration projects, (b) occasional meetings to instruct farm people, (c) distribution of printed material to literates, and (d) that the press should carry on the instructions. Schultz's contribution may be described as follows:

Schultz puts his main emphasis on the investment in human capital. This, according to him, will form the basis for transforming traditional agriculture into a modern surplus-producing type. Modern factors of production need to be acquired and used effectively if economic growth is to take place. He, like Rostow, suggests importation of capital, except that the type of capital he suggests is in form of particular skills and knowledge. Here we must remember that foreign skills and knowledge most times are developed largely to meet the sets of conditions in the exporting countries and are therefore not easily adaptable to the conditions of the importing countries. Nevertheless Schultz has made an immense contribution to the analysis of the traditional agriculture, its problems and its prospects.

Additional Concepts Relevant to Analysis

Besides the contributions of Ricardo, Marx, Rostow and Schultz, which we have appraised above, we may probe other ideas as they may be relevant
in our discussion of the role of agriculture in the Nigerian economy.

The Harrod-Domar model assigns a crucial part in the process of economic growth to capital accumulation. Even though this model was developed with the concept of an advanced economy in mind, it has implications for an underdeveloped country such as Nigeria. It attempts to achieve a growth rate of income without having to experience secular stagnation or secular inflation. The optimal path for investment designed by the model is similar to what we describe in our model in the Appendix. Its emphasis on reinvestment is especially appropriate.

Tinbergen (16) does not specifically consider land inheritance problems in his approach to economic development. But his recognition of the "elements determining relations between individuals such as: 1) the degree of freedom left to individuals, and 2) the frequency of conflicts, etc." (16, p.11) makes it relevant. As has been mentioned earlier, the present land inheritance in Nigeria does, among other things, cause occupational immobility, thereby limiting the degree of freedom left to individuals. Tinbergen notes that such elements need to be removed or modified if a correct tradition of economic policy is to be established. He regards as additional bottlenecks to economic policy such elements as lack of capital, uncertainty, lack of data, and different forms of rigidity as to norms. These bottlenecks just mentioned are present in our discussion of the problems of land inheritance also.

Tinbergen notes that the aim of economic development is to increase both national income and per capita income. Such a goal may be achieved if the individual in communal agriculture is guaranteed economic mobility.
With economic mobility more farms may be operated and the productivity of the existing farms may be increased.

Concerning agriculture Tinbergen feels it should make a maximum contribution to national income under the following conditions: "agricultural income should be as stable as possible; it should be reasonable in comparison to the incomes earned in other industries; it should be regionally well distributed" (16, p.141). Nigeria's agriculture cannot be expected to make its maximum contribution to national income as long as its land inheritance permits occupational immobility.

Gill (15) says virtually all underdeveloped countries must face "1) the attempt to raise the rate of capital formation; 2) the question of balance between agriculture and industry; and 3) the problem of coping with population growth" (15, p.91). He asserts that workers should receive enough to eat, so that they may work efficiently and to prevent their working lives from being shortened. He recognizes that there is significant interdependence between the different sectors of an economy when he notes, "the country must achieve advances simultaneously over a broad range of activities: Given interdependence, any isolated effort is likely to fail" (15, p.95). Industrial development, according to Gill, places heavy demands on the agricultural sector. He contends that if an economy tries to develop its industry exclusively it will almost certainly create great strains in the domestic economy, and also internationally, because of its need for increased imports.

Hirschman's model is also adaptable to underdeveloped economics. His distinction between Social Overhead Capital and Directly Productive
Productive Activities, hereafter termed SOC and DPA, respectively, helps to explain the conditions that must exist before economic development can take place. Even though the model provides no specific direction for investment allocation either among sectors or within sectors, it clearly shows the interdependence between sectors in its "unbalanced growth" thesis, i.e. that the various sectors of an economy may grow at different times to take advantage of complementarities. For example, the establishment of a large industrial concern sets up a chain reaction. It provides income to its workers who in turn would seek better housing and this would provide jobs for the construction industry. With an influx of people, consumer industries and services spring up, to cater to this new source of purchasing power. And Belshaw (17, pp.104-105) notes that "less capital intensive decentralized industries, even if less efficient in financial terms than urban industries, will spread the increase in income more widely". The need for SOC in a balanced growth in Nigeria is expressed in a recent article by Callaway (18, p.365) in the following manner: "A new feeder road brings multiple results: transporters and traders move into the villages; more consumer supplies flow in; higher surpluses move out; a cooperative for marketing farm produce is started; farm extension work becomes more effective. And as income rises, more money is spent locally: the tailor has more orders; the carpenter has more business; more apprentices are required; more jobs are available". Balanced economic growth may particularly be necessary in Nigeria to reduce the overdependence on primary exports and to take advantage of complementarities.
Balance growth needed

It is possible to develop agriculture and industry simultaneously in a complementary process. It is also possible to develop one at the delay or complete neglect of the other. We are concerned here with optimum allocation of resources between agriculture and industry. The two sectors are, however, complementary and interdependent. Hence there is need for a balanced growth. Agriculture creates demand for industrial goods and industry creates demand for agricultural goods. Agriculture supplies food, labor and raw materials for industry, while industry in turn, creates a market for agricultural products and provides employment for the surplus farm labor. Such a degree of interdependence was observed in Great Britain's economic revolution by Blodgett and Kammerer as:

"Industrial Revolution would not have been possible...without surplus food made possible by the Agricultural Revolution, and without the labor supply released by more efficient farming. Equally true, the farmers would not have sold their surplus if markets had not sprung up in new industrial cities. The whole process was one of action and interaction" (19, p.147).

Nigeria's experience with agriculture and industry

As experienced by the economically developed countries of the world, the role of agriculture in its proportionate contribution to the total economy declines as economic development progresses. This opinion is shared by Colin Clark (20, p.339) in saying that a "...consideration of fundamental importance is that the output of primary producing industries consists largely of necessaries of life. This being the case, it is
inevitable that the proportion of national income spent on them and the proportion of national effort devoted to their production, should fall as general prosperity increases". Clark's primary industry is defined "to include agriculture, livestock farming of all kinds, hunting and trapping, ..." (20, p.337). The actual rate of decline of agriculture's contribution to the national product will depend as much upon the rate of growth of non-agricultural industries as upon the rate of development within agriculture itself.

The relative decline of agriculture which follows general economic expansion is usually accompanied by a reallocation of resources in favor of non-agricultural industries. The most important manifestation of this process is the shift of population from rural to urban occupations (20, p.492). The increase in the number and size of urban communities in some of the southern Nigerian provinces may be a reflection of the industrial expansion. But it may be a reflection also of the increased pressure on agricultural lands, the discussion of which will come under land tenure later. The shift of population from agriculture to the expanding sectors of the economy raises a problem of fundamental importance for the Nigerian economy as a whole and leads us to the consideration of the probable contribution of agriculture to a growing economy such as that of Nigeria.

The rate at which labor can be advantageously transferred from agriculture to the expanding sectors of the economy will depend upon whether agricultural techniques and organization permit a relatively declining agriculture to satisfy the needs of an expanding urban population for food, and of growing industries for raw materials.
In terms of per capita intake of calories, food supplies may be said to be adequate at present levels of production. But a considerable part of the calories consumed by the average Nigerian comes from bulky and starchy food products with notable deficiencies in proteins and other essential food items. With rising levels of incomes the first major effort of consumers is to correct any dietary imbalance by expanding the demand for certain food items while curtailing demand for others.

The Nigerian urban wage earner spends a large proportion of his food expenditure on such high-yields protein food products as meat, fish, eggs, milk and other dairy products. Since some of these items are not readily available from domestic sources, he relies on imports for his supplies of them. This shows that food supply from domestic sources is not really adequate to meet the changing pattern of food consumption in Nigeria. In 1958 for example, a total sum of over ₦16 million (approximately $45 million) was spent on food imports. This included import expenditure of over ₦900,000 on dairy products, of about ₦50,000 on eggs, of over ₦6 million on fish, and of about ₦2 million on wheat-flour in 1957 (21). Given the necessary technical conditions, the demand for these products, with the probable exception of wheat-flour, can be met more cheaply from domestic sources.

As for its contribution to the development and maintenance of industrial output in Nigeria, agriculture has not fulfilled its role. A number of processing industries notably oil mills, rubber and canning factories, have suffered serious set-backs due largely to insufficient supplies of raw materials. The rubber-processing factory established in Benin at a total
cost of £320,324 sustained a total loss of £75,534 between 1955 and 1957; in the financial year 1955/56 alone the fruit canning factory in Ibadan with a total investment of £334,497 lost £73,839, and its cumulative losses to March 1956 amounted to £99,654. Both projects are located in Western Nigeria. Similarly, the oil mills in Eastern Nigeria have shown losses throughout their lives. The public bodies responsible for the operation of these projects have frankly traced the source of their problems to agriculture.

The Western Nigerian Development Corporation, which owns and operates the Ibadan Canning Factory complained that because "of inadequate supplies of grapefruits and pineapples the factory's output was low in relation to its capacity" (22, p.36). With regard to the rubber-processing factory, the Corporation argued that "until sufficient supplies of good quality latex are forthcoming the Factory will be seriously handicapped and will be unable to make a contribution to the economy of the Western Region commensurate with the capital investment" (22, p.22).

Processing plants, such as oil mills and rubber-processing factories, require an adequate flow of farm products for efficient performance. A sustained growth in the non-agricultural sector requires that agriculture, as it declines in its relative importance, provide food and raw materials in adequate quantities to facilitate a rapid rate of domestic capital accumulation. The improvement in the underlying conditions of agricultural production must be of such magnitude as to permit the resources left in agriculture to satisfy the food needs of an expanding population.

The particular forms of improvement required before agriculture can make its optimal contribution to the expanding Nigerian economy may follow
two lines of approach: 1) improvement of the existing technical framework of agriculture, i.e. a general improvement of the three-acre farms through the use of such agricultural requisites as artificial and natural fertilizers, higher yielding strains of seeds and the adoption of a more permanent system of rotation; and 2) the modification of the existing institutional framework with particular reference to land inheritance.

Growth Concepts and the Framework of Analysis

The following link may be established between the growth concepts reviewed in this chapter and the framework of analysis used in this study:

Ricardo (11) is interested in comparing returns to labor and capital with the relative contribution of both factors in the production of one unit of output. He advocates an increase in the productivity of labor and capital to sustain the growing population.

Marx (12) suggests an increase in the productivity of labor through an increase in technology.

Rostow (13) associates with economic transition the following problems: the problem of increased productivity in agriculture and the problem of social overhead capital. He suggests the application of quick-yielding changes in productivity to the most accessible and naturally productive resources.

Schultz (4) is primarily suggesting an improvement in the capabilities of the farm people in the traditional agriculture. He favors the introduction of a more profitable set of factors of production if agricultural transformation is to be achieved. He suggests educating the farm
people through demonstration projects, occasional meetings, printed material, etc.

Hirschman (14) is primarily interested in the complementarity that exists between agriculture and industry in the process of economic development.

Tinbergen (16) notes that the aim of economic development is to increase both the national income and the per capita income, and that agriculture should make its maximum contribution to national income.

From our review of the growth concepts, it will be noted that the central thesis of Ricardo, Marx, Rostow, Schultz, Tinbergen concentrated on achieving an increase in the productivity of labor in agriculture while Hirschman, Gill and Allen concentrate their efforts on explaining the complementarity that exists between agriculture and industry. Our framework is built along the line of increasing productivity in agriculture and of demonstrating the relationship between agriculture and land inheritance. Also the model in the Appendix proposes an increase in $B_a$, the productivity of investment in agriculture which is in support of our argument developed later in this report for the use of credit. Our concept of increased productivity relies on the assumptions 1) that the growth of one segment of the economy is not at the expense of the other segment, and 2) that the population growth rate is less than agriculture's growth rate.

Suggested Structural Change Framework for Analyzing Inheritance Structures as Means to Agricultural Growth and Development

We employ here a two-stage analytical framework. Stage 1 involves the identification and delimitation of the purposes and targets guiding the
change. Also in Stage 1, we explain the interrelationships among purposes, means and consequences in the construct which permits examination of the means in relation to both consequences and purposes of change.

This concept may be illustrated as follows:

<table>
<thead>
<tr>
<th>Purposes</th>
<th>Means</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Economic growth, agricultural growth and development, i.e., increased productivity per man and per acre.)</td>
<td>(Policies, legislation, education, programs, structures, and instruments.)</td>
<td>(Realized, expected)</td>
</tr>
</tbody>
</table>

Stage 2 is based on the findings in Stage 1. It translates the purposes into target variables as ends-in-view to be accomplished by changes in Instrumental and Structural Variables.

Restating the concept presented in Stage 1 and elaborating Stage 2, we have:

1. **Target Variables**
   (i.e., 3% per capita growth in real income per year, 6% increase in agricultural productivity per year, extension education, health, etc.)

2. **Instrumental Variables**
   (i.e., capital investment, interest rate, public outlays, etc.)

3. **Structural Variables**
   (i.e., land inheritance resource organization, credit system, resettlement system, security of land titles, occupational mobility, consolidation of land into economic units, etc.)
The Target Variables consistent with the National Plan of Nigeria are stated for the agricultural sector as specific guides and goals directing change within the agricultural sector. The Target Variables will be achieved within the agricultural sector through the means of Instrumental Variables. The Instrumental Variables are tools of administrators of resources both public and private. The Structural Variables are structures fashioned by Decree and Legislation. The changes within agriculture may cause other changes (known as Non-Target Variables) outside agriculture. Structural changes may be designed to achieve a stated increase rate of annual per capita real income, increased productivity per agricultural worker, improved levels of living of agricultural workers in relation to increased productivity.

The foregoing framework is necessary in order to provide the means for testing our hypotheses. It is consistent with the growth concepts reviewed earlier in this chapter because it presents a purposeful, normative and predictive picture to our land inheritance problems. The framework has "increase in productivity" as one of its target variables just as was done by Tinbergen (16), Rostow (13), Schultz (4), Gill (15), and a host of others. It follows particularly Tinbergen's design of employing data and policy instruments to achieve the goals or target variables.
CHAPTER THREE: CHARACTERISTICS OF THE AGRICULTURAL INDUSTRY
THAT IMPEDE OR FACILITATE ECONOMIC GROWTH

In this chapter we are concerned with testing the hypothesis that agriculture is not fulfilling its role of increasing per capita productivity and income. In Chapter Two, the growth concepts reviewed as well as our structural change framework suggest the need to raise productivity of labor and capital if economic growth is to be achieved. And towards the end of the same chapter (Chapter Two) the role played by agriculture in the Nigerian economy is discussed. There it was pointed out that food supply from domestic sources is not really adequate to meet the changing pattern of food consumption, and that Nigerian agriculture has not been able to meet the needs for raw materials of industry. But the foregoing does not provide sufficient ground to uphold the hypothesis that the Nigerian agriculture is not fulfilling the role of increasing per capita productivity and income. To test such hypothesis we need information on 1) yields and income per acre, 2) output and income per farm worker, and 3) comparative growth rates between agriculture and industry or any other relevant sector. In addition we need reliable data on target variables. Unfortunately we do not have these stated necessary data. However, preliminary work has been done in a model in the Appendix. The lack of data and time to fully develop this model has precluded its inclusion and application in this section. Consequently the model is put in the Appendix. Future work will elaborate and apply this model.

Therefore this chapter is devoted to identifying and analyzing those characteristics of the agricultural industry that impede or facilitate
national economic growth without the benefit of statistical measures of target variables or current growth rates. The first part of the chapter describes the structure of the peasant farm, the crops produced and the types of cultivation. The second part relates to land, its availability, use, and tenure. A discussion of the structure of the peasant farm is important in order to determine the relative contribution of agriculture to the total economy. Such knowledge is useful in appraising the necessity of preventing an improper transfer of agricultural land between generations. We discuss the products produced and the types of cultivation in order to determine in part the sizes of farms that will be considered optimum. Land availability and land use are both in part affected by the land tenure that prevails. The discussion of land tenure is appropriate since land inheritance is an offshoot of land tenure. Hence information on agricultural practices becomes necessary in developing insights into land inheritance structures.

The Peasant Farm

Agriculture is a crucial sector of the Nigerian economy in which more than 75 percent of the male working population is actively engaged. Agriculture contributes about 70 percent of the gross domestic product. Agricultural products account for approximately 85 percent of the total annual exports from Nigeria. But this amounts to only 20 percent of the total agricultural production. Nigeria is largely self-sufficient in food and fiber and does not depend on outside sources for essentials (1, p.4).

The most common type of a peasant farm in Nigeria is between four and five acres in size. The farmer is illiterate and lacks a knowledge of
modern agriculture. The practice of shifting cultivation is the only soil conservation method that he knows. This practice is traditional. In general, the peasant does most of his work with his hands and with some hand-made tools such as hoe, machete, and axe. Ploughs and draught animals are seldom used. Farm equipments are not available partly because the farmer is too poor to purchase them and partly because his scale of operation does not economically justify the use of such equipment. Diversified farming is uncommon because very few farms in the South keep livestock, the reason being that cattle breeding is largely confined to the North, which is free from tsetse fly. Dairy farming is confined to the northern high plateaux such as Jox and Bauchi, where it is cool enough for animals and dairy products. Agriculture is of a settled type in the South while it is partly settled and partly nomadic in the North.

Cattle rearing in Nigeria is a nomadic, pastoral occupation. Some nomadic tribes from the North, particularly the Fulanis, drive the animals overland to the southern markets. The cattle drive is tedious and long; many weeks are spent on the journey, and many of the animals perish or are emaciated before they reach their destinations. All of the risks and losses are included in the price of beef, hence meat consumption is generally a luxury for the average family.

Principal food crops raised on farms in Nigeria include yams, cassava, cocoyams, legumes, maize (corn), spices, fruits, millet, and palm oil. Guinea corn and millet are raised in the North, and maize, cassava and yams are grown in the South. The principal diet consists of starch and carbohydrates and because there are only few livestock, the diet is deficient in meat and animal protein (2, p.240).
Types of Cultivation

The tropical climate makes soil conservation a very difficult task indeed. The land leaches easily and the top layer is washed away during the wet season. Chemical fertilizers are not available to the poor farmers, nor is animal manure obtainable because of the livestock scarcity. Hence the peasant farmer practices shifting cultivation.

**Shifting cultivation**

The shifting cultivation (or bush fallow) used in Nigeria is explained by Buchanan and Pugh thus:

"Shifting cultivation may be defined as an economy of which major features are rotation of fields rather than of crops; clearing by fire, absence in most cases of draught animals and larger types of stock; employment of the hoe, with the plough only exceptionally important; short periods of land occupancy and long periods of fallow" (23, p.103).

Shifting cultivation, a very old method of conservation, is practiced in all parts of Nigeria. Critics of the practice have not been able to recommend a cropping system for this tropical country where soil conservation is a serious problem. Shifting cultivation seems better than alternative methods for an area such as Nigeria which has moderate soil fertility. The land growing back to begetation reduces erosion; the ash and humus from land cleared by fire add natural fertilizer to the soil; and the system results in a minimum soil disturbance.

Its chief limitation is population growth. As man/land ratio increases, shifting cultivation becomes less and less practicable. A
situation of this type has developed in the southeast of Nigeria where pop­
ulation density is over 300 per square mile, which is more than the land
can support under the present systems of use.

**Intensive irrigated cultivation**

In the arid regions of the country intensive irrigated cultivation is used. In some places such as Ilorin and Oyo provinces (see Figure 1) the farm is irrigated with landscoops. A more elaborate type of instrument, the Shaduf, is used on a small scale in the Sudan on farms growing onions, carrots and other vegetables. The government of Nigeria is contemplating major irrigation projects in the Lake Chad area (23, pp.114-115).

**Terrace agriculture**

The inhabitants of the Jos and Bauchi plateaux (Figure 1) went on the elevated land to avoid neighbors who used to invade their villages. Because good land was scarce in this new environment, shifting cultivation was impracticable. Hence, the people evolved a terrace agriculture that is more intensive and better suited for hilly areas. The ridges prevent erosion and help to maintain soil fertility. The cool climate is good for dairying and livestock breeding, therefore animals are kept on the farms and the manure adds to soil fertility. The animals are hand-fed for there is no grazing area.

The limitation of terrace agriculture, as in the case of shifting cultivation, is population growth. In recent years, due to increasing population, the land has been overcropped and the good practices are being given up.
Figure 1. The cities and regions of Nigeria (12, Cover)
FIGURE 1. (12, COVER)

NIGERIA
REGIONS AND CITIES
REFERENCE

REGIONAL BOUNDARIES
Continuous cultivation

Continuous cultivation of land is not widespread. It has been used with the greatest success in the Kano area in the Northern Region. One reason for this is that the region is relatively free from tsetse flies and manure is more readily available here than in other areas. Even though continuous cultivation is practiced in this area, there is not an abundance of mixed farming, i.e. farming involving a balance of crops and stock on individual holdings. There are two reasons for this; the first being that cattle raising in Nigeria is largely a nomadic pastoral activity. Secondly, those who raise most of the cattle, the Fulani, are not interested in crop production.

Plantation farming

Plantation farming is increasing in use, but as yet has not seen widespread adoption. At the present time plantation farming is used mainly in areas where rubber, cocoa or bananas are grown (23, pp.112-114), i.e. in the southern hot and wet climate. This system of farming has been deterred because of political and social factors. The government, until recently, has not been in favor of it because of the disruptive effect it would have on indigenous social and economic life. Also, plantations have been associated with exploitation of the people. However, today, under the leadership of the Regional Production Development Boards, steps have been taken to increase the use of plantations as it has been recognized that they are a legitimate form of agricultural development.
Land resettlement programs

To meet the need of the rapid rate of population growth it is increasingly urgent that more land be brought under cultivation. There are two types of resettlement programs in effect. One is financed by the government and the other is done through community projects. Each program plans for land clearing and reclamation. New families are settled in new homes and on new farms and they are asked to follow modern agricultural practices supervised by the extension officers. But land resettlement is not enough for agriculture to improve. In support of this Ashby states:

"Land resettlement ... is not the only method by which a country can increase its food supplies ... a large increase in production could be obtained in many countries through the introduction of greater use of new and better varieties of plants, together with artificial fertilizers and the protection of crops and animals from attacks by pests and diseases" (24, pp. 3-4).

Ashby recognizes both extensification and intensification as means of increasing agricultural production. However, in order to know by how much the cultivable areas in Nigeria can be expanded it is necessary that we have information on the amount of land available, how and for what it is being used, and how it is held.

Land Availability

One of the principal causes of undersized holdings in general is pressure of population on land resources. Small size holdings in Nigeria cannot be said to have resulted from high pressures of population. Except in the overcrowded conditions of certain provinces in Eastern Nigeria, there
are large tracts of uncultivated farm land in many parts of the country (see Table 1). In the words of Professor Oluwasanmi:

"Land is not the limiting factor of size in Nigerian agriculture. Primitive techniques and tools of farming and a tenure system and social organization which render it virtually impossible for farmers

Table 1. Pattern of land utilization in Nigeria, 1952-53^a

<table>
<thead>
<tr>
<th></th>
<th>Northern region (percent)</th>
<th>Western region (percent)</th>
<th>Eastern region (percent)</th>
<th>South Cameroons (percent)</th>
<th>Average Nigeria (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agricultural land</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farm crops</td>
<td>6.8</td>
<td>9.3</td>
<td>20.5</td>
<td>3.0</td>
<td>8.8</td>
</tr>
<tr>
<td>Tree crops</td>
<td>--</td>
<td>7.0</td>
<td>2.7</td>
<td>2.7</td>
<td>1.2</td>
</tr>
<tr>
<td>Total</td>
<td>6.8</td>
<td>16.3</td>
<td>23.2</td>
<td>5.7</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Residential</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Builttron areas</td>
<td>0.8</td>
<td>1.0</td>
<td>1.7</td>
<td>0.7</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>Forest and bushes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bush fallow</td>
<td>9.3</td>
<td>22.2</td>
<td>42.5</td>
<td>24.4</td>
<td>13.8</td>
</tr>
<tr>
<td>Forest reserves</td>
<td>6.1</td>
<td>15.6</td>
<td>8.1</td>
<td>13.9</td>
<td>7.8</td>
</tr>
<tr>
<td>Other forests</td>
<td>31.2</td>
<td>0.7</td>
<td>2.3</td>
<td>8.4</td>
<td>24.1</td>
</tr>
<tr>
<td>Uncultivated bush</td>
<td>45.8</td>
<td>44.2</td>
<td>22.2</td>
<td>46.9</td>
<td>43.4</td>
</tr>
<tr>
<td>Total</td>
<td>92.4</td>
<td>82.7</td>
<td>75.1</td>
<td>93.6</td>
<td>89.1</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

^aSource: (2, p.200).
to move freely from regions of high population density to areas where land is in excess supply are the real factors limiting both the scale of operation and the volume of output in agriculture" (25, p.235).

Despite the large number of people engaged in primary production, only ten percent of the land area is in agriculture, and the rest in forest and bush (see Table 1).

Land Tenure

In order to appreciate the various considerations involved in the law and customs of land inheritance of a certain nation, state, tribe or group, it is important to examine the land tenure arrangements that are followed. This position is taken because ownership of a piece of property is assumed before a valid transfer of that piece of property could take place. Whether the transfer takes the form of inter vivos (transfer between and/or among the living), or that of testamentary disposition (i.e. any disposition at death by will, state law of intestate distribution or other testamentary conveyance), there is an implied or expressed recognition of ownership of the piece of property by the parties involved in the transfer.

While land use describes a man-to-land relationship, land tenure encompasses a man-to-man relationship with respect to land. O'Byrne, Harl and Harris in their Agrarian Planning and Land Reform state:

"Land tenure is the phrase used to denote all of the relations between and among men with respect to land; it is a far broader concept than the common law notion of tenure. These relationships may exist among two or more private parties, or they may involve public agencies. Land tenure is not concerned directly with land
use, although the tenure system affects the efficiency with which land is used. Man's dependence upon the land is spoken of as land use. Man's relations to his fellow human beings regarding ownership and control of land is land tenure. Land tenure is a man-to-man relationship. The problems that arise from agricultural land tenure relations and the programs for their solution may be more meaningful if thought of in terms of the various agricultural institutions pertaining to the holding and transmitting of rights in real property, the arrangements under which farm people produce agricultural products, and the techniques for equitable allocation of land returns among the participants in the production process" (26, pp.5-6).

Land inheritance involves the transmitting of land rights between generations. It is a man-to-man relationship between succeeding generations. Land inheritance is one of the various agricultural institutions pertaining to the holding and transmitting of rights in real property. As used in this thesis, land inheritance in Nigeria includes the arrangements which prescribe the nature of crops that can be produced by the farm people and the way the products produced may be distributed among the participants. However, the concept of land inheritance would be understood more fully after we have established the concept of ownership in land.

**Concept of ownership in land**

An analysis of what is meant by "ownership" is required in order to evaluate how far from the norm Nigeria's concept deviates. Let us use as the norm the Western concept of ownership. Ownership of a piece of property entitles a person to the exclusive but not absolute dominion over the
property. This is the fee simple. This would encompass the right to possess and enjoy the property to the exclusion of all others, as well as the right to dispose of the property at the will of the owner. The exercise of this dominion is subject to a larger body -- the government or the laws and the institutions of the land. It may be visualized as a collection of rights, powers, privileges, and immunities that a person has with respect to a piece of real estate. The more of the proverbial "bundle of sticks" a person can accumulate, the closer he approaches complete ownership. In Anglo-American land law the fee simple absolute is the biggest "bundle of sticks" obtainable -- but even this is not the complete bundle; that is, the absolute exclusive right to possess and enjoy, and the unlimited power of disposal are unobtainable (27, p.987).

Ownership of land as distinct from that of chattels becomes more significant when we consider those aspects of land which make it immobile, irreproducible and indestructible. While man can trace with little difficulty the origin of his chattels, he cannot do the same for land because land has always been in existence. Since man is not responsible for the existence of land, there exists in human society the problem of who has any rights, powers, privileges, and immunities regarding its use, management, control and its transfer. We must keep in mind the brief foregoing analysis of ownership throughout the discussion that follows.

Ownership of land in the Western sense is foreign to but gradually is being introduced into Nigeria's concepts. Land in the traditional concept belongs to the deity while its use belongs to the people who occupy the land. The use of land was primarily for the growing of food crops. At the
introduction of permanent crops (also called cash or export crops), such as cocoa, coffee, rubber, oil palm, etc., attitudes towards land ownership and consequently towards land transfer began to change. This comes about partly because cash crops tie up the land for several years and owners of such crops become permanently identified with the land on which these crops are grown, and partly because the planting, cultivation, and maintenance of permanent crops involve more capital outlay than those of food crops. Management and improvement on such (cash crops) land have always been in the hands of individual rather than communal owners.

Communal and individual rights in land

The indigenous customary law concerning agricultural land tenure remains essentially communal. In support of this Meek states:

"It is to be noted that under native (Nigerian) customary law various individuals or groups may have interest in the same piece of land. One may have cultivating rights on land belonging to his lineage, others may have grazing rights after harvest, others may have rights in the trees growing on the land, and so on. It is even possible for one individual to exercise rights during the dry season, and a totally different person during the wet season" (10, pp.116-117).

Community rights of a village may consist of 1) meeting place, 2) marketplace, 3) roads, 4) watering places, 5) sacred grounds, 6) burial grounds, 7) timber or thatching reserves, 8) communal pastures, 9) all land immediately surrounding a village and which may be used for village expansion, and probably many more.

As pointed out by Sir Gerald Clauson (28, p.5), there are three main
types of communal tenure systems, namely primary, secondary, and tertiary. The primary type is that which is indigenous and has never conceived of individual ownership. In the second type, individual rights in land are recognized under certain circumstances, but unused land is still regarded as joint property of descendants or collateral relations, a group normally described as an extended family, kinship, clan, or tribe. Tertiary type implies a type of joint ownership exercised in land on the basis of religious or organizational activity. It does not have to include a group of people related by blood.

Though there are slight variations from region to region, Nigeria's communal tenure may fit the description of Sir Clauson's second type.

There are certain features of communal ownership which deserve some attention and support. These may be considered its "success elements". Such elements include:

"1. the doctrine that land is not a saleable commodity.

2. the principle that the individual family is entitled to occupy communal land as long as it cultivates it ... and to take up more land if any is available.

3. the principle that community itself is the general heir to the rights of any family which dies out or leaves the group.

4. the principle that the members of the community are entitled to graze their stock, if any, and gather other materials that they require on those parts of the communal land which are not currently under cultivation" (28, p.44).

By banning the sale of land, the communal tenure prevents the rise of landed aristocracy, thereby eliminating the possibility of the poor
peasants losing their land to middlemen and money-lenders. In addition to the foregoing, the communal tenure acts as a strong cohesive force in an agrarian society in which the cultivator is afforded a stake in the major assets of the community.

How the communal type of ownership developed is not known but it is believed that the greater part of the land now held communally had matured into family rights through long and continuous occupation and cultivation. This introduces the idea of one original settler whose descendants continuously held the land for family use. In a Colonial Office report, a chief was said to have stated his concept of ownership of land as follows: "I conceive that land belongs to a vast family of which many are dead, few are living, and countless members are yet unborn" (29, p.14).

Nigerian kings, Obas, and Obis as they are called in some Western and Eastern provinces, Emirs in Northern provinces, Councils of Elders in parts of the Eastern provinces, and Paramount Chiefs in some Northern provinces, compose the apex of a Nigerian concept of a final political and sociological authority over the land of a given community. With the exception of varying nomenclature and differing degrees of authority exercised they occupy a comparatively equal level of hierarchy when compared one to another in so far as privileges and responsibilities are concerned (30, p.95). Their interest in land is mainly administrative.

Individual ownership is an offshoot of communal ownership. Certain forces are influencing the change from a communal to an individual ownership pattern. Among those forces are 1) pressure of population on land in certain parts of the country, e.g. in the South-East, 2) the growth of an
exchange economy, i.e. the expansion of both the internal and export markets, 3) introduction and application (where feasible) of foreign legal ideas, and 4) the introduction of new types of economic or permanent crops, e.g. cocoa, coffee, rubber, etc. Even with the above-mentioned forces, individual ownership in the fee simple sense is still not widely practiced in Nigeria. In the Northern provinces, for example, according to customary law no private estate could exist and all land was the property of the community. In the Southern provinces certain communities have always practiced or have begun to practice individual ownership on agricultural lands. It must be mentioned here that most if not all of the permanent crops in Nigeria are found in the Southern provinces.

**Acquisition of rights in land**

Many young Nigerians and other writers concerned with the optimal acquisition, use, and transfer of land have advocated a policy whereby it would be possible for any Nigerian to acquire land rights in any part of Nigeria, irrespective of his tribal affinities.

Land may be acquired in the following ways:

First, land which is not yet occupied or cultivated may be appropriated. However, there is very little, if any, unoccupied land in the country. There is hardly any land over which some kinds of rights are not exercised or exercisable.

Secondly, a portion of the family lot may, with the consent of every member of the family, be given to an individual member. This is especially the case when the individual has put the lot into permanent crops and has
been identified with such crops over a period of years before the gift was made.

Thirdly, a land-owning family or group having surplus land may give land as a gift to a stranger. Such gift may pass along with the marriage of the stranger to the daughter of the land-owning family or it may be for the mere recognition of good conduct or some proper introduction of the stranger, i.e. a non-member of the community. This kind of gift, most of the times, is made with the agreement that it can be recalled if the donor-family happens to need to expand its operation in the future or if the stranger happens to violate the conditions of the transfer.

Fourthly, family land may be partitioned into as many lots as there are family members, so that every member may have specific and identifiable lots. Boundary lines of such lots constantly change as each one recipient dies or expands his family to a point where the allotment is no longer large enough to economically sustain the family.

Sale Even though in urban areas land is often transferred by sale, mortgage or lease, the concept of sale is yet to be accepted in agricultural areas. In urban areas the foreign practice of individual ownership has made such transfers easy while in the rural areas ownership is still largely communal. But in those rural areas surrounding cities, the practice of sale is gradually being introduced. Because of the old rules (i.e. rules making land a non-saleable property) clashing unfavorably with new concepts, a buyer ought not to be ignorant of what they are when he buys the rights of another. This is precisely equivalent to the Western idea of "caveat emptor". The concept of land sale is so foreign to the indigenous tenure that when the Government (Federal, state, or local) needs
land for public use, it is generally a problem of what can be reasonably called an adequate compensation for the land so expropriated. This is similar to the Western concept of "eminent domain" whereby land may be transferred from private to public ownership under conditions of just compensation, public interest and due process.

**Pledges** The main element which distinguishes the Nigerian pledge of land from the usual American or English chattel mortgage is that a pledge in Nigeria is always redeemable; a pledgee can never obtain absolute ownership of the pledged property (30, pp.179-180). Also often the parties agree that the pledgee can only enjoy the products which result from his own work -- from the planting of trees or crops on the pledged property, and upon redemption of the pledge the pledgee usually cannot recover for any improvements which he has made on the pledged property while in possession. Naturally, questions of title to pledged property often arise after a long period of time has elapsed and after witnesses to the transaction are deceased. Determination of the title is further complicated by the typical absence of any written agreement establishing a pledgor-pledgee relationship. Lack of recording requirements has accelerated problems of pledging and re-pledging, yet the courts of Nigeria generally allow the pledgor or his descendants to prevail in a title suit if the land involved and the understanding between the parties to the original transaction can be ascertained (30, p.181).

**Borrowing** Land is said to be borrowed to alleviate problems of temporary shortage of land in a family, group or community. Shortage of land results from growth in farm population and the necessity for shifting
cultivation which requires fallowing period. Transfer under borrowing requires the presence of one party who has excess land which he is willing to lend to another party who has his reserve in fallow. A loan under such circumstances is for the fallowing period, a period which usually lasts from two to seven years. Since the land is returnable at the end of this period, no crops of a permanent nature can be grown on the borrowed land. This is usually not a serious problem in that the products of borrowed land are designed to meet an immediate need and a crop which could not be harvested for several years would be of little value to the borrower. Generally there are no interests paid to the transferor, and there are no compensations paid to the borrower if he made any improvements on the land.

Leases This represents a long-term borrowing of land. It is not generally practiced with respect to farm lands. Since there is generally no documentary evidence available lease may often fraudulently mature into ownership due to its long duration. The consideration usually present in leases for life or for an indefinite period is either cash or a share of the products grown by the grantee on the leased property, or a combination of the two. Because of the long planning horizon conferred on the lessee there are generally no prescriptions as to what crops may be grown on the leased land.

Inheritance This is alienation on death. Land may pass from the dying to the living generation either by devise (a will which may be written or oral) and through acquisition under the Laws of Descent and Distribution. In the rural areas of Nigeria people generally die intestate -- without a will -- and their land passes according to the customary laws.
These customary laws have slight variations as between tribes and as be-
tween religions. Since in most cases land belongs to the family or com-
munity, it generally reverts to the owner at the death of the user.

Perhaps the most important features of Nigerian land tenure are
1) that although land may be acquired by an individual under a local system
of tenure and the holder may have great freedom of use of it to such an
extent that it may look as though he holds it in fee simple, on his death
it becomes family land for the members of his family, Ovie v. Onoriobokir-
hie, (1957) W.R.N.L.R. 8 169 (High Court), and 2) land has not generally
been permitted to be held in fee simple, Boulos v. Odunsi, (1958)
W.R.N.L.R. 169 (High Court).

Cessar of rights in land

The right of an individual in land may cease if he 1) surrenders it,
2) abandons it, 3) fails to occupy it effectually, 4) alienates or attempts
to alienate it, 5) denies the land-owning group of its title, 6) refuses or
fails to pay the customary dues or fails to render the customary services,
and 7) misbehaves to the chief or headman (30, p.165). Each of these con-
ditions of cessar will be considered briefly.

Surrender or release  As the family grows in size it usually be-
comes necessary to expand the acreage cultivated if the family wants to
maintain its level of living. In the same way increasing demand from
members of the extended family may make one's holding too small to be
economically feasible to operate. The occupier may surrender or release

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8W.R.N.L.R. = Western Region of Nigeria Law Report
his holding to the general family pool to move out for resettlement. Also a change from agricultural to non-agricultural occupation may cause one to surrender his holdings.

**Abandonment** The usual period of fallow is from two to seven years, but when an occupier vacates his holding for longer than can be reasonably considered as fallow period, the land is brought to the notice of the chief or headman who declares it abandoned. But if the occupier left behind him permanent crops, homesteads or sites, such land may not be declared abandoned since such fixtures serve as sufficient indication that the occupier could or would resume his occupancy sometime in the future. Abandoned lands revert to the family pool.

**Failure to use or occupy beneficially** The indigenous customary laws, in its attempt to ensure fairness of land distribution, requires of its grantees to put the land granted into beneficial use. Whatever is beyond a grantee's immediate needs or what he can cultivate is asked of him to be returned to the family pool for a redistribution among such family members as might need to expand their holdings. A land use is considered beneficial when it adequately serves the purposes and needs of the occupiers. A misuse of one's holding, including the use of it for purposes other than those for which the grant was made may be regarded as an anti-social act for which the occupier may not only forfeit his occupancy but also may be barred from future negotiations for land. Eyamba v. Holmes, (1924) 5 N.L.R. 83.

**Alienation** The customary laws provide that every transaction by which rights in land are being transferred to a stranger must receive the approval of the family. Where such approval is not obtained before the
act of transfer, the land rights will revert to the family and both the grantor and the grantee will have nothing. Such alienation may be in the form of sale, mortgage, lease, and the like. In Adagun v. Fagbola, (1932), 11 N.L.R. 110, a family member, in court opinion forfeited his holding because he mortgaged his portion of the family land which was granted to him for occupation and use.

**Denying land-owning family the title** If and when the land-owning family is denied of rent, homage or the like, by an occupier who makes a fraudulent claim of ownership, the occupier may from then forfeit his rights of occupancy. In Oloto v. Dawuda case, (1924), 1 N.L.R. 58, the defendants forfeited their rights when they claimed ownership and refused to pay their rents.

**Refusing to acknowledge grantor's ownership** Where the occupier refuses to acknowledge the grantor's ownership by refusing to pay tribute to the original grantor or to the grantor's successors, fines may be imposed, and if such fines are defied, forfeiture may ensue. Fines were imposed upon the defendants in Chief Uwani v. Akom case, (1928), 8 N.L.R. 19.

**Misconduct** An occupier (non-member of the family) is expected to have good conduct. A serious misconduct such as burglary or adultery may cause a forfeiture of the occupier's rights in land. Special respects are also supposed to be given the chief, headman and the elders of the community. A chief may require an occupier to surrender his holding if according to public opinion the occupier is of bad behavior. In Ashogbon v. Oduntan case, (1935), 12 N.L.R. 7, the defendant forfeited his right because of being insolent to the chief.
Synthesis of the Characteristics in Relation to Economic Growth

As was pointed out at the beginning of this chapter, the information we have will not be sufficient to prove that the Nigerian agriculture is not fulfilling its role of increasing per capita productivity and income. The information available brings us to the following conclusion that the present structure of the agricultural industry has room for improvement. Let us consider these characteristics one by one and observe how each impedes or facilitates economic growth.

The peasant is illiterate and lacks knowledge of modern agriculture. This makes him a subsistence farmer. This also makes the agricultural industry incapable of yielding labor to industry, in order to facilitate economic growth. However, we do not know whether the industry is capable of absorbing excess agricultural labor in case there is excess.

Shifting cultivation, as a method of conservation, becomes less and less practicable as man/land ratio increases. Probably it may be replaced by continuous cultivation through the use of manure if there could be a way to eradicate tsetse fly or through other kinds of soil amendments.

In land settlement programs the participants get the benefit of following modern practices. And with the size advantage in plantation farming, owners are able to use machinery as cost-saving device. Both may facilitate economic growth.

But the communal system with its conflicting rights in land does not appear to provide an atmosphere conducive to economic growth. It was pointed out that on the same piece of communal land a group may have grazing rights while another group has cultivating rights, and yet another may
have rights in the trees. The incentive to apply improvements to such land is impaired. Such land probably would have yielded greater revenue if it enjoys less trampling and more improvement. With proper tenure and with only ten percent of arable land now cultivated, the above mentioned conflicting rights can be avoided.
CHAPTER FOUR: STRUCTURAL DEFECTS IN LAND INHERITANCE THAT IMPEDE PROVISION OF CREDIT, LABOR MOBILITY, CONSOLIDATION OF HOLDINGS, SECURE LAND TITLES, AND ADEQUATE SIZE OF FARM

In this chapter, we are concerned with analyzing two of the remaining three hypotheses formulated in the initial chapter. This includes the two diagnostic hypotheses which are restated thus:

2) Inoptimal (i.e., inadequate and inefficient) land use and labor immobility contribute to the relatively deficient role played by agriculture. Fragmented, non-contiguous, and undersized holdings are elements of inoptimal land use as is the lack of a basis for effective provision and productive use of credit.

3) These defective elements in the agricultural sector arise in part from defects in land inheritance structures, especially as they exist under the communal land holding system of the country.

This chapter is developed along the line of our hypotheses 2 and 3 as stated above. We shall attempt to examine the land inheritance laws and customs relevant to our problem and we shall use these (laws and customs) to test the diagnostic hypotheses.

In this process we shall explore the relationship between the structural defects in land inheritance and each of the following: provision and use of credit, labor mobility, consolidation of holdings, secure land titles and adequate size of farm.

Nature of Land Inheritance Laws and Customs

In Nigeria the patrilineal principle is almost universal, in that descent is reckoned almost exclusively through males. Inheritance
therefore is by agnatic kinsmen. However, in some tribes, the matrilineal principle or a mixture of both patrilineal and matrilineal principles is being followed. In the Northern Provinces all of the Moslem tribes and most of the non-Moslem tribes are patrilineal, while in the Southern Provinces the Yoruba and Ibo and most of the remaining tribes are essentially patrilineal.

It may also be noted that inheritance is not always governed by kinship considerations. There are many instances where long association of strangers and friends with a land-owning family has matured into according such strangers and friends the same rights of inheritance as they would have enjoyed as kinsmen. When a friend has lived with a family and has helped the head of the family to establish and maintain the family property, and on the death of the headman has borne a major share of the burial expenses, such friend may well be regarded as having established a claim, or even the first claim, to a share of the dead headman's estate. An example of this may be found in the case involving lands at Ogwashi-Uku concerning which the court rules that "in the case of the death of the individual user, the right to continue in use passes to the lawful heirs and failing any such, to the person who undertakes the carrying out of the funeral ceremonies". In a case such as this the friend may be considered as having been adopted into the family (10, p.180).

We must also remember that in the extended family, the type that predominates in Nigeria certain nomenclatures bear broader concepts, e.g. "brother" and "sister" may include male and female cousins while "father" and "mother" may embrace uncles and aunts, and yet still "son" and
"daughter" include nephews and nieces. The principle of primogeniture if considered in this context may not necessarily mean that by which all property of the deceased is transferred exclusively to the deceased's first living son. This may merely mean the transfer of the deceased's real estate to his oldest son or nephew.

In general the principle of primogeniture is widely practiced and accepted. This helps to prevent the series of division and subdivision that would have taken place without that principle. The next senior male (brother, son, cousin or nephew) succeeds to the position vacated by the deceased. He takes charge as a guardian of the family property held by the deceased. This is to be administered by him for the common benefits of all the others. In the case of self-acquired property such as cocoa, oil palm, kola plantation, etc., a great part of the property is left to the next senior with the general understanding that he will hold and manage it to take care of the deceased's young ones and to fulfill the family obligations which the deceased used to fulfill. If all the children of the deceased were grown there would be no point in any next senior taking over permanent trees. Such trees will be partitioned among the children of the deceased since the trees were the direct product of the efforts of their father. Ancestral lands are generally preserved since such act is considered the surest means of maintaining the unity and strength of the kinship group. However this preservation is giving way to outright partition because of the continuing growth of demand for money. This demand for money can be met through improved land use growing out of individual ownership accompanied by the freedom to maximize land use and the right to devise in a way both economically feasible and legally permissible. The
present rules of inheritance are so tightly interlocked with the correlative systems of customary land tenure that each serves to perpetuate the other. Thus, land which is "held" under customary law as ancestral property cannot be devised or inherited by any method other than customary law.

Inheritance rights of women

A woman, according to the customary law, is a part of her father before marriage and a part of her husband on marriage. She does not own or inherit a share of land which belongs to her own lineage since she on marriage goes to live with her husband. The husband provides her with an area sufficient for the cultivation of her garden crops. Women do not undertake farm work except at harvest peaks when extra labor might be unavailable or too expensive for the household. The woman is therefore not assigned any farm land from the family allotment. In some peculiar instances a woman might demonstrate the capability and interest of hiring labor to cultivate. Such woman may acquire a piece of land, but such land does not pass to her husband upon her death. The husband, however, may hold the land in trust for the children. In case she left no children the land reverts to her own lineage.

The Mohammadan law requires an equal division of property among the deceased's children, both male and female. It is opposed to primogeniture in principle but holds the eldest son as the guardian and trustee for the younger brother's share of the property until the latter is married. A women (widow) cannot inherit land, but when a man dies without issue his widow can apply to the chief of the village for a life estate interest in the land if she can hire help to cultivate it. The Mohammadan law operates
largely in the Northern Provinces.

In some Nigerian communities the principle of ultimogeniture is in practice. When the oldest son is married, a home and a farm are established for the new family. This is done as each next oldest gets married. In such cases the family compound and land will pass not to the oldest son, but to the youngest. This system operates with the assumption that the older sons have been provided for and the youngest son is going to be the least able to fend for himself.

Factors varying customary rules of inheritance

Land inheritance is normally governed by customary law. The customary law, however, may be varied by "(a) gifts inter vivos (i.e. gifts made during life or between two living persons); (b) nuncupative wills (i.e. a declaration made voluntarily and orally by a person in sound mind, in expectation of death, in the presence of responsible and disinterested persons); (c) written wills; and (d) the contraction of a marriage under the Marriage Ordinance or according to Christian rites (thereby altering the legal status of husband and wife held under the customary law, and imposing English rules of inheritance)" (10, p.182).

Inter vivos transfer has been described earlier in this chapter. It takes the form of outright gift or conditional grant. A documentary evidence supporting such transfer is desirable in order to specify what type of gift.

Nuncupative wills Wills may be written or verbal. Verbal or nuncupative wills are well recognized in Nigerian societies. Transfer of this nature is different from inter vivos because the gift under the
nuncupative wills may vest only at the death of the testator. The head of the family and the customary heirs are generally given formal notice of the making of such wills. Unless the nuncupative wills make provisions that are in conflict with ideas of equity or with the customary law, they are not disregarded. Nuncupative wills, like written wills, can be respected or exercised only on individually-owned land, not on lineage or family land. When such wills concern family land, they are regarded as mere suggestions or recommendations which the family members may look into. Nuncupative wills may be used to disinherit certain members of the family who have not acted in the best interest of the testator. However, a family member cannot be disinherited of the family compound or house.

**Written wills** Several factors contribute to the adoption of the use of written wills as a method of transferring property at death. Among these factors are: increasing number of educated citizens, the influence of English law, the growth of individually owned property, and the introduction of a money economy. The right to leave property by means of a written will cannot be denied where the property concerned is self-acquired. In the Northern Provinces land rights are more restrictive than in the Southern Provinces. They are merely rights of occupancy; hence there is little occasion for the use of written wills. In concluding this section on will-making, it may be well to note that the Administration (Real Estate) Ordinance (Cap.2) provides that "when any person shall die intestate, leaving any real property of whatsoever nature of which the intestate might have disposed by will, such real property shall for purposes of administration be deemed to be part of the personal estate of the said intestate and shall be administered accordingly". A proviso, however, adds that "real property
the succession to which cannot by native law and custom be affected by testamentary disposition, shall descent in accordance with the provisions of such native law and custom" (10, p.185).

Marriage according to Christian rites Christianity was brought to Nigeria by the English and marriage according to Christian rites followed closely the English law and custom. A conflict thus arises in the ownership concept -- the English having always upheld the principle of individual ownership and the Nigerians the principle of communal ownership. Since ownership concepts in these two cultures differ, rules of inheritance are bound to differ. Recognizing this conflict, the Supreme Court Ordinance of 1943 manifests a general, but clear, intent that the law applied should always conform to the reasonable expectations of the parties. While it is expressly provided that matters between natives should be governed by native law and custom, the statute also directs that: (31, 1:17)

No party shall be entitled to claim the benefit of any local law or custom, if it shall appear either from express contract or from the nature of the transactions out of which any suit or question may have arisen, that such party agreed that his obligations in connexion with such transactions should be regulated exclusively by English law or that such transactions are transactions unknown to native law or custom. (Nigeria Law ch. 211 17(3) (1948)).

On this reasoning in Cole v. Cole (1 N.L.R. 15, 21-23 (full Ct. 1898)) the court applied the English law of inheritance to the devolution of a property of a native who died intestate. The deceased had contracted a Christian marriage in Sierra Leone, thereby "clothing the parties to such
marriage and their offspring with a status unknown to native law". (Id. at 22). The court thought application of native law would be inequitable and contrary to the legislative intent (30, pp.255-264).

Since the Cole v. Cole decision in 1898 it has become well-established law in Nigeria that a Christian marriage creates a presumption that English law will control the transfer of property upon death. But this presumption can be rebutted. As mentioned earlier, property which is manifestly treated as family property will devolve under native law, and it can be devised under the English law of wills as family property if the intent is clear. Thus, in Asiata v. Goncallo, 1 N.L.R. 41 (Div. Ct. 1900) the intestate, a Nigerian Moslem, married a Moslem woman by Moslem rites. The same parties were remarried by Christian rites in Brazil because they wanted to ensure state recognition of their marital status. When the intestate died after his return to Nigeria the court refused to distribute his property under English law since the Christian marriage had been contracted only for convenience, and the ordinary implications of Christian marriage relating to the ways of life and expectations of the parties and their children were lacking. In addition, the intestate had contracted another marriage with a second woman after his return to Nigeria and, Moslem law permitting polygamy, his children by both wives shared in his estate (30, p.260).

**Marriage under the Marriage Ordinance** The Marriage Ordinance is a compromise between the traditional method of devolution of property and that method stipulated by marriage according to Christian rites. The Marriage Ordinance of 1914 provides a procedure for monogamous marriages with certain consequences attaching, the most notable being the displacement of
native law in the devolution of intestate property: (31, 1:36)

Where any person who is subject to native law or custom contracts a marriage in accordance with the provisions of this Ordinance, and such person dies intestate, ... leaving a widow or husband, or any issue of such marriage; and also where any person who is the issue of any such marriage as aforesaid dies intestate, ... the personal property of such intestate and also any real property of which the said intestate might have disposed by will, shall be distributed in accordance with the provisions of the law of England relating to the distribution of the personal estates of intestates, any native law or custom to the contrary notwithstanding....4 Nigerian Laws, ch. 128, 36(1) (1948).

If the intestate owned property individually, native law would be displaced if he were married under the Marriage Ordinance; undivided family property would not pass under English law, but partitioned property would (30, p.240).

The inheritance provisions of the Marriage Ordinance apply only to Nigeria by express declaration. However, the law relating to Christian marriages was founded partially upon an analogy to an earlier version of the Marriage Ordinance in Cole v. Cole and to that extent it has implications beyond the geographical boundaries of Nigeria.

In conclusion it has been seen that a marriage under Christian or Moslem rites or under the Marriage Ordinance can displace native inheritance because such marriages are inconsistent with native land tenure. Native land tenure and inheritance are founded upon the customary notions of polygamous marriage and family life. A monogamous Christian marriage
undercuts the entire structure and destroys all reason and justice in applying customary law.

The Nigerian family is also an economic unit which is designed for survival in a subsistence agricultural economy. For example, the institution of polygamous marriage is frequently defended in terms of economic advantage or necessity: the family unit must be maintained at a size sufficient to sustain itself in farming despite high death rates. It would seem that a commercial use of land (sale) would undercut the customary structure as much as would a Christian marriage. This idea is not explicitly reflected in the law of Nigeria, but it does exert a subtle influence. The reluctance is understandable; it would seem inequitable to treat property as under English law unless the owner's customary-law heirs were prepared for it.

Structural Defects in Relation to the Provision and Use of Credit

The path to a satisfactory money income is an efficient combination of productive assets such as land, labor, capital and management. The sweat of man's brow, his physical labor, is no longer sufficient to earn him his living. Similarly, land, labor, and management would require capital to form an efficient combination. The role of capital in this combination is very important. The level of income of a farm family is to a large extent dependent on the amount of capital the family is able to combine with the other factors of production (32, p.3). The appropriate amount of capital to be employed in a farm business depends on its scale of operation and the availability of capital itself. Where maximization of satisfaction is the goal of the user, owned or borrowed capital is needed
to achieve the goal. Borrowed capital is generally and shall in this paper be referred to as credit.

**Role of credit in agricultural development**

A farmer uses credit when he wants to augment or acquire his capital. The need for capital-owned or borrowed -- is manifold. Capital may be needed for the following purposes:

1) for efficient use of labor
2) for the exploitation of natural resources
3) to promote economic development through agriculture
4) to increase agricultural output through better tools, feed, seeds, breeds, etc.
5) to improve the economic well-being of the rural population through improved sanitation, eradication of human and plant pests, etc.
6) migration and resettlement, including training of the settlers in the use of tools and technical improvements
7) land development, i.e., reclamation, irrigation, drainage, and other conservation practices. This, in short, involves improving the land already in use and bringing additional land already into production
8) to provide developmental services such as research, extension, input supply lines, and marketing facilities
9) to make it easier for the farmer to discover and apply technological improvements
10) to increase the user's capacity to save. This is brought about by the increase in the farmer's income resulting from the other nine
purposes listed before this.

In most less-developed countries, people are predominantly agricultural and since the forces of traditionalism tend to be most resistant to change in the rural areas, it is in the agricultural sectors that the leaders of many less-developed societies attempt to initiate the process of modernization. This often takes the form of agricultural extension and community development programs which make available to the peasant cultivator new techniques and new attitudes.

By changing market relationships by the organization of rural cooperatives, and borrower-lender relationships by providing agricultural credit, these programs make a significant impact upon the traditional institutions of rural societies and stimulate the forces of change and growth.

The control or eradication of major endemic diseases and the general raising of health standards is one of the outstanding social development needs of the developing countries. Such development program would increase the effectiveness of the labor force and may also open up large land areas to productive use for the first time. The prospects of development are not very great unless labor, which is one of the country's greatest production resources, can increase the effort it expends and the efficiency with which it works. Consumption standards must increase both for the worker and for his family. For the effectiveness of labor, the worker's diet must increase and improve.

Social and cultural barriers to economic progress also need to be removed. The attitudes within most individuals need to be changed; especially those that:
1) make it impossible for them (the individuals) to visualize the possibility of change,
2) make the activities necessary for economic change uninteresting or repugnant to them, and
3) limit their creativity so that they cannot effectively carry out the necessary activities.

Such attitudes are not easy to change especially where a large portion of the rural population had always lived largely in a preliterate, tradition-dominated folk culture, and where the social structure was often dominated by the extended family or tribe with traditional social responsibilities. In a continent like Africa, or to be more specific, in a country like Nigeria, development will rest not only on bringing literacy quickly to the people but also on changing their conception of nature from one of mystical and irrational forces beyond the control of man to one of cause and effect. Serious research by imaginative persons could be directed to exploring and testing methods of doing this quickly, cheaply, and effectively. Improvement in training, educational, and other social institutions may stimulate change in attitude towards economic progress.

A change in the tools now used for agriculture in Nigeria is necessary if economic progress is going to take place. Such change involves purchasing better tools and equipment and adopting better methods of farming. Better tools would aid in bringing more land into use and in cultivating existing ones more efficiently. This problem may also be solved through the use of credit.

Inefficient land use can also be corrected by the use of better tools and equipment. Slash-and-burn cultivation, for example, is considered
"a very primitive type of cultivation, a waste of forest resources, a serious cause of land erosion, and a form of economic activity that should be eliminated" (33, p.82). This sort of cultivation had continued partly because of lack of education on better methods and partly because of lack of better tools to uproot the thick tropical undergrowths. These problems could be overcome if the farmer could acquire additional capital and extension advice.

Conditions for optimum use of credit

A proper use of credit leads to success while if improperly used it may lead to bankruptcy. When a farmer plans to increase his output, he is confronted with the question "in what way?" Would he intensify or extend? Once the decision is taken, and he discovers that he does not have enough capital and must obtain credit, he is faced with other kinds of decisions:

1) by how much to increase output
2) how much credit he needs and from whom to borrow
3) his capacity to repay and the types of risks involved as his scale of operation increases
4) whether it would pay more to increase output of one crop, e.g. cocoa, or outputs of several less-capital intensive crops, e.g. corn, millet, beans, yams
5) whether he should expand now or later, especially if he is already in debt, prices are uncertain, or he is at present in poor health.

All these stages of decision making are considered by a farmer who has maximization of income as his goal. He does not go into the use of credit
on corn until he is convinced that it cannot yield a higher return on cocoa, rubber or coffee. He is not satisfied until the marginal revenue product of credit used in the culture of cocoa is equal to that used in the propagation of rubber, cotton, or corn. Where he has two farms within a given producing area, he allocates his credit between the two farms in such a way that its marginal revenue product on one farm is equal to that on the other. Where one farm yields less than the other, the credit used must be transferred to the farm which yields higher marginal revenue product.

From the lender's point of view if credit extended to the farmer would yield less marginal revenue product than that extended to alternative business, the lender should optimally put the credit to use where the yield is higher. This applies to all enterprises which can compete with agriculture in the farmer's use of credit. From a social standpoint the optimum allocation of resources requires that the marginal revenue product be equal in agriculture and alternative businesses. It is recognized however that credit has traditionally been extended on the basis of security rather than on the basis of marginal revenue product.

Within any two farming regions credit must be so applied that both regions produce equal marginal revenue products. If not, credit should be applied to that region which produces higher marginal revenue product. If the oil palm plantation of the rain forest belt of Southern Nigeria yields a less marginal revenue product than the groundnut (peanut) cultivation of the semi-arid north central region, credit should be applied to the cultivation of groundnut which has higher marginal revenue product.

Credit must be allocated over time to produce equal discounted marginal revenue products. This is especially necessary of cultivators
deciding between the production of crops that require a period of four to six years before maturity and crops that are seasonal. Cocoa, palm tree, and rubber take between four and seven years to get into full production while a grain crop such as corn is grown and harvested twice a year. The productivity and future product prices of cocoa should be considered along with the future worth of the credit now being applied. For a cultivator who is in debt and is concerned with how he would quickly repay his credit or pay the required interest rate plus his household maintenance, such cultivator may be forced to employ the credit in a manner that does not fully satisfy the conditions of the optimum allocation. He may have to use his credit on those seasonal crops that would bring him quick returns even when he is aware of the higher marginal revenue product that cocoa may yield at a later period of time.

The marginal factor cost in agriculture is the same at a given time, agriculture approaching a state of pure competition. If fertilizer sells for $10 a hundred weight, the farmer may buy as many units as he wants and the price per unit shall not be changed. Also if labor is supplied at $1 per man-hour, the number of man-hours the farmer employs in the production of his product shall not alter the wage rate (34, pp.557-560).

Sources of funds for agriculture

There have always been some types of credit institutions open to and for the farmers of Nigeria. These institutions operate on small scales. Sources of credit could be by commodities and implements or by cash. A number of such sources are described by Nadel (35, pp.180-204). Where commodities and implements are used as credit source, a group of
established farmers would help a young farmer get started by advancing him seeds to grow, livestock to raise and implements to work with. Since the land is communally owned, the established farmers pick a site for the young farmer, build him a house and work with him to clear some land for the cultivation of his crops. At harvest the young farmer is expected to pay back about twice the measure of seeds, return the mother livestock plus one half the number of the young ones, and surrender the used implements plus a prescribed number of new ones. In return for the labor the established farmers contributed in clearing a field for him, the young farmer only has to participate in helps of similar nature in the future.

This system is neither well defined nor strictly observed. In some groups the custom may be to take back in kind only that amount of seed, livestock, and labor the group contributed to help the young farmer get started. In others it may be that nothing is expected in form of repayment except that in such instance, the young farmer is obliged to be at his best behavior to the members of the group that helped him and to the community as a whole. As for cocoa which takes four to seven years for maturation, the seeds are usually given as gifts.

Cash transactions between farmers are generally not for farm improvements. They may be for paying income taxes, defraying wedding and funeral expenses or for some other sundry uses. Whenever credit is extended in form of cash, it is a common arrangement that the borrower would take a day or two off his farm work annually to go and help the lender at the peak of harvesting any major crop the lender was growing until the debt is paid. Sometimes the borrower may pawn a part of his crops to the lender who will
do the harvesting for nominal interest payments until the main debt is paid. Transactions involving cash are usually witnessed by some elders in the community in order to avoid disputes over the amount borrowed and the terms of repayment. If these transactions are to take place between two farmers each belonging to a different commune, the heads or representatives of both communes usually serve as witnesses. Better methods, however, are evolving as more and more people become literate.

Modern sources of credit would include savings, taxation, bank reserves, cooperatives, Regional Development Boards (loan boards), direct business investments, international loans and grants, social overhead capital and some other governmental agencies.

**Savings** Where to get the necessary funds to fulfill the needs of the Nigerian farmer and to permit the expansion of credit facilities is a complex problem. Considering the world's capital problems, three types of shortages can be distinguished: 1) countries with overall shortage of capital, 2) countries with shortage of capital in the rural areas, and 3) countries with capital shortages for certain agricultural purposes. Nigeria belongs to the first category, i.e. she is plagued with an overall shortage of capital. The agricultural sector of the Nigerian economy, composed mainly of low income farmers is capable of generating very little internal savings. It is probably a matter of general agreement that at very low levels of income (subsistence) the marginal propensity to consume approaches one, and even occasionally for short period exceeds one.

Friedman suggests that in some countries, the consumers, with very low incomes, do not have savings in the usual sense, but may have them in the
form of contributions to some temple or gods, trinkets, etc. The problem is then one of redistribution of the saving effort (36, p.235). While such redistribution of the saving effort may sound very easy, the economist should not disregard the values the consumers of the low income countries attach to their gods and trinkets. However, if small amounts of savings (hoards) are held by small farmers, then the problem may have two aspects: encouraging farmers to invest these funds in productive enterprises, or assisting them in finding productive enterprises in which to invest; or secondly, to aggregate these dispersed savings into large enough quantities to be workable amounts for loans. A number of economists including Ragnar Nurkse, Charles Kindleberger, and Arthur Lewis have written considerably about the role savings can and do play. Savings constitute the accumulation of wealth through the postponement of consumption. In global terms, some part of a society's current income must be set aside to produce capital. The idea of capital formation is expressed by Nurkse thus:

".....that society does not apply the whole of its current productive activity to the needs and desires of immediate consumption, but directs a part of it to the making of capital goods: tools and instruments, machines and transport facilities, plant and equipment -- all the various forms of real capital that can so greatly increase the efficacy of productive effort" (37, p.2).

Kindleberger expresses savings in a similar way that "these savings may be regarded as consumption goods produced but not consumed by their producers; or capital goods produced and offset by the savings of their producers which reduces demand for consumers' goods" (38, p.50).
In underdeveloped countries, the whole country is poor but there are generally a few individuals who hold the lion's share of the national income. The problem thus is that income is poorly distributed with a high proportion concentrating in the hands of a few chiefs, rulers, and politicians while a great majority of the population is close to subsistence. If the rich few can invest their money on non-productive monuments, it is logical (assuming all obstacles removed) to expect them to redirect these savings into productive capital that is needed for economic growth. In this respect, Arthur Lewis concludes that:

"... no nation is so poor that it could not save 12 percent of its national income if it wanted to; poverty has never prevented nations from launching upon wars, or from wasting their subsistence in other ways. Least of all the nations plead poverty as an excuse for not saving, in which 40 percent or so of the national income is squandered by the top 10 percent of income receivers, living luxuriously on rent" (39, p.236).

While this may be an observable fact, the non-economic reasons behind such behavior are not being taken into consideration. Economic goals are different from society to society. The underdeveloped countries apparently do not have the same outlook towards economic development as the advanced countries do. Also when a nation goes to war -- be it rich or a poor nation -- her reason for doing so is partly economic, i.e. the idea to fight and keep the country's present and future wealth from being henceforth controlled by another nation or group of nations. The incentive to build a nation is also restricted if the builders are not guaranteed with the security of their nation, both present and future generations.
The problem of low savings stems directly from low income which gives rise to low capital, then to low productivity which completes the circle when it results in low income. At this stage of economic development in Nigeria, improved medical services have contributed to a fast growing population. It is likely that population increases faster than productivity. Thus, a growing population coupled with a very high marginal propensity to consume leaves very small room for savings. But Nigeria has no choice since the main industry is agriculture, it is the agricultural sector that will pay the initial costs of economic development. The savings in agriculture -- food, labor, and revenue -- must play important roles in the process of capital formation (43, p.56). The Nigerian farmer's savings attitude would be improved by the use of cooperative banks. This is to be discussed later.

**Taxation**

Taxation is another source of funds for credit in that it can be used as a means of forced savings. Income taxes could attempt to skim off some revenue without greatly reducing the incentives to earn income. Even though the primary objective in taxation is to collect revenue, it serves to accomplish social goals as well. In an underdeveloped area an efficient land tax can bring about changes in land tenure and land inheritance. Its impact may help to commercialize agriculture, and to get rid of the surplus farm population who will be forced to migrate when they are unable to pay the tax. In addition, taxes can be used to reduce the extreme inequalities in the distribution of income and wealth. All of these can be attained because:

"... taxation itself is an instrument of social change. It does not need to wait passively until restrictive and binding social
institutions are changed, but can hasten the change" (40, p. 84).

The government of Nigeria can only expect very small amounts of revenue from income tax because the average personal income is very low. But the few who earn more than the average can afford higher taxes. The cocoa farmers of Western Nigeria have higher incomes and pay higher income taxes than the millet producers of the middle belt. However, the communal land ownership pattern presents some difficulty in assessing the annual income of many a Nigerian because of lack of clear definition of boundary lines between plots farmed by relatives and because of the income fluctuations arising from shifting cultivation. When a cultivator is faced with shifting cultivation, every three or four years he clears new land, provides new drainage or irrigation and thereby starts like a beginning farmer. His income during the first year is generally much less than that of the subsequent year or years. Since the average annual income is so low, the government of Nigeria relies very heavily on indirect taxes (principally import and export duties). This makes Nigerian revenue particularly sensitive to the tendency of the international trade to change suddenly. The farmers' contribution to revenue is in the "Direct Taxes" which constitutes just about 25 percent of the total revenue from taxes. See Table 2 for the structure of tax revenue.

To encourage saving for use in capital formation of the underdeveloped countries, Ragnar Nurkse suggests: "for the sake of the incentive to save, taxation should not be on personal income, but rather on expenditure" (37, p. 146). This line of thought is plausible, but one must consider what difficulty such a system would run into where farmers produce just for family consumption. Where transactions are made in kind, sales are
Table 2. Structure of tax revenue, all government authorities combined

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<td>1952-53</td>
<td>1955-56</td>
<td>excluding recommended additional revenue</td>
<td>including recommended additional revenue</td>
</tr>
<tr>
<td></td>
<td>Million %</td>
<td>Million %</td>
<td>Million %</td>
<td>Million %</td>
</tr>
<tr>
<td>Customs and excise taxes(^a)</td>
<td>33.9 67.5</td>
<td>39.2 70.1</td>
<td>41.3 68.8</td>
<td>46.3 67.8</td>
</tr>
<tr>
<td>Direct taxes(^b)</td>
<td>12.5 24.9</td>
<td>13.2 23.6</td>
<td>14.9 24.8</td>
<td>18.2 26.6</td>
</tr>
<tr>
<td>Licenses, fees and fines(^c)</td>
<td>2.1 4.2</td>
<td>2.3 4.1</td>
<td>2.6 4.3</td>
<td>2.6 3.8</td>
</tr>
<tr>
<td>Mining royalties</td>
<td>1.7 3.4</td>
<td>1.3 2.3</td>
<td>1.3 2.2</td>
<td>1.3 1.9</td>
</tr>
<tr>
<td>Total(^d)</td>
<td>50.2 100.0</td>
<td>55.9 100.0</td>
<td>60.0 100.0</td>
<td>68.3 100.0</td>
</tr>
<tr>
<td>Of which collected by central government</td>
<td>43.2 86.1</td>
<td>44.9 80.3</td>
<td>47.5 79.2</td>
<td>52.5 76.9</td>
</tr>
</tbody>
</table>

\(^a\) Including regional produce sales taxes.

\(^b\) Including federal income taxes, taxes under the Direct Taxation Ordinance and "rates of local authorities".

\(^c\) Including "licenses and internal revenues" and "fees of court or office".

\(^d\) Totals may not equal sum of components because of rounding (31, p.111).
difficult to calculate, and the costs of collecting taxes on such transactions will be very high. Unless the tax can be levied on some type of produce which can be intercepted and assessed at the market place, it is apt to be uncollectable.

Produce sales taxes are collected in Nigeria on cocoa, palm kernels, peanuts, timber and most other export crops. This is possible because many, if not all, of the export crops pass through the hands of the Nigerian Marketing Boards. The inefficiency of the internal market structure plus the almost wholesale illiteracy of the traders make taxation on expenditure impractical. Rather it may be possible to use an increase in income tax as a means to increase the incentive to work since people on subsistence engage in transactions involving cash mainly for the purpose of getting money to pay tax and buy some necessaries, e.g. salt, that are not produced by the farm family. This may force the farmer to improve his farm for better income, and money collected from the increase in income tax may be used as a source of credit for the seemingly progressive farmers, qualification based on approved farm management practices.

Commercial banks and private money lenders

Cost of loans from private sources are usually high, sometimes exceeding 20 percent interest. In part the costs reflect the shortage of capital, a phenomenon typical of underdeveloped countries, so that interest rates in general are higher than in developed countries; but rates for agriculture are typically higher than for industry and commerce even in underdeveloped countries. In respect of institutional credit the difference arises in large measure from higher real costs due to higher lending risks and higher administrative costs resulting from dispensing loans to scattered and relatively remote small
scale enterprises (41, p.61). The non-agricultural sector of an economy may also not be inclined to loan funds to the agricultural sector, preferring investments that are more convenient to make and supervise, and preferring investments in businesses with which they are more familiar. The oppressive practices among the money lenders of India as listed by Belshaw are probably not uncommon in Nigeria. Those practices include:

"(a) demand for advance interest;
(b) demand for a present for doing business; ....
(c) taking a thumb impression on a blank paper with a view to inserting an arbitrary amount at a later date if the debtor becomes irregular in payments of interest;
(d) general manipulation of the account to the disadvantage of the debtor;
(e) insertion in written documents of sums considerably in excess of the actual money lent;
(f) taking of conditional sale deeds in order to provide against possible evasion of payment by the debtor" (41, p.62).

Money lenders are very few and the farmers definitely need their services. The money lender is familiar with the situation of the farmers and can always exploit it.

**Agricultural cooperatives as a source of credit** The credit requirements of subsistence farming as practiced in most parts of the country are small. The export crops are adequately financed under the existing arrangements with the buying agents. The buying agents generally extend credit to those farmers who would sell their crops through the agents. The buying agents may organize the farmers into small cooperative units where
all the farmers in each unit will have a common buying agent. The buying agents draw their funds from the cooperative banks established purposely for helping the farmers in production and marketing of their products. To establish a cooperative bank, the government of that region provides the initial working capital for the building, staff, stationery and for operation. The bank is then handed over to the cooperative societies in the region. The cooperative societies come under many names but their functions usually overlap. They may be called Produce Marketing Societies, Thrift and Loan Societies, Thrift and Credit Societies, Consumer Societies, and Secondary Societies (2, p.291). The two that are of importance to this paper are the Thrift and Loan Societies and the Thrift and Credit Societies. The difference between them is not much in function but in the volume of business. The thrift and loan society is composed of rich urban people who pay a fixed amount of money monthly to support the society's operation. Anyone including non-members can borrow from the society. The members are paid dividends at the end of the year according to their patronage. The loan and credit societies are mostly rural and cater only for their members.

The procedure for granting loan to a needy farmer is as follows: a cooperative inspector surveys the farmer's need for loan, issues a certificate of recommendation; the local society looks into the recommendation and sends the farmer to the cooperative bank; the farmer is granted the loan from the funds of his own society at the standard interest rate of 3 percent. Where the funds of his own society are not enough to cover the loans, the farmer may apply to the bank of his own personal recognition for
an overdraft which is usually extended at a higher rate of interest. In the latter case the farmer frequently runs into trouble because of lack of an acceptable form of security. The communal pattern of land ownership and inheritance does not allow the cultivator to mortgage his land without the consent of the entire family. The extent of this as an obstacle will be discussed later.

The thrift and credit society supervises the use of the credit, i.e. makes sure the farmer applies the credit to the purpose for which it is intended since credits given to peasant farmers without advice on how best they could be used and the supervision of their use are of little or no value. The financial position of the cooperative societies is being strengthened by the establishment of more cooperative banks. Also the cooperative training school established in the Western Region serves as a training center for auditors and inspectors of the cooperatives for all of Nigeria. The training school could add a series of short courses in storage, insect control, and other basic needs of the farmer.

**International loans, government and governmental agencies** The farmers of the underdeveloped countries cannot expect much help from direct business investments of foreign origin. These business investments concentrate on primary production for export to the advanced countries. This may be sound as a way to encourage the specialization in the production of raw materials and foodstuffs, it does not serve to develop the domestic economies of the low-income countries. Nurkse, according to this view, remarks, "even if this concentration on extractive export industries did not necessarily mean exploitation for foreign profit, or still less exploitation in any popular political sense, it meant all the same that
foreign investment served primarily the interests of the industrial creditor countries, and that economic growth was inevitably somewhat unbalanced in character" (37, p.84).

The farmers can look to the public authorities for investment in agriculture. The government may lay the foundation for economic development in the form of providing public services and social overhead capital. Foreign loans may play a great role in the financing of such investments, but reliance on foreign loans may reduce the incentive for domestic savings and increase consumption. The problem of capital formation may remain unsolved if the inflow of capital is accompanied by a relaxation of domestic saving effort. The government of Nigeria has set up a number of agencies to advance credit to farmers. Notable among such agencies are cooperatives, regional development corporations, and settlement schemes. The role of the cooperatives has been discussed. The regional development corporations, formerly known as the regional production development boards, serve to extend loans to farmers and non-farmers as well. These corporations are three in number -- situated in the three major regions, East, West and North. In addition to advancing credit to farmers, they supply funds to the cost of scientific research into matters affecting the produce with which they deal, i.e. research on swollen shoot of cocoa, methods of and suitable equipment for spraying cocoa, and research on irrigation methods. With the newly established cooperatives taking up more and more of the functions which used to be carried out by the development corporations, the latter are now concerned with building of roads, opening up of plantations, experimental or demonstration farms, and establishing new industries.
The new roles of the development corporations may be considered as complementary to the proper use of the credit granted by the cooperatives. Improved transportation and enlargement of the network will enable the farmer to market his produce more easily; the demonstration farms will provide him with a guide to his crop husbandry, farm management and organization; and the newly established industries will provide customers for the farmers' raw materials.

The role of the settlement scheme in supplying credit to the farmers is limited in that it caters only to the settlers on the particular scheme. The scheme also is run in a cooperative fashion, i.e. the government supplies all the initial funds required in getting the settlers established and requesting them to repay in reasonable terms as soon as the crops begin to come forth.

Obstacles to the Optimum Use of Credit

Factors preventing an optimum use of credit can be broadly divided into two categories, one emanating from the borrower is called internal rationing, and the other stemming from exogenous forces is called external rationing. Under the internal rationing category will be listed 1) deep-seated aversion to borrowing, 2) lack of decision-making ability, 3) lack of equity, high interest rate, and price uncertainty, 4) needlessness of use of credit on non-economic holdings, 5) institutional and social barriers, and 6) small size of market coupled with lack of domestic purchasing power. The external rationing category will include: 1) loan (non-agricultural) agency's lack of understanding of agriculture's problems and productivity, and 2) defects in land tenure and land inheritance.
It may be noted from the above list that the factors obstructing the effective procurement and productive use of agricultural credit range beyond purely financial considerations. They embrace the socio-economic conditions among peasant societies which present obstacles to economic development and, more particularly, create difficulties in the establishment of effective systems of agricultural credit. Let us now consider these factors one after another. Heady describes risk aversion as representing "the manager's psychological discount of returns due to uncertainty" and capital rationing as "the inability of the borrower to obtain all of the capital funds which he might desire at current or possible interest rates" (34, p.550). The amount of the discount is a function of uncertainty rather than time.

A farmer's dislike for borrowing may be based upon several factors. He may feel that it is bad to be in debt or that he just does not believe in it. Health and/or age may prevent farm expansion, thereby seeing no reason for borrowing. He may feel satisfied with the present scale of operation and may not wish to assume risks of expansion. In low income countries where the resources of the farm firm and the chattels of the household are small, credit aversion is widespread. Lack of decision-making ability plays a great role in preventing the optimum use of credit.

The traditional farmer, due to his inability to explain the causes and effects of such natural phenomena as rainfall, drought, disease and death, has been subject to a state of helplessness which in turn gives him a sense of impotence. This sense of impotence and of danger in the environment around him makes him prefer to rely on others for decisions. It relieves
his anxiety if the elders and persons in positions of authority make the
decisions. This sense of impotence, dependence, and anxiety at experi­
menting is bred into the next generation as the traditional farmer attempts
to raise his children. Sometimes mere poverty has made him accept the no­
tion that he cannot affect his destiny by changing his ways of doing things.
Persons in position of authority very often may not understand the problems
of the farmer. Improvements and methods introduced by the central govern­
ment fail because the farmer has been unable to make decisions as to
whether to adopt them. His inability in this instance is a product of
his past contacts with the central government -- contacts which had been
mainly to collect taxes from him, thereby making him assume that no good
can be intended by the central government. His inability to make decisions
for the present impairs his planning horizon.

Community sanitation and probably the control of mosquito-carried
malaria may go a long way in eradicating those deaths whose causes used
to be associated with poverty and the work of unseen powers. Education and
agricultural demonstrations can probably help the farmer to change his at­
titude towards life. As for lack of equity, high interest rates and price
uncertainty, there is a definite correlation among them. In most countries
of the world, a private bank is interested in loans to farmers only if high
rates of interest and security of repayment are provided. High interest
rates are closely associated with scarcity of capital in underdeveloped
countries.

Price uncertainty is prevalent in underdeveloped agriculture because
of the fluctuations in national income and prosperity and because of random
disturbances growing out of weather fluctuation. Since Nigeria's exports are composed of mainly agricultural products, the national income responds in the direction of the rise or fall in prices in the foreign markets Nigeria deals with. Due to lack of efficient storage facilities, many farm families are forced to produce only that amount of food crops that can be readily marketed or consumed during the harvest period. But in good weather years, the increase in output causes a sharp decline in prices. A farmer who has witnessed such a price decline may not be too anxious to use credit even if a price increase is forecastable. The Nigerian farmer's lack of equity is a product of the insecurity in title caused by the structure of land tenure and land inheritance. Discussion on this comes later, but the non-economic sizes of most of the holdings make the use of credit needless.

Institutional and social factors may also stand in the way of the optimum use of credit. The market size may be small, thereby making expansion of farm output unreasonable. Some laws within the country may prevent certain classes of people from achieving their goal. In Japan, for example, private bank credits are not common because the law prohibits the purchase of land by non-agricultural people. As a result those who have invested money in agricultural credits have no security in case the borrowing farmer is unable to repay his loan. To correct this three new banks were recently established for agricultural credit (42, p.501).

The non-agricultural loan agency -- be it foreign or domestic -- most invariably lacks the understanding of the problems and productivity of an underdeveloped agriculture. Many of the problems facing agriculture in an underdeveloped country are new to the capital-rich and capital-exporting
countries. In the economically advanced countries, labor has always been one of the scarcest assets, therefore such countries have concentrated on capital intensive technology. In the underdeveloped countries the major problem is how to find gainful employment for their huge populations.

This great contrast between the experience of the advanced country and that of the underdeveloped one makes it difficult for the former to lend the latter a part of its experience during the early stage of economic development. The use of credit to provide employment for more people is new to the capital exporting countries since capital is generally known to substitute for labor and the other factors of production.

Let us briefly assume that fertilizer is introduced as an added capital. More output is produced on the same area of land or the same output is produced on a less area of land. This also saves labor to produce a given quantity of output. An ideal credit system attempts to protect the borrower as well as the lender, i.e. the borrower gets, if necessary, help and assistance to make repayment possible. This would require the capital exporting countries to supervise the activities of the underdeveloped countries using the borrowed capital. It follows then that the capital exporting countries must develop economic models along the line of labor-intensive technology in which the credit used would be to enhance the productivity of labor and land.

The problem of underdeveloped agriculture is as new to the foreign capital exporting country as it is to the non-agricultural sector within the same country. In many underdeveloped countries the townspeople's ancestors were also townspeople. In short, they never had to face the problems confronting the rural people. In such countries what position a
man holds or is likely to hold is due more to his inheritance than to his merit. A communication gap develops between the agricultural and the non-agricultural sectors. The introduction of free primary education in Nigeria has served to reduce such gap as just described. But the new problem that resulted from free mass education is that the farm boys, who have been brought up to regard farming as an occupation for illiterates, refuse to accept the existing rural amenities the farm life provides. They instead look for urban employment which is very scarce if not non-existent for the expanding population of literates. Here the government is brought to task of making agriculture both lucrative and attractive so as to absorb the primary school graduates who cannot find urban employment.

Much of the reasoning and factual statements, introduced in the preceding discussion of inheritance structural defects in the provision of credit, also apply to the remaining defects stated in hypotheses 2 and 3. However, there are additional relationships and applications between inheritance structures and the remaining defects that will be emphasized in the following sections.

Structural Defects and Security of Land Titles

Gittinger (43, pp.262-263) states that the insecurity of land titles may cause "the limiting of the economic horizon as is the case when the length of lease is short,"..., "the limitation of capital funds which may be borrowed,"..., and "the very lack of incentive even to attempt long term planning". When cultivators do not have a secure expectation they will receive the future benefits arising from present efforts, misallocation and exploitation of resources may become a common practice. The
insecurity of land titles in Nigeria is in part caused by certain defects in land inheritance.

Who gets his land at his death is beyond the cultivator's decision except in the case of those plots that have been put into permanent crops. The land generally used for the production of traditional seasonal crops will be treated as fallow at the death of the occupier (i.e. land reverts to the family) and may be used by any member of the family, not necessarily by the children of the deceased occupier. With this in mind, the present occupier is not likely to be anxious to make any long-term improvement on the land. Also his children's effort to help him would be mainly for the sake of the immediate benefit they can get, not from the hope to inherit the land. The only method by which land may stay with the occupier is through continuous cultivation. Land so used may pass directly to the children of the deceased if those children made an immediate use of the land upon their father's death. Continuous cultivation, without the use of fertilizer or manure, would run into problems of land exhaustion through erosion and leaching.

Structural Defects and Occupational Mobility

The farmer is not free to choose the locality where he will farm since it is difficult for him to acquire land outside the piece belonging to his family. This puts a limitation on his occupational mobility. He is not free to decide how much land he will till since this is controlled by the man/land ratio within his family and the type of farming tools he is able to acquire.

Furthermore, land is not for sale in a communal society. If an
occupier moves, the land reverts to the family just as is the case when the occupier dies. There is no compensation. And since there is no sale of land anywhere, the acquisition of land based strictly on the occupier's good behavior is contingent upon several factors not often related to good agricultural practices. This method of acquisition is thereby not secure. The occupier is thus discouraged to move to places which may present better agricultural opportunity.

If the children of the deceased occupier are not interested in farming, the only thing they can share in terms of inheritance would be the crops that were not yet harvested at the time of the death of the occupier.

Even though we may mention some good points about banning the sale of land, such as eliminating the possibility of the poor peasants losing their land to middlemen and money lenders, and preventing the rise of a landed aristocracy, the limitation it puts on occupational mobility and the use and procurement of credit is worth serious consideration.

The ban placed on sale of land makes it difficult, if not impossible, to assess what should be considered an adequate and just compensation when an unused land is being expropriated. Also, agriculture at present lacks the commercial outlook probably because land is regarded as a free resource; and since unskilled labor is abundant in Nigeria, it follows that the two major resources in an underdeveloped agriculture possess very little or no economic significance. But if land is free, it should not be free only among the members of one family to the exclusion of the members of another family.
Population distribution is not even and land uses and capabilities are not the same throughout the country. Also, even where the best lands of a country were settled first, population growths would not necessarily be at the same rate at all settlements over the years. Hence, a land inheritance structure that restricts mobility necessarily inhibits resource productivity by allowing one piece of land to be overcrowded, excessively subdivided and depleted while preventing some unused tracts from being brought into production. The pattern of land holding will enable a few families to have more than enough land for their needs while a large number of families have not enough land for their need. The land inheritance structure, by restricting mobility, prevents agricultural labor from realizing its maximum potential.

Structural Defects and Consolidation of Holdings

Earlier in this chapter, it was mentioned that one of the ways by which land may be acquired is that family land may be partitioned into as many lots as there are family members so that every member may have specific and identifiable lots, and that the boundary lines of such lots constantly change as each recipient dies or moves out. This in essence impedes consolidation of holdings especially when the lot vacated is not contiguous to the lots of the family members who want a share of it.

The principal economic effect of such method of acquisition is to reduce the efficiency of labor and the total output. Where the individual cultivator farms a number of different tracts, a large percentage of his total working time may be lost in traveling from parcel to parcel within one working day. There is also the problem of extra expense and time
involved in moving seeds and manure to the various parcels and of returning crops to the farmstead. The efficiency of production is reduced by the difficulties of supervising the growing crops. Land improvement and maintenance measures are difficult to employ, for example, a drainage plan may require the cooperation of a number of different neighbors. Some parcels may be too small to justify much care on the part of their owners, thereby cause poor standards to become common practice. The smallness of the parcels may also prevent the use of machinery which would increase efficiency if the tracts were larger.

Structural Defects and Adequate Size of Holding

We realize that whatever is considered adequate size of holding is relative to a particular set of tools, types of crops, and farming techniques. A farmer using hand tools may find his size of holding inadequate as soon as he changes to the use of draught animals and plows. Because of lack of relevant information we have not attempted in this study to define what the optimum adequate size of holding should be as the farmer makes use of different types of tools and farming techniques.

Since the occupier can only inherit land where he is family member he is faced with the possibility of undersized-holding problem as the size of the family exceeds a certain point. Because of this problem the occupier's scale of operation does not permit the use of improved machinery. Consequently, there may be low productivity.

Let us visualize what would happen to farm sizes if the defects in land inheritance were to be eliminated. Given the present tools and techniques, there might not be a significant addition to the total acreage
farmed because of the constant recultivations the farmer in the tropics is faced with. However, with improvements in tools and techniques, coupled with occupational mobility, it may be expected that both the total output and the per capita productivity would rise.
CHAPTER FIVE: IMPROVEMENTS IN LAND INHERITANCE STRUCTURES

In this chapter, we are concerned with analyzing the final hypothesis which is remedial in nature and which states: "Defects in land inheritance can be remedied through appropriate educational, legislative, administrative and judicial measures".

The alternatives proposed will consider situations under different types of land ownerships (i.e., individual ownership, cooperatives, and incorporation) which would generate different types of land inheritance structures void of those defects that prevent increasing resource productivity. Developing a number of such alternatives to improve the existing land inheritance will serve as partial test of the remedial hypothesis.

We proceed with identification of major elements of a policy which is expected to mitigate the problems emanating from the existing inheritance structures.

The Problem of Policy Making

It is understood that what appears to be the solution to one problem may just be good enough to point out the need for attention to another problem. Also the goals of the society may be conflicting. For example, in advanced societies the demand elasticity for agricultural products being low, it is not possible for a society to achieve both increase in agricultural output and increase in farm revenue. In a way one can consider such pair of goals as not complementary, but competitive. In some other instances the conflicts may not be all economic. They may be social, political and economic.
In Nigeria the society has an ambivalent attitude towards the alienation of land by sale: 1) there is a demand for freedom from all rules controlling alienation since these tend to impede the economic progress of the people; 2) there is, in many congested areas, an increasing opposition to all forms of commercialization of land. In other words, the former group demands a form of land policy that tends to favor individual ownership with freedom to sell, mortgage, or lease. The latter group demands that land ownership stay communal with its social privileges of every member accorded right to a piece of land. While it is possible to create a landless class by following the former, it is also possible that it may aid in allocating the land purely among those who are genuinely interested in making a productive use of it. It is assumed here that the purchase of a piece of agricultural land carries with it the intent on the part of the buyer to make a beneficial use of it. This approach also makes mobility easier by leaving the seller only to compare the exchange of his land for money and the economic gains that may arise from such gains. The group that favors communal ownership wants to preserve the social benefits that are embodied in this system, but tend to overlook or disregard the incompatibility of communal ownership with economic development. The puzzle created by the merits and the demerits of these two approaches is an age-old one. The former Colonial Administrations in Africa were confronted with it. A United Nations Report (44, p.35) quotes the government of Belgium concerning land problems in the Belgian Congo as saying:

"to introduce individual ownership in a society entirely collective, would encounter practical and technical difficulties. To prevent the practice of shifting cultivation would result in starvation for the
indigenous population, so long as the Administration does not make available to them the fertilizers and methods which would allow continuous cultivation. The grant of individual tenure would also entail dangers of fragmentation of individual holdings, and of sale resulting from indebtedness to commercial interests. The result would be not economic progress, but the impoverishment of the rural population, and increased exhaustion of the soil."

From the foregoing, one could imagine how difficult, if not impossible, it is to draw a land policy that would suit all segments and demands of a society. How do we design a land policy that would enable land utilization to achieve its objective which "begins and ends with the satisfaction of human wants?" (45, p.279). How do we improve agricultural output both in total and per person and/or per acre? Should the land policy concern itself with long run or short run goals or both? Should it be directed to developing land resources to support more people at higher levels of living or should it bring population distribution into line with available land resources? Professor Timmons (45, p.279) says "the demand for land and its products and services is conditioned by both number of people and levels of living". Should land policy in Nigeria concern itself mainly with the improvement in the utilization of the land already in use; or should it seek the control and management of unused land? Would the answers to the above questions serve to remove or correct the land inheritance defects in Nigeria? Would a change in ownership structure (i.e. from communal to some form of group tenure) improve land use and remove defects in land inheritance?
With the above questions in mind we review the defects in Nigeria's land inheritance as presented in the preceding chapter with the view of considering remedial alternatives. The defects in brief are:

1) fragmentation and excessive subdivision in consequence of the desire to give every member of the family his own share of each type of land

2) insecurity of land titles arising from the principle that any member of the family can succeed to any piece of family land not currently in cultivation, i.e. the community itself is the general heir to the rights of any family which dies out, leaves the group, or vacates the land

3) undersized holdings

4) occupational immobility.

It may be necessary to explore the above mentioned defects with regard to a land policy that would not depart so much from the existing policy as to cause discontent and revolt among those whom the policy might directly or indirectly affect.

Fragmentation is the holding of small units of land in various parts while excessive subdivision is the partitioning of a plot among so many heirs that it ceases to be economically workable. In both cases labor and capital cannot optimally combine with land resources to make a profitable farm business. Much time is lost in traveling between parcels of fragmented land and the use of machinery in place of hand labor may not be a wise approach where land has been subjected to excessive subdivision.
land beyond a certain limit, say five acres. Rules so set up may create more evils than those they seek to cure. Land is the cornerstone of the Nigerian agricultural economy and any rules preventing excessive subdivision may tend to destroy the family interest in land. A landless class may be created in a country which is not at present capable of providing other ways of livelihood than agriculture. One-heir holdings may prevent subdivision but how would the heir be able to pay off the other heirs, and what would the other heirs do for living?

A remedy for excessive subdivisions may be found in the land not as yet brought into cultivation. Laws may be enacted to direct the use of unused lands. New and improved farming methods may also be introduced as a part of taking possession of land from unused lands. But it may be argued why are we interested in making no one landless? Is everybody in Nigeria--including lawyers, doctors, and educators--interested in owning a piece of agricultural land? We would definitely be advocating inefficiency in the use of land resources if we assume that every Nigerian should have a piece of agricultural land. The desire to own land will become less and less strong as the non-farm sector continues to expand. Also by expanding and modernizing agriculture and related production, other services like marketing and processing would provide sources of employment for some of those currently engaged in subsistence farming. An attempt to consolidate fragmented and excessively subdivided lands would require that occupiers of the sandwiched lots move to other sites. This points up the need for a resettlement program. The problem of excessive subdivision is not corrected merely by resettling the dispossessed farmers unless appropriate
provisions are made to that effect. Timmons and O'Byrne point out that "maldistribution of land is not successfully corrected through the creation of new units of subsistence agriculture" (46, p.33). Solutions to occupational immobility and insecurity of titles are given under the following proposals.

Improving the Concept of Accession to Land Right

The fact that any occupier of communal land is not certain about who succeeds to his land rights makes him feel insecure of future expectations. Any piece of land vacated by the death or migration of the occupier reverts to the commune for redistribution or for communal grazing of herd and for communal fruit gathering. A piece of land left fallow, to regain its fertility, is sometimes treated in the same way. To prevent such treatment the occupier would have to maintain a continuous cultivation which may be regarded as permanent identification of the occupier with the land so cultivated. This results in erosion and depletion. Also the yield per acre continues to decline since the average Nigerian farm is yet to be introduced to the use of fertilizer. Permanent cultivation of some profitable result is practiced only in some parts of the North where there is cattle to supply manure. Even if the purchase of fertilizer were at the reach of every farmer the insecurity of tenant expectations created by this situation makes the occupier lack the incentive to make investments. Land given as gifts, as pointed out earlier, may be recalled any time the land-owning family feels the need for it. Also land borrowed to alleviate some temporary shortage of land for food crops is held on year to year basis, i.e. only for the production of seasonal crops which take up the land for the
longest period of one year. Under such conditions, the occupier would be interested in making only those improvements that could be exhausted within the term of occupancy. The above description points out that the children of the occupier do not necessarily succeed to his land rights. By restricting ownership to the commune individual investment initiative is thwarted. This also hinders security of title to land and obstructs productive efficiency.

A change in or modification of the communal ownership structure may probably serve as remedial alternative for insecurity and occupational immobility such as are existing in the Nigerian agriculture. This will take the form of either promoting the idea of owner-occupiership in the fee simple sense or establishing a type of group tenure that will not radically depart from the existing system and yet possess the economic outlook which has been lacking. The group tenure may be in form of corporation, cooperative settlement, or communal with a slight limitation put on the extent of its right to acquire and cultivate new lands, i.e. a set proportion (depending on the amount of land available to the group and the number of the members) of land may be asked of the commune to be put in compulsory forest reserve.

**Promoting owner-occupiership**

When economic horizons are limited, long-term investments whether in production equipment, cropping practices, or soil building measures, are sharply curtailed. Even should farmers be willing to increase their long-term investments under conditions of uncertain tenure, they will be limited by the amount of capital they can borrow (47, p.133). Uncertainty of
expectations may be reduced by transferring ownership of the land to the cultivator. Owner generally has greatly lengthened economic horizon. Land inheritance problems are also lessened under owner-occupiership. The heirs directly succeed to the rights of the owner. Ownership of land may be transferred to the cultivator through the enactment of some legislative measures enabling the current occupiers of communal lands assume full ownership while those desiring to farm but not currently occupying a piece of communal land could secure, with government permission, their plots from pieces of unused lands. Such new holdings, to be safe from litigation, must be surveyed and registered. Initial surveying of both used and unused lands may be undertaken by the government. This would enable the government to know how much land is available and how should it be distributed or reserved. Sale of land may be legislated to facilitate individual ownership. The sale may be subject to the approval of the government to ensure recordation of transfer and to guarantee that what is left to the seller, if he is still farming, constitutes an economic unit. Or the ban on sale may be retained while subjecting all transfers to government approval and recordation. The introduction of cash crops into the Nigerian economy has played a great role in promoting the concept of owner-occupiership. It has also established a different type of land inheritance concept, i.e., the direct heirs of the cultivator succeeds to his rights on those plots he left economic trees or crops.

Leases also should be subject to the approval of the government and should be made heritable so as to extend the economic horizon of the cultivator in order that resources may be used most efficiently.
Promoting group tenure

In this section we shall propose different types of group tenure that would modify the land inheritance structures in order to achieve agricultural development.

Communal tenure with government supervision  Let us first consider a form of group tenure in which no change in ownership structure is contemplated, but rather adjustments to reduce uncertainty are made in the economic and social institutions which define the obligations of occupiers and the commune and help to extend the economic horizon. It is assumed that certain kinds of reductions of uncertainty are better accomplished when a group has rights of tenure than when they are invested in an individual. The government may require that while ownership stays communal, certain adjustments could be made on the job. If, for example, a portion of the land now controlled by the commune is required by law to be put in forest reserves—those occupying some scattered plots within the reserve should move out and occupy pieces of land now left fallow—some form of permanent cultivation may develop. The farmer, in order not to suffer from a declining yield, would have to adopt new improvement techniques. This in the long run may help solve some land inheritance problems, i.e., because of the permanency of cultivation the farmer makes investments in land development and improvement which otherwise he would not have made when such artificial scarcity of land was not created. Also because of the permanency of cultivation, the society has learned to identify the occupier with the land and to recognize the right of the children to succeed directly to their deceased father's plot in which the whole family has been
investing. This approach may not be too feasible in the Eastern part of Nigeria where the rural man-land ratio is already high. Probably a re-distribution of population may help to alleviate the problem of rural over-population that the Eastern region is facing. The Western and the Northern regions would fit very well into this proposal because there still exists large tracts of unused land there.

**Government to control and manage the unused lands**  
Another type of group tenure is suggested by Professor Oluwasanmi (48, pp.49-55). He is concerned with the control and management of unused lands, especially in the less densely populated areas of the country where it is still possible to evolve a rational land policy. He contends that since the political function of the chief has been gradually transferred to the popularly elected local government bodies, the chief's role of managing all unused land on behalf of the village community or family group should also pass to the hands of the local government bodies through legislation by the appropriate legislators. The rationale behind this policy proposal is expressed thus:

"The immediate impact of this policy would be to enable local residents of a district to have access to the use of land in any part of the district or province to which they belong. Under the existing system of tenure it is virtually impossible for an enterprising farmer whose village or family lands have been taken up to acquire the use of land outside his immediate group although other villages or families within the same district may have more land than their members can hope to use. Secondly, the local government bodies will be in a position to make a rational plan for the use of land and
ensure that land passes into the hands of genuine farmers and not to speculators. Local authorities will also be able to control any tendency towards the growth of landlordism. Finally the land policy advocated here will make it possible for the public to share in the increased value of land consequent upon general economic development" (48, p.52).

The author admits that the policy proposed here may not solve population problems prevalent in some areas, but it may pave the way to larger inter-group and intra-group transactions involving land. A local government body, possessing the power to lease land and to evict tenant defaulters, would be more tolerant in accommodating a farmer from other region on temporary basis. The courtesy extended to the stranger by the local government body will be more acceptable than the transaction of such nature carried out between individual members. This policy goes beyond family lines and it probably can be tried on national scale, i.e., that local government bodies everywhere in the nation work towards coordinating land availability information and setting up uniform lease terms. This policy, however, does not consider the problem of excessive subdivision. It should include setting up a minimum land holding ceiling. It considers only a maximum ceiling through preventing growth of landlordism. This policy recognizes such aspects of the communal system as ban on sale, and every member being entitled to own land.

**Incorporation** The idea of incorporation is introduced here to solve two main problems, i.e. the problem of mechanization and that of transferring land rights within and between generations. Since mechanization here is intended for increasing acreage rather for saving labor,
agricultural output would definitely increase. Incorporation would reduce the insecurity of tenure found in the communal system and thereby give the operators a broader planning horizon. Incorporation would also take care of the problem of excessive subdivisions of land within the commune by consolidating the existing non-contiguous holdings.

The use of mechanization and technology requires that the employee have some training in farm management and returns to productive factors used on the incorporated farm. It is not easy to get older established farmers to accept new methods. Incorporation would be hard in a society which is largely illiterate and which is characterized by low income and traditional attitudes toward economic pursuit. The handling of stocks and dividends requires some knowledge of bookkeeping on the part of the executive board and an understanding of the marketing of stocks on the part of the stockholders. Financing of the corporation may be facilitated if mechanization progresses slowly, i.e., the use of animal power preceding the use of tractors in the same manner as the use of manure preceding that of commercial fertilizer.

On the communal farm, the occupier is his own master and is not answerable for his economic efficiency to anyone, but on the corporate farm he is answerable to the stockholders who now constitute the employers. This change in status may affect total output, the direction depending upon how the workers assume collective responsibility and how the relationship between the management and the workers progresses. Incorporation, because of the prolonged business horizon, possesses the ability to borrow to expand its operation. It also can provide services such as extension and
research lacking in the communal set-up. On the importance of expanded agricultural services in Africa, Karl Pelzer (49, p.415) recently commented:

"The two great problems in Africa, as in other parts of the tropics, are 1) to develop farming systems which will permit higher yields per unit of land and per man-hour without adverse effects on the soil and 2) to devise effective channels of transmission down to the grass roots of the lesson learned in the research stations".

These two tasks can be taken care of by incorporation through mechanization and research. It is even possible that an increase in the farm income may be achieved through the ability of the corporation to combine a larger stock of capital with labor more efficiently. There are some aspects common to both communally-owned farms and incorporated ones which might facilitate the transition. The corporation is described by Timmons and others (50, p.1) as:

"a legal and economic entity--separate from the individuals who own, manage, and work for it. A corporation has a status similar to that of a person. It is capable of doing business, making contracts, being sued, suing others, borrowing funds and living indefinitely without interruption by change of its owners or officers. Thus the corporation may be considered as a legal person, with a capacity similar in nature to that of an individual operator".

The above description can accurately apply to the commune, which is the owner, manager, and the operator of the communal lands, except that the cultivator in a commune exercises individual right over his crops, while the cultivator in a corporation is only an employee. But the main
difference is in the outlook, i.e., the commune has a rather social outlook while the corporation concerns itself strictly with business. The corporation provides the business incentive which is either weak or completely lacking in the communal system. Let us briefly consider a possible procedure in the transition: the corporation consolidates the fragmented lots now cultivated by a few households within the commune. It proceeds to making it an economic size, i.e. economically feasible by acquiring all the fallow lands among and around those farms currently under cultivation. The members of the household form the labor force and also the stockholders. Land, as held under the communal system, continues to be non-saleable, and any expansion deemed fit by the corporation is negotiated for through the local government--municipal or village. Economic crops such as coffee, rubber, cocoa, existent at the time of incorporation, become stocks of their respective owners on a basis acceptable to all the members of the corporation. At death, retirement, or shift to other business, stock can be transferred as wished or willed by the owner. Where a stockholder die intestate, the community's law of inheritance and distribution may apply.

The management of the corporate farm is similar to the communal type. The members appoint officers, draw a constitution and solicit the support of the local government for the provision of agricultural advisors. The costs of incorporation are accounted for in stocks which carry dividends while the labor supplied by the members is rewarded in wages of whatever kind is agreed upon by the board. An ideal time for incorporation is during the dry season--December to March--when most farmers prepare their fields for the following wet season. The harvesting of most seasonal crops
ends by December which is the time most likely for farmers to accept new ideas especially if the old methods had proved a failure in the previous year. Initial corporations may be located where expansion is possible and at easy reach from the market and repair shop. Corporation farms may serve as demonstration farms to the surrounding community by making available the results of their research and by allowing observation tours on their farms.

The major weakness of the above proposed incorporation is that it does not apply where man-land ratio is already too high. The consolidation of any number of uneconomic holdings may still prove uneconomical if redundant labor is not taken out from the group now sharing the products of the consolidated land. The proposed incorporation would be well adapted in many areas of the Northern Nigeria where unused land is plentiful and there would be room for corporation expansion. However, the attitude of the peasant farmer towards the proposed organization of the farm as business rather than as a way of life must be changed. The corporation lacks the social cohesiveness that is warmly shared in the communal system. It is recognized that a corporate farm is more capable in operating plantations of cocoa, palm trees, rubber or other economic crops than the communal system. The development of these crops is also accompanied by a new interest in land ownership with an insistence on clearly defined boundaries, the qualities which are lacking in a strictly communal society. But it must also be recognized that the impersonal nature of incorporation may cause its own defeat in a society which has always been collective.

**Aiyetoro, a corporation and a communal tenure** An unusual experiment in communal enterprise is in progress in Aiyetoro, a prosperous
A community of about 3,000 people. Aiyetoro is located about 100 miles east of Lagos. Its story is covered in the "Nigeria Magazine", (51, pp.356-386). The first group of settlers arrived there on January 12, 1947. They united their property in May, 1948. Its organization is based on a simple application of practical Christianity. It is not based on dialectic materialism or any other nineteenth-century philosophy but on frankly mystical grounds. It derives its principles from the Biblical teachings—love thy neighbor as thyself; a man who has two coats should give one to a man who has none—and attempts to blend this with the traditional African communal practice. Property is held in common as it is in any monastic establishment. Committees are set up to look after every craft occupation and the issue of consumer goods. It is hypothesized that the faith followed at Aiyetoro is a break-away from the earliest form of Cherubim and Seraphim. The settlers started as fishermen but later included such crafts as weaving, carpentry, food production, etc. They started with a policy of unrelenting prosperity, built their first huts, and carried out a mighty canal project. Even though the community is now prosperous, the old habit of discipline remains. Laziness is not allowed, but the only sanction is the disapproval by the other members. Money is made principally from fishing and an efficient accounting system is kept by the treasurer. There are a communal laundry, dining halls, and other services. New members are constantly joining the organization while only very few ever leave. A group of sixteen elders, men and women, determine how proceeds shall be distributed according to the requirements of the members. Meek concludes that "the original miserable fishing village has thus been transformed into a progressive and prosperous community" (10, p.17).
The organization of Aiyetoro is different from the traditional communal system in that Aiyetoro goes beyond group ownership of land. It embraces a working together of the entire group, and a sharing of the proceeds according to the needs of the members. It is similar to a modern corporation except that it does not deal in stocks. It is a continuing business concern whose decisions are made by a board of elders. It may probably be hypothesized that similar concern could succeed without being based on religious principles.

**Cooperative settlement schemes** In the thinly populated areas of many provinces of the northern and the western parts of Nigeria, there are still large areas of uncultivated land. A well executed farm policy may free these yet uncultivated lands from the problems of tenure and inheritance. A policy of such nature may also help in the redistribution of population. The cooperative settlement scheme may serve both of these purposes and, in addition, serve as a source of employment to young school leavers. It is realized that land settlement requires adequate financial provision of the right kinds both to settle and develop lands, and for the production, marketing and other services after farmers are established. It is also realized that in a country such as Nigeria it is a difficult choice to make when weighing priorities of public spending because of the limited capital to be allocated among many alternative competing ends. The more money that is spent on resettlement, the less there is left to spend on promoting other social measures including health, education and welfare that are necessary to achieve economic development.

From the point of financing, let us visualize what types of farm settlements can be protected from the tenure and inheritance problems.
inherent in the traditional communal system. Let us assume that the government can acquire ownership of both unused communal lands and private lands. Further, let us also assume that we only concern ourselves with the distribution of land from both domains—the unused communal land that the government acquires, we call public domain. Distributing from the public domain would make possible the creation of farm units of economic size without great reorganization of the previously established pattern. It would also open up new alternatives to farmers who otherwise would have been subjected to discontent and poverty through overcrowding. We do not intend here to take lightly the attachment the farmer has to his farm land and homestead. Resettlement involves moving from the previously occupied land and home to a new site for a modern method of farming. The cord of sentiment may often tie a farm owner to his land even though his net returns for the existing unit are less than for other alternatives. This kind of sentiment prevents consolidation and expansion of agricultural units. But the distribution of land from private domain does not involve the creation of new communities or the building of new roads, schools, and the extension of other government services. Also, because the resources are already known, there would be less uncertainty in previously settled areas. Even though the latter—redistributing from private domain—looks easier considering financing, it would be difficult to enforce new uses recommended to the farmer. A change in environment may probably influence the easiness in the changing of attitude towards making agriculture an economic enterprise.

To guide and direct the use and transfer of the land intended for distribution, occupancy may be made conditional through various tenure
provisions. The nature of such conditional occupancy is well expressed by John Galbraith and Walter Morton (51, p.498) thus:

"The land distribution agency can retain the ownership of the land and rent it out to farmers. Another method would postpone granting of full ownership rights to the farmer until after a certain test period. Farmers may be prohibited from selling, leasing, mortgaging, or dividing their land, and their uses of the land may remain subject to supervision. A useful provision would reserve for the land distribution agency the right of first purchase if the new owner wants to sell his land".

In Nigeria, activities necessary to prepare land for redistribution may include such items as clearing the land, malaria control, providing transportation, building roads and schools, draining or irrigating land, and supplying credit. A land distribution agency would need be set up which would acquire and distribute the land. This agency should also advise and supervise the farmers in order that the settlers can pay back initial loans and be able to continue an efficient farm unit.

Consider settlements which are cooperative oriented. But how large should each settlement be to operate efficiently and cooperatively? Should there be large settlements which might draw farmers from a radius of say, 20 miles? Should they be small settlements close to the villages of the would-be settlers? Or should the approach be that of helping individuals to introduce improved methods while engaged on family farms? The problem here is in achieving low-cost changes within the traditional farming patterns and, in addition, in demonstrating that improved agriculture may be lucrative as alternative employments. The next problem is in selecting
settlers. Should they be from among the established farmers or primary school graduates? The established farmers are generally illiterate and may prove to be reluctant to accept new methods. Also the primary school graduates, who have always aspired to civil service or city employments, may feel defeated by going back to the farm unless the settlement offers some future for them. The problem of the school leavers can be solved by creating cooperative settlements. The settlers should undergo some training in farming methods, the use of fertilizers, etc. Another consideration should be in the nature of farming that would keep the settlers fully employed. Should this be crop-livestock arrangement or should it be plantation type of agriculture? Large plantations require many workers at the beginning, during the planting period, but after that not many for maintenance. The crop-livestock could be a rational approach in that it would not only provide the settler with a full time employment, but would also supply the balanced nutrition most Nigerians need. The problems of marketing, machinery use, agricultural extension and credit services may be solved through cooperative settlements. The cooperative settlements may also device a land inheritance process which is consistent with agricultural development.

In Western Nigeria there are Farm Institutes for the training of settlers. Each can accommodate 200 students. A two-year curriculum is followed in general agricultural science, animal husbandry, and crops grown in the district. The settlers are taught principles of cooperative organization and community development. The first two years after the training are spent on the settlement site, working and training communally. The settlers are paid subsistence wage. During the next three to five years,
they are gradually allocated their land holdings and are allowed to bring their wives to the farms. When the farms come into full production, the settlers become independent and begin to pay back their loan to the government. It is realized that a scheme of this nature would benefit only a few thousand families and would cost considerably per settler, but the proponents maintain that the goals are 1) to bring about rural progress and 2) to offer a partial solution to the problem of unemployment of primary school leavers (53, p.540). It is too early to assess the success of farm settlement in Nigeria, but one can say that it is a short-run solution only. In the first place, a more intensified extension work would have cost less and would have reached more people. It also would bear fruits much quicker. Adoption of low-cost improvements would be at the reach of the farmers, thereby providing an on-the-job training and demonstration effect. In the second place, land is not reproducible and would definitely be all occupied some years to come. But it may be argued that as Nigeria becomes more and more industrialized, the desire to own farm land would decline. Also the relative contribution of land to agricultural output would decline as more capital is used in form of fertilizer, seeds, better breeds, etc. for modern agriculture.

In Nigeria's eastern region the approach to farm settlement is a bit different from that in the western region. Here the settlers are experienced farmers assisted by trained technicians. Villages organize themselves into multipurpose cooperatives as the Israeli Moshav (18, p.370). Labor is provided by the families of the settlers while the government helps with extension. It may be recalled here that due to the rural over-population of the eastern region, there are not likely to be large enough
sites the settlers can be moved to. This is where the Federal Government could help by opening up large tracts of uncultivated land in the north to the excess farm population of the east.

Evaluation of the Proposals

The first part of the proposed policy assumes that the goal of the society is the promotion of owner-operatorship. This is not assumed only because most land reforms do assume it. Rather it is assumed because at present only about 10 percent of Nigeria's arable land is being cultivated. Land therefore does not appear to be scarce yet, if it is properly distributed. It is realized that land ownership or owner-operatorship is not a panacea of all the agricultural problems. However, it opens the way to improvement in land use by eliminating a great many problems arising from insecure tenure and poor land inheritance arrangements.

But the second part of the proposed policy points out that group tenure, if managed and controlled properly, can bring as much satisfaction to the participant as the individual ownership would to the operator. However, caution must be taken to protect the rights of the individuals within the group tenure, i.e. to help the individual participant enjoy the benefits accruing to the group in relation to the contribution he has made.
SUMMARY AND CONCLUSIONS

This study was undertaken 1) to identify and appraise the major characteristics of land inheritance structures in relation to agricultural and national development, and 2) to suggest alternatives whereby the land inheritance structures can be modified and improved in order to achieve our goal of increase in productivity.

Basic Elements of Land Inheritance Within the Communal System

The major defects in land inheritance dealt with in this study are: 1) fragmentation resulting in non-contiguous holdings, 2) undersized holdings, 3) defective land titles which impair security of expectations and 4) occupational immobility.

An understanding of the nature of the tribal communal system is necessary to appreciate why land inheritance within the system is said to be characterized by the above defects.

The communal system appears to be a survival rather than a commercial venture. Every member of the commune has the right to acquire land within the communal boundary. The attitude of the communal system towards land inheritance, however, is a major obstacle to improved land use. In the commune any member of the group, not necessarily the direct heir to the deceased, may succeed to the land vacated by the death of the occupier. This, as we can quickly observe, dampens the incentive to make long-term investments on the land. It also prevents the occupier or his heir apparent from obtaining loan from the local agencies, especially if we assume that both the lender and the borrower are equally interested in the repayment of the loan.
Thus the procurement of credit is in part obstructed by the insecurity of titles, a very important factor in the Nigerian land tenure and land inheritance. Land cannot be used as security for loan because the lender cannot sell the land to recover his loan in case of default in payment. The decision to improve or not to improve land use is therefore dependent partly on the security of title the occupier has and partly on the credit he can procure on the basis of equity consideration. We can observe that the use of credit is being controlled by both internal and external rationing.

The communal system, and particularly its attitude towards land inheritance becomes recognized as a problem because: 1) man-land ratio is uneven throughout the cultivable areas of the country and this gives rise to the suggestion that many rural people are not given equal access to the use of land since one can only inherit land within his commune; 2) the introduction of the cash crops such as cocoa, rubber, etc. lends a money value to the activities within the commune; 3) the exposure to foreign legal systems (particularly English laws) brings new concepts of ownership and inheritance; and 4) the expanding population makes it necessary for Nigeria to find a way to expand its total agricultural output. The total output can be increased in two ways, i.e., by intensification and extensification. Both methods require additional capital which we shall call credit, and extensification requires both capital and an access to larger plots. In brief an improvement in the land inheritance structure becomes necessary.
Approach to the Study

From observing the setting of the communal system and the nature of the defects produced by the land inheritance structures we guided the study with the following hypotheses:

1) Agriculture is not fulfilling its role in the Nigerian economy, the role being that of increasing per capita productivity and income as determined by relative resource productivity, factor prices, product prices, and the state of technology.

2) Inoptimal (i.e. inadequate and inefficient) land use and labor immobility contribute to the relatively deficient role played by agriculture. Fragmented, non-contiguous, and undersized holdings are elements of inoptimal land use as is the lack of a basis for effective provision and productive use of credit.

3) These defective elements in the agricultural sector arise in part from defects in land inheritance structures, especially as they exist under the communal land holding system of the country.

4) Defects in land inheritance can be remedied through appropriate educational, legislative, administrative and judicial measures. For example, minimum and maximum limits of land holdings may be set by the legislature. Improved land inheritance may be introduced through individual ownership, cooperatives and incorporation.

We have not been able to test the foregoing hypotheses with statistical data. However, we have analyzed and examined the defects in the land inheritance structures exhaustively enough to establish the validity of the hypotheses.
We viewed a few economic growth concepts that may be applicable to structural change within the agricultural sector of the Nigerian economy. We found Hirschman's concept adaptable especially because of its emphasis on "chain reaction" in the process of economic development.

We went into the tenure and inheritance problems and cited a few cases to show the position of the courts in interpreting the customary laws with respect to agricultural land.

We suggested several ways by which land inheritance may be modified or improved. Among the alternatives suggested were: 1) individual ownership, 2) cooperatives, 3) incorporation, and 4) resettlement schemes. We also pointed out the social and economic costs involved in these alternatives. In addition we emphasized the role of credit in this process of transition.

In the Appendix we propose a two-sector model whose main aim is to design optimal growth paths for income Y, investment I, and consumption C for the Nigerian economy. However, the lack of data on the marginal productivity of both labor and investment prevents a graphical presentation of the optimal paths. The model cannot be applied until we are able to provide data for its interpretation. Hence a large part of this study is of necessity qualitative and descriptive. Certain quantitative measures are applied where data are available. However, the model does specify the kinds and quantities of data needed and thus becomes a prerequisite to further research.

The following are the findings from our study:

Table 1 shows that only 10 percent of the cultivable land is in use. Other things being equal, there is definitely room for expansion of land use and consequently total agricultural output and income.
The communal society places a ban on the sale of land, and provides no compensation for the members who move out of their family land. This discourages occupational mobility while it breeds excessive subdivisions as the size of family grows on a given area of land. It also impedes the procurement and use of credit.

The family exercises control on what types of crops should be planted on family land. Under such circumstances it is possible that land is not being put to the highest and best use because the family may not have the extension education necessary for such advice.

Poverty and small scale of operation limit the peasant to the use of outdated techniques and simple hand tools. But this situation can be improved partly by making credit available and by eliminating or modifying the structural defects.

Suggestions for Improvements in Inheritance Structures

A redefinition of "family" to suit the concept of individual ownership is needed. By this we mean that the present nature of extended family which embraces distant relations does not give the individual the incentive to make use of its potential to the fullest. The individual member of such family depends upon the other members for his support. The intergeneration transfer process will be easier through individual ownership.

Education is needed to promote and encourage proper registration of land in order to minimize insecurity of titles. Appropriate legislations should be enacted to enforce compliance. Such educational and legislative measures will indirectly aid the provision and the use of credit. Administrative measures such as credit supervision, extension research, and
cooperative settlements will also facilitate the use of credit to acquire and adopt improved tools and techniques. Education is particularly needed to appreciate and apply those remedies we have proposed, especially incorporation and cooperatives.

Land sale should be encouraged because it promotes occupational mobility. It helps the enterprising young farmer to relinquish his less productive or undersized holding for a more productive or adequate size of holding. Proper registration is necessary to avoid duplication of sales.

Appropriate legislation must be enacted to set minimum and maximum ceilings of holdings. By such legislation the problems of fragmentation and land hoarding can be prevented. In setting these ceilings, however, consideration must be given to those factors that affect or influence the optimum size of holding, i.e. factors such as 1) the man-land ratio, 2) the types of crops to be produced, 3) the state of technology, 4) the government declared targets, and 5) the cultivator's capability to manage and operate farm.

Suggestions for Further Study

It may be emphasized that a study of this nature, though it lacks adequate and up-to-date information on many of the subjects discussed, serves as a basis for further inquiry into the Nigerian land inheritance problems and methods of approaching them. An on-the-site study will probably provide more information than we think is available. Each of the four hypotheses developed could probably be made future study topics.

The analysis in this study is necessarily based largely upon library research. Our main problem has been lack of adequate data. In order to
prove that land inheritance defects do inhibit economic growth, a case study approach may be necessary. By case study is meant a situation in which we have two communities where stated defects in land inheritance are present in one while the other is free from such defects and we compare information on 1) farm sizes, 2) tools and techniques used for farming, 3) ease of acquiring and frequency of use of credit, 4) output per acre and per man, and 5) per capita income.

Studies may be made of the different types of land inheritance structures that exist in different parts of Nigeria. From such studies the structures that appear to be most compatible with agricultural development may be encouraged. The same may be done to credit arrangements in different parts of the country. Studies are needed to determine the optimum size of holding, the method of introducing better techniques, the differences between the structural defects, and the link between the defects and the targets.

The method of obtaining information, at least for the meantime, should not be through the use of questionnaire by mail since a great many of the farmers are illiterate. Instead, personal interviews may prove useful transition. We hope we have contributed to the study of improvements in land tenure and land inheritance which may be regarded as a precondition of agricultural development. Today's land policies have implications for the present and future use of the land; therefore, such policies must be made with foresight and concern. It is appropriate to close with the words of Professor Timmons (45, p.287) "since land policies involve current action with expected future benefit, the necessity for foresight exercised today
in behalf of increasing the certainty of expected benefits in the future becomes obvious".
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I would like to note however that the responsibility for any errors or shortcomings is wholly mine.
A Proposed Model

Elements of the model

Tinbergen defines an economic growth model as "a system of relations, describing, in an approximate way, the adaptation process of an economy" (16, p.6). Hence we shall construct by appropriate assumptions, a framework of relations between the different economic variables which are relevant to our problem. Our model is described in a set of simultaneous "structural" equations. In this set of equations we have two kinds of variables: 1) endogenous or economic variables, and 2) exogenous or data. The endogenous variables are determined within the system thereby becoming the subject of economic analysis and "have to be explained through the equations of the system, by the data" (54, p.18). The exogenous variables are determined outside the system; they are non-economic and are supposed to be given to the economist for analysis. The goals or targets of the society are examples of the endogenous variables while the policy instruments used to achieve the goals are considered as exogenous variables.

We choose to construct a two-sector model, i.e. one sector is agriculture and the other is non-agriculture. Schultz describes the agricultural sector of an economy as that which "produces a particular class of products, products that come mainly from plants and animals, including poultry. Some of these products consist of fibers and other raw materials used by industry. But most are used ultimately for food" (4, p.5). The agricultural sector here, however, is considered to embrace the occupations of fishing

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9 The author wishes to express his thanks to Professor J. K. Sengupta and Mr. T. K. Kumar for assistance in developing the model appearing here.
and forestry and exclude such farming as plantation type. Peasant agriculture is mainly what is being analyzed. The non-agricultural sector in most underdeveloped countries is not as important as the agricultural sector. The situation is similar in Nigeria where the agricultural population is about 80 percent of the entire population. We limit ourselves to a two-sector model because we are interested in constructing a system with manageable and intelligible relations. With a micro-economic study the number of relations involved will be too large and the system would get very complex.

The model about to be presented concerns a closed economy. It is not that we are unaware of the need for and the importance of international trade. Rather this position is taken because we are dealing with what is largely a subsistence economy—especially the peasant agriculture. The people of Nigeria are or should be more concerned with raising their level of living through higher income, better nutrition and improved medical facilities. In the subsistence agriculture, the export crops produced have generally been meant to supply just enough money for the peasant to pay his income tax and, if anything left over, to buy a few consumer goods. Furthermore, food processing industries that are recently being established should be able to supply an effective demand for many of the farm products that used to be exported.

At least for the initial stage of economic development we assume the population growth rate in agriculture to be equal to that in non-agriculture. This is not difficult to justify since both sectors are characterized by high birth rates and high death rates. Also the lack of relevant data will make such assumption tenable.
We must note here that both sectors are part of an independent system represented by the country's economy; what a sector does is not fully attributable to it but is contingent upon what happens in the other sector (and perhaps also outside the country).

With the above as our background we proceed to present a formal analysis of our model:

The economy is broadly divided into two sectors, i.e. agriculture and non-agriculture. We shall use subscript "a" to denote agricultural and subscript "b" to denote non-agricultural sector where "N" is population.

1) Total population of the economy is equal to the sum of agricultural and non-agricultural populations.
   \[ N = N_a + N_b \]

2) Total income is equal to the sum of the incomes in agriculture and non-agricultural.
   \[ Y = Y_a + Y_b \]

3) The production function for agriculture.
   \[ Y_a = B_a K_a + \alpha_a N_a \]

Where \( B_a \) equals marginal productivity of "K" in the agricultural sector. K is a resource combination. It comprises land and capital more so of land than of capital as would be expected of resource composition in underdeveloped agriculture. If we assume that the best lands are cultivated first, and progressively cultivating the less productive lands, our \( B_a \) would run into a problem of
declining marginal productivity unless sufficient capital is employed in the successive combination to offset the decline and generate an increase.

Where $\Theta_a$ equals marginal productivity of "N" in the agricultural sector. Although we recognize unemployment and particularly disguised unemployment in agriculture, it is not possible to estimate what percentage of rural people in Nigeria are actively engaged in agriculture. We also realize that it is characteristic of underdeveloped countries to have a high percentage of the population fall below ten years of age, but the practice of child labor also exists in these countries, thereby making it difficult to estimate. We shall therefore assume that the rural population constitutes the agricultural labor force.

4) From Equation 3 and $\Delta K_a = I_a$, we get

$$\Delta Y_a = B_a I_a + \Theta_a \Delta N_a$$

i.e. a change in agricultural income is due partly to change in "K" and partly to change in population.

5) The production function in the non-agricultural sector

$$Y_b = B_b K_b + \Theta_b N_b$$

$B_b$ = marginal productivity of "K" in non-agriculture. The resource combination "K" here is more so of capital than it is of land. $\Theta_b$ = marginal productivity of population in non-agriculture.
\( N_b = \text{population in labor force in non-agriculture} \)

6) From Equation 5 and \( K_b = I_b \), we get

\[
Y_b = B_b I_b + b N_b
\]

i.e. change in non-agricultural income is attributed to investment and change in population

7) Change in total income according to the two production functions, i.e. the sum of Equations 4 and 6

\[
Y = Y_a + Y_b = B_a I_a + B_b I_b + a N_a + b N_b
\]

Let \( I_a = p_a I; I_b = p_b I; p_a + p_b = 1 \)

\( p_a = \text{proportion of total investment which goes to agriculture} \)

\( p_b = \text{proportion of total investment which goes to non-agriculture} \)

\( I = \text{investment} \)

Let \( \Delta N_a = \mu_a \Delta N; \Delta N_b = \mu_b N \) where \( \mu_a = \text{the proportion of total population engaged in agriculture and } \mu_b = \text{the proportion engaged in non-agriculture} \)

8) Then \( \Delta Y = q I + s \Delta N \)

where \( q = B_a p_a + B_b p_b = \text{aggregate marginal productivity of investment} \) and \( s = \Theta_a \mu_a + \Theta_b \mu_b = \text{aggregate marginal productivity of labor} \)
9) Solve for $I$

$$I = \frac{\Delta Y - s\Delta N}{q}$$

Now let $\frac{\Delta N}{N} = r$, i.e. rate of growth of population and let $sr = \alpha$

10) Therefore $I = \frac{\Delta Y - \alpha N}{q}$

11) Consumption function

$$C = Y - I = Y - \frac{\Delta Y - \alpha N}{q}$$

where $c = \text{consumption}$

12) We have been able to define $Y$, $C$, and $I$. We need to have a policy criterion function which the policy maker is interested in optimizing. We are interested in constructing optimality paths for $Y$, $C$, and $I$ that will lead to a higher level of living for the Nigerian population. We therefore take the following criterion function which is a cumulative sum of a monotonic function of the excess of per capita consumption over the subsistence level, i.e. we maximize cumulative per capita consumption over a fixed horizon.

$$U = \int_0^T \left( \log \frac{C}{N} - C_0 \right) \, dt$$

where $(0,T)$ is the planning horizon and $C_0 = \text{per capita minimum subsistence level of consumption}$
13) Using $C$ as it is in Equation 11 we get

$$U = \int_0^T \log \left[ \frac{Y - \Delta Y - \alpha N}{N} - C_0 \right] dt$$

Equations 14 through 27 describe the process of arriving at the solutions.

14) Let $X = Y - \frac{\Delta Y - \alpha N}{qN} - C_0 = Y - \frac{1}{qN} (\Delta Y - \alpha N) - C_0$

Then the criterion function takes the simple form

15) $U = \int_0^T \log X dt$

We suppose that the planning horizon $(0, T)$ is given or predetermined so that the end points of the interval are fixed and not variable. The problem is a little complicated if the end points themselves are variable. Now the problem is to determine the growth paths (time functions) for resource combination accumulation $K_t$, consumption $C_k$, and national income $Y_t$ which maximize the policy maker's criterion function, $U$ which is defined above. This problem is well known to mathematicians as the "problem of Lagrange" of calculus of variations.

16) The Lagrange Problem: choose $Y_t$ which maximizes

$$U = \int_0^T F(Y, Y) dt$$

where $F = \log X$ and $Y = \Delta Y$

The solution to this problem is given by two conditions, one of which is the necessary condition and the other is sufficient for
U to be a maximum.

The necessary condition is given by the following differential equation, known as the Euler-Lagrange differential equation:

\[
17) \frac{\partial^2 F}{\partial Y^2} - \frac{d}{dt} \frac{\partial F}{\partial Y} = 0
\]

The sufficient condition is given by the following inequality known as the Legendre Condition

\[
18) \frac{\partial^2 F}{\partial Y^2} < 0
\]

Although these two conditions are necessary and sufficient, they do not necessarily ensure an absolute maximum for U. But we assume that the solution given by the Euler-Lagrange differential equation satisfies both the Legendre condition mentioned above and the Weierstrass condition which ensures an absolute maximum.

The Euler-Lagrange differential equation in our problem takes the form

\[
19) \frac{\partial F}{\partial Y} = \frac{\partial F}{\partial X} \frac{\partial X}{\partial Y} = \frac{d}{dt} \frac{\partial F}{\partial Y} = \frac{d}{dt} \frac{\partial F}{\partial X} \frac{\partial X}{\partial Y}
\]

where \( F = \log \)

The above equation takes the form

\[
20) \frac{1}{X} \cdot \frac{1}{N} = - \frac{1}{q} \frac{d}{dt} \left[ \frac{1}{XN} \right]
\]

noting that
21) Equation 20 could be reduced to

\[ \frac{1}{X} \cdot \frac{1}{N} = -\frac{1}{q} \left( \frac{x}{X^2} \frac{1}{N} - \frac{N}{N^2 X} \right) \]

where \( X = \frac{dX}{dt} \) and \( N = \frac{dN}{dt} \)

\[ \frac{1}{X} \cdot \frac{1}{N} \frac{1}{qXN} \left[ \frac{\dot{X}}{X} + \frac{N}{N} \right] \frac{\dot{X}}{X} = q - r \]

whose solution can be written as

22) \( X = X_0 e^{(q - r)t} \)

\[ X = \frac{C}{N} - C_0 = \frac{Y}{N} - \frac{Y_{\infty} N}{qN} = C_0 = X_0 e^{(q-r)t} \]

23) Multiply by \( N \)

\[ \dot{Y} - \frac{\dot{Y} \alpha N}{q} - C_0 N = X_0 Ne^{(q-r)t} \]

Multiply by \(-q\)

24) \(-qY + Y = \alpha N - N C_0 q - X_0 N q e^{(q-r)t} \)

Equation 24 can be put in the following Bernoulli form:

25) \( \dot{Y} - qY = \alpha N_0 e^{rt} - N_0 C_0 q e^{rt} - X_0 N_0 q e^{qt} \)

noting that \( N = N_0 e^{rt} \)
The solution for Equation 25 can be obtained in the following manner by using $e^{-qt}$ as an integrating factor (i.e. multiplying both sides by $e^{-qt}$)

26) \[
\frac{d}{dt} \left( e^{-qt} \right) = \alpha N_0 e^{(r-q)t} - N_0 C_0 q e^{(r-q)t} - X_0 N_0 q =
\]

\[
N_0 (\alpha - C_0 q) e^{(r-q)t} - X_0 N_0 q
\]

Integrating the complete differential equation, we get

27) \[
e^{-qt} Y = (A - X_0 N_0 qt) + \frac{N_0}{(r-q)} (\alpha - C_0 q) e^{(r-q)t}
\]

where $A$ is an arbitrary constant to be determined from the initial conditions. Thus we have the following optimal path for the national income $Y$:

28) \[
Y = (A - X_0 N_0 qt) e^{qt} + \frac{N_0}{(r-q)} (\alpha - C_0 q) e^{rt}
\]

From Equation 28 we can derive the optimal path for the national income per capita

29) \[
y = \frac{Y}{N} = \frac{(A - X_0 N_0 qt)}{N_0} e^{(q-r)t} + \frac{1}{(r-q)} (\alpha - C_0 q)
\]

The optimal "K" accumulation path could be derived from Equation 28 noting that

$Y = qK + sN$

where $q$ and $s$ are given under Equation 8. Thus we have the following optimal "K" accumulation path
30) \[ K = \frac{(A - X_0 N_0)}{q} e^{qt} + \frac{N_0}{(r-q)} \frac{(\alpha - C_0)}{q} - sN_0e^{rt} \]

The difference between 30 and \( (K-K_{t-1}) \) gives the optimal consumption path.

**Its Strength and Limitation**

**Strength**

A central problem in economic development, according to Lewis (55, p.155) is "to understand the process by which a community which was previously saving and investing 4 or 5 percent of national income or less, converts itself into an economy where voluntary saving is running at about 12 to 15 percent of national income or more". Our model is designed to show the optimal paths for income, investment, and consumption. The policy maker is free to select a fixed welfare function and adjust his variables to achieve his goal. One interesting aspect of a two-sector model of this type that we built is that it attempts to show the contrast between agriculture, a relatively declining sector, and non-agriculture, a relatively growing sector. The subsistence sector of the economy is currently not using reproducible capital, and output per head is low. Our model seeks to modernize agriculture by removing the basic obstacles in land tenure and land inheritance. It also seeks to simultaneously develop the non-agriculture sector in order that this sector may be capable of absorbing the surplus labor present in the subsistence sector. The results of such a macro-economic model may be used as a general background to judge any results of detailed planning.
We must recognize that formulae cannot tell all about economic policy. Economic policy deals with aspects of reality which may not concern themselves with economic viewpoints: such aspects as institutional, technical, juridical, and psychological. Our model takes this into consideration by attempting to raise $B_a$, the productivity of investment in agriculture. The model also leaves the policy maker to decide what proportion of total investment should go into agriculture or non-agriculture, i.e., to decide the values of $p_a$ and $p_b$. We assume here that the policy maker takes those non-economic aspects into consideration when attaching values to $p_a$ and $p_b$.

Although this model assumes constant marginal productivity of resource combination ($K$) and of labor ($N$), it must be explained that the productivity coefficient used in the planning period is not to be used throughout the subsequent periods. The investments which are injected during the initial stage of development are supposed to alter the productivity structure. Certainly the replacement of hand tools with animal-driven equipment not only changes the productivity of labor but also that of land. We may then ask the question: What are the realistic productivity coefficients at a particular phase of development? We should take the coefficient that serves as an average of the short period of planning which may be 5 or 10 years. The reason for taking the average is thus illustrated: a rise in food and drug consumption by the people of the United States may not raise the efficiency of labor. It may even lower it. But such a rise in consumption in Nigeria would definitely combat diseases and thereby help the cultivator save many man-days that he otherwise would have spent in sickness.
Our concept of increased productivity has the following as its supporting assumptions:

1) that agriculture enjoy especially favorable prices

2) that the growth of one segment is not at the expense of the other segments, so that the net contribution by the expansion of the favored segment would not be nullified

3) that population growth rate is less than the agriculture's growth rate.

Suppose $B_a$ rises faster in agriculture than $B_b$ does in non-agriculture, investment should then be made more in agriculture than in non-agriculture because we are interested in optimum allocation of resources and raising $q$, the aggregative productivity of investment.

Limitations

Increase in productivity is not possible at a short notice. It cannot be achieved instantaneously just by changing the tools the cultivator uses and giving him more land to cultivate. Efficiency increase is a slow process.

Land is limited in area. Therefore new land cannot continue to be brought into cultivation indefinitely. We cannot always use acreage expansion as policy instrument. Also a removal of the defects in land inheritance takes place only once. In the long run technological improvements would play an increasing role in the land use process in order to produce the food and fiber necessary for the upkeep of the population. This implies that as agriculture develops the composition of our parameter "$K$" (resource combination) will include larger and larger ratio of capital to
land. Our model does not show how this transition from land-intensive to capital-intensive resource combination takes place. Technology is not explicitly considered. It may be desirable to break investment in agriculture into technological and non-technological groups, i.e. technological group including mechanization, improved seeds, breeds, and feeds, etc., while non-technological includes improvement in land tenure and land inheritance, extension education, etc.

Price changes are not considered in our model. This is not a realistic approach especially when we take into account the low elasticity of demand for agricultural products. An increase in agricultural productivity may cause the nation to be poorer unless there is an effective demand for the excess produced. Production should correspond with demand.

This two-sector model is an abstraction. It does not consider the complimentarities that exist, particularly in the non-agriculture sector.

We have studied long-term trends with short-term tools, i.e., $B_a$ and $B_b$ should be considered as functions of time.

The lack of adequate information concerning the pattern of growth in the past and the structural changes that the economy has experienced, if any, makes it difficult to make projections.

**Application**

The policy interpretation of this model may be made to follow Tinbergen approach (16) in terms of targets, irrelevant variables, instruments, and data.

Target $Y$ may be fixed or flexible. The policy maker may want a set quantity of output or amount of national income at a set date. This is a
fixed target. But if he wants maximum output or national income, it becomes a flexible target. If we make \( Y \) our target, \( C \) and \( I \) will then be regarded as our irrelevant variables, i.e. the side effects. Our instruments consist of \( p_a, p_b, \) and \( \psi_a, \psi_b \). These instruments have to be chosen such that \( Y \) is maximum. \( p_a \) and \( p_b \) are the proportions of total investment allocated to agriculture and non-agriculture respectively. When one is fixed the other is automatically fixed because \( p_a + p_b = 1 \). The growth of \( Y \) depends on the distribution of investment in the two sectors which grow at different rates. \( \psi_a \) and \( \psi_b \) are the proportions of population engaged in agriculture and non-agriculture respectively. These parameters are used to measure the rate of migration from agriculture to non-agriculture. The data are \( B_a, B_b, \) and \( \Theta_a, \Theta_b \) and \( N, I, \) and \( r \) are exogenously given. \( r \) is the rate of population growth. \( B_a, B_b \) are marginal productivity of investment in agriculture and non-agriculture while \( \Theta_a, \Theta_b \) are marginal productivity of labor in agriculture and non-agriculture respectively.

The growth path, i.e. the optimal path for \( Y \), depends on \( q \) and \( \alpha \).

\[
q = B_a p_a + B_b p_b \quad \text{(as given under Equation 8)}
\]

\[
\alpha = sr = (\Theta_a \psi_a + \Theta_b \psi_b)
\]

\( q \) and \( \alpha \) depend on \( p_a, p_b, \psi_a, \psi_b \) assuming other coefficients to be given constants during the short period of planning. To maximize \( q \) with fixed coefficients \( B_a \) and \( B_b \), the optimal allocation of \( p_a, p_b \) is given by

\[
p_a = \frac{B_a}{B_a + B_b} \quad ; \quad p_b = \frac{B_b}{B_a + B_b}
\]
One can also consider the allocation parameters $p_a$, $p_b$, to be given constants and find out measures to change $B_a$ and $B_b$ so as to maximize $q$.

Data Needs (identification of data)

We shall need information on the following:

$N$: total population

$\Theta_a$: marginal productivity of labor in agriculture

$\Theta_b$: marginal productivity of labor in non-agriculture

$r$: rate of growth of population

$I$: total investment

$B_a$: marginal productivity of investment in agriculture

$B_b$: marginal productivity of investment in non-agriculture.

Data availability

It is possible to obtain figures on total population, the rate of growth of population, and total investment.

Additional data

It is doubtful that we get figures on marginal productivity of labor in either agriculture or non-agriculture. The same is true of those on marginal productivity of investment either in agriculture or in non-agriculture.

Fitting data to model

We can illustrate this by our optimal income growth path equation. We use Equation 28 as an example.

$$Y = (A - X) (\alpha N_0 q^t) e^{qt} + \frac{N_o}{r - q} (\alpha - C_0 q) e^{rt}$$

$A$ and $\alpha$ are arbitrary constants to be determined by the boundary conditions, (fixing $Y(0)$, $Y(t)$). We know that $N_o = N_0 e^{rt}$. By raising $q$
we automatically raise \( Y \).

We then calculate \( Y_t, Y_{(1)}, Y_{(2)} \ldots Y_{(5)} \) and plot the graph. The graph may help us to compare the actual with the optimal path of income growth.

Modification in Model

The two-sector model is by itself highly aggregated. The growth in two sectors will depend on how the investment is distributed not only between sectors but also within sectors. The sectors need to be further disaggregated.

We need to introduce external economies, i.e. the impact the investment in one sector may have on the output in the other sector. The interdependence of sectors should be shown.

What we have constructed is a model of a closed system. We can introduce an open economy where export and import will become endogenous variables.