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NICHOLAS NYANGIRA

RELATIVE MODERNIZATION AND PUBLIC RESOURCE
ALLOCATION IN KENYA: A COMPARATIVE ANALYSIS

by

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DISSERTATION

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the degree of Doctor of Philosophy in Political Science in
the Graduate School of Syracuse University, ~~1971~~, 1972

August

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PREFACE

This study represents an effort to investigate the determinants of public policy outcomes in the new nations using data drawn from Kenya. The question asked throughout the study is: What variables significantly influence public policy outcomes? In an attempt to answer this question this study holds that two sets of variables (modernization and political system) determine public policy outcomes in the new nations. Modernization variables are the independent variables. They are causally related to political system variables and public policy outcomes. The political system variables on the other hand are intervening variables, mediating the relationship between modernization and public policy outcomes (dependent variables).

The approach is comparative, i.e. comparison is made of variation in levels of modernization at the district, division, village and individual levels. Observed variation in levels of modernization are then related to public policy outcomes. The objectives are: (a) to generalize the findings to the rest of Kenya, and (b) to make inferences to the Third World. Thus, a number of hypotheses are tested in an attempt to isolate relationships that are significant.

I am greatly indebted to Professor Patrick J. McGowan who apart from reading and critiquing the first draft pro-

vided me with intellectual inspiration. His advice and comments guided me in writing the final draft. I also wish to record my indebtedness to Professors Robert N. Kearney, Ronald H. McDonald and Thomas E. Patterson for their comments on the same draft.

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INTRODUCTION

In the past two decades, the literature on aspects of modernization of the new nations of Africa and Asia has grown at an amazing rate. Few scholars can keep pace with this literature. In the area of public policy most of the literature has made use of the case study method. Many scholars would agree, however, that the study of public policy in the new nations has not yet developed: (a) sophisticated typologies¹ that may be used to order data, and (b) systematic approaches that lead to meaningful comparative analysis of data both cross-sectionally and longitudinally. The theory of public policy can hardly be expected to develop unless abstract typologies with greater generality are conceived. It is not our objective in this study to develop such a typology. Our concern is with the second problem, that of engaging in a systematic analysis of public policy outcomes in one of the new nations.

An attempt to develop a systematic analysis of public policy outcomes requires that the individual scholar or researcher start out by operationalizing his concepts. Thus,

¹In the contemporary world, few social systems could be classified as traditional. Fred Riggs' Administration in Developing Countries: The Theory of Prismatic Society (Boston: Houghton Mifflin Co., 1964) clearly documents the weakness of the dichotomous typological approach to the study of social change.

in the following pages, we attempt to relate the concept of relative modernization to public policy outcomes. We believe that the concept of relative modernization is operational. Secondly, for a systematic analysis of public policy outcomes to yield knowledge and understanding, scholars will have to specify clearly the variables that they are working with. For example, if per capita income covaries with expenditure on education, how does the introduction of a third variable, e.g. voter turnout affect the former relationship? Thirdly, a systematic study of policy outcomes may lead to better prescription in the future. In other words, the understanding of how various variables interact may lead to better policy formulation.

It is important to point out that the approach to public policy that we have in mind has been taken seriously by scholars who study policy outcomes in the American states. These scholars have demonstrated through systematic analysis of socio-economic variables, political system variables, and public policy outcomes that the long held notion that public policy outcomes are purely the making of public officials may not be so. In other words, policy outcomes are influenced by a complex set of variables of which public officials are only a part. But if this is the case, what socio-economic variables may be considered as the primary causes of variation in public policy outcomes? Likewise, what political system

variables influence variation in public policy outcomes?

These are some of the questions that this study will attempt to illuminate.

The Plan of the Study

This is a comparative study in which our objective is to analyze the variation in public policy outcomes in Kenya. We start out with two working hypotheses, that variation in public policy outcomes in Kenya districts is dependent on: (a) Level of modernization, and (b) Political system characteristics. Our analysis will be in seven chapters. In Chapter One a survey of key concepts in the study will be made. The survey will be carried out in five sections. In section one we define the concept of modernization, both theoretically and operationally. This will be followed by a discussion of aspects of modernization. The question we ask is: What relationship exists between modernization process and political, administrative, economic, social and psychological phenomena? Secondly, we introduce our concept of relative modernization, show how indicators flow from it and discuss its utility for research. In the third section we define and discuss the concept of political system. This is followed by the fourth section where the concept of public policy is taken up. In the fifth section we sketch our causal model, i.e., the causal linkages involving modernization variables, political system variables and public policy

outcomes. The second chapter relates the concept of relative modernization to twelve aspects of public policy outcomes. Essentially this is a theoretical chapter. The problem here is: What may account for observed variation in, for example, highway, health and education expenditures? The above two chapters being theoretical tend to raise more questions than they answer. Thus in Chapters Three, Four, Five, and Six, an attempt is made to empirically explain some of our theoretical propositions generated in Chapter Two.

In Chapter Three we extract modernization components at the district level, compute factor scores for each case, and using a two by two table, we classify the cases according to their factor scores. In Chapter Four we hypothesize that allocation of resources to each district in Kenya covaries with the level of modernization of that district. In other words, the greater the level of modernization of a district, the greater the level of resources allocated to that unit by the Kenya central government. In Chapter Five we introduce into the analysis political (intervening) variables. At this stage our objective is to observe the combined influence of modernization variables and political (intervening) variables. In the next chapter (Six), via a series of comparative case studies, we analyze variation in levels of modernization at the Administrative Division, Location

(village), and individual (administrator) levels. We also relate variation in individual (administrator's) characteristics to generation and allocation of self-help resources. In Chapter Seven we make some suggestions and observations concerning the implications of the study for future research, theory and public policy.

CHAPTER I

THE CONCEPT OF MODERNIZATION

The end of the Second World War was followed by decolonization in Asia, Africa, and the Middle East. The new nations that emerged proclaimed their goals as that of improving the standard of living of their people. Thus one began to hear phrases such as "war on poverty, disease and illiteracy", or "the revolution of rising expectations". Social scientists, in studying the problems of the emerging nations, appeared to have been caught off balance, i.e. they lacked clear concepts which could be used to explain the process of change that was taking place in these "new" social systems. For some time they simply referred to the process as "development". Implicit here was the notion that these countries were "underdeveloped" and hence they were progressing to a developed stage like the Western nations. But in this fashion the concept of development became closely identified with economic growth. At the same time it was clear that the process of change that was taking place in the new nations was something more than just economic development or political independence. The process involved many other phenomena -- social, cultural, etc. In other words, it was a complex process of change that influenced a wide scope of life of the individual and society.

Other concepts such as industrialization, westernization, Europeanization, tended to capture only part of the process that was at work. In an attempt to break out of this dilemma, some social scientists resorted to typology construction. Thus we began to read of dichotomous ideal types such as "agraria" and "industria", "traditional" and "modern". The ideal types did make a contribution to the study of social change in the new nations, however, they still suffered from simplicity. What is important for our purpose is that it was out of these attempts that the concept of modernization was conceived. In this study, modernization is the process whereby institutions are adapted for the purpose of creating modernity.¹ The adaptation is characterized by growth, differentiation, integration, specialization and complexity in the structures of the social system. Modernity, on the other hand, may be measured by indices on urbanization, per capita income, education, communication, transportation, etc. Levels of the modernization process and modernity co-vary. In other words, where there is a high level of modernity, there will also be a high level of modernization.

¹P. J. McGowan and N. Nyangira, "Relative Modernization and the Study of Politics and Administration in New States: Concept and Case Study (Tanzania)," a paper presented at the annual meeting of the American Society for Public Administration, New York City, March, 1972, p. 14.

In the chapters that are to follow (Three and Four), we shall use indices of modernity to measure modernization; this is because no unit can have high levels of modernity without having institutions that are capable of producing it. Secondly, past literature¹ by social scientists has shown that the modernization process is governed by the distribution of indices of modernity; where modernization "goods" go determines who gets modernized and who does not.

Theories of how modernization occurs use different units of analysis. There are two widely accepted theories. One of the two theories takes the institution as the starting point, whereas the other starts with the individual. The theory that stresses changes in social system's structure goes back to Karl Marx.² Marx argued that for a society to advance socio-economically and therefore to offer a high standard of living for most of its citizens, its social structure (mode of production) must be transformed. Marx's concern was basically with the have-nots and haves (proletariat versus bourgeoisie). Contemporary economists have

¹P. R. Gould, "Tanzania, 1920-1963: The Spatial Impression on Modernization Process," World Politics, 22 (January, 1970), pp. 149-170; D. J. Siddle, "Rural Development in Zambia," Journal of Modern African Studies, 8 (July, 1970), pp. 271-284.

²Karl Marx, Capital, A Critique of Political Economy (New York: Random House, Inc., 1906).

not radically departed from the argument Karl Marx made, but have widened his argument to include socio-economic and political structures generally. Thus for a society to proceed along the modernization path, it has to make changes in its institutions as the process continues. Henry J. Bruton writes:

. . . economic growth results in rising income and rising capacity and in structural changes. These structural changes, in turn, change the environment within which the short run mechanism functions. It then becomes necessary to examine the nature of these structural changes and the resulting effect upon the growth-generating powers of the economy.¹

Social scientists who take this approach seriously see institutions as things to be tinkered with until an acceptable medium is found. Agricultural economists, for example, have argued that some land tenure systems in the new nations are barriers to modernization. Changes in such systems would create opportunities and incentives for the masses of the peasants.

The second approach to the process of modernization stresses changes in values of the individual.² This approach

¹H. J. Bruton, "Contemporary Theorizing on Economic Growth," in Development and Society: The Dynamics of Economic Change, ed. by D. E. Novack and R. Lekachmand (New York: St. Martin's Press, 1969), p. 69.

²Talcott Parsons and his followers have argued that the individual who is not modernized is characterized by ascriptive, particularistic values, whereas a modernized individual is characterized by achievemental and universalistic.

stresses the fact that modern man is achievement oriented, thus the problem that is facing the new nation is to create "need for achievement"¹ in individuals. For this group of scholars, notably psychologists, changes in the social structure of societies is not the answer. The problem is one of transforming the psychological traits of the individual.

Modernization and Politics

The new nations are not yet nations in the classical sense of the term. They are at best nation-states. These countries are divided by ethnic rivalry, linguistic differences and religious differences, to name but a few of the types of cleavages. One is bound to ask: What keeps these diverse groups of people together as a political entity? For many decades the colonial authority kept these groups together. In many instances, e.g. Buganda, Ashanti, the colonial power did not destroy traditional rulers. What happened is that the colonial powers merely came to terms with the traditional rulers and let the latter remain intact so long as they did not challenge the colonial authorities.

values. Parsons' theory is enunciated in The Social System (New York: The Free Press, 1951).

¹D. McClelland, The Achieving Society (New York: The Free Press, 1961).

With the end of colonial rule and the ascendancy of modern elites to power, traditional rulers in a number of the new states, e.g. Uganda, challenged the new elite for a share of power. Thus, one of the problems facing the new states is that of creating an accepted center of political authority to replace traditional centers of power. In discussing this problem Seymour M. Lipset has observed:

A basic problem faced by all new nations and post-revolutionary societies is the crisis of legitimacy. The older order has been abolished and with it the set of beliefs that justified its system of authority. The imperialist ogre upon whom all ills were blamed has now disappeared, and there has been a slackening of the great unifying force, nationalism, under whose banner private, ethnic, sectional and other differences were submerged. The new system is in the process of being formed and so the questions arise: To whom is loyalty owed? And Why?¹

In many of the new states of Africa South of the Sahara, for instance, traditional chiefs, or kings wielded enormous power.² Their subjects had been socialized to accept the authority of these traditional rulers. Thus, the new elite that has gained political power has to resocialize the individuals to accept them as the legitimate leaders who have not only replaced colonial authorities, but the traditional

¹S. M. Lipset, The First New Nation (New York: Basic Books, Inc., 1963), p. 16.

²I. A. Fallers, Bantu Bureaucracy (Cambridge: Cambridge University Press, 1957).

authorities as well. This is a problem the new states have to address in the course of their modernization. The problem has occurred in Western countries as they modernized. For instance, most of Europe went through legitimacy crises in the 16th and 17th Centuries; the United States went through it in the 18th and 19th Centuries. This is clearly documented by Lipset in The First New Nation. In the contemporary new nations the task of getting the individual to accord legitimacy to the new elite in power is an on-going struggle. Ideology is articulated in some, e.g. Tanzania, to politically educate and indoctrinate the individual. In other new nations mass rallies constantly remind the individual of the achievements of the national leaders.

A second factor of process of political modernization is the differentiation of institutions. Modernization process leads to an increase in the number and variety of decisions a political system must handle. Thus, whereas a traditional chief in a simple society may be his own judge, legislator, and executive administrator, a president of a modern polity performs only specified functions. Even if such a president were to attempt to perform the functions of the court and the legislature in addition to executive ones, he could not effectively and efficiently cope with the volume of work. Historically, political structures tend to change and become functionally specific as a polity moves away from a tradi-

tional or less modernized state to a more modernized state.¹ For example, in highly modernized polities one finds political process involves many institutions, e.g. political parties, interest groups, courts, legislatures, etc. These institutions are created as the polity moves from a position of relatively low modernization to a relatively high level of modernization.

Differentiation of structures is accompanied by functional specialization² which is typified by division of labor. Another trait of differentiation is that the structures become complex; hence the greater the level of modernization of a given society, the greater the complexity of structures and roles in that social system.

A third factor of the process of political modernization is political participation. Political participation partly involves the influence of individual members of a political system over the choice of leaders and hence on public policy. Individuals in a political system, through participation, determine who rules and who does not. This

¹F. W. Riggs, "The Comparison of Whole Political Systems," in The Methodology of Comparative Research, ed. by R. T. Holt and J. E. Turner (New York: The Free Press, 1970), pp. 73-121.

²Students of sociology have been at the forefront of mapping the changes that take place in political, social, and economic phenomena. One of the leading works on this aspect is Max Weber's The Theory of Social and Economic Organisation, (New York: The Free Press, 1947).

of course is what happens in western democracies. But concern with participation goes back to the Greeks. For Plato, for instance, participation was rigidly structured; one's social status prescribed what the nature of one's participation would be. Participation in the new states takes the form of mass political activities. The leaders of these political systems use this type of participation for their own goals. The masses are not regarded as able to influence public policy, but they may be mobilized for demonstrations, propaganda parades, rallies. These activities are vital for the sustenance of the political life of the elite. Propaganda parades and rallies further the popularity of the elite; rival elites want to demonstrate their support. Although there may be argument as to whether these activities constitute modernization, there is no doubt that the participants come to learn how their role as voters or supporters is crucial to the survival of certain political leaders. To these people, politics ceases to be something beyond their control. They soon begin to use their influence to extract as many favorable policy decisions from their leaders as possible. Finally, mass participation is a means for mobilizing the masses to get involved in national development projects such as road building. It creates a sense of urgency, hope and challenge.

Our fourth factor of the process of political modernization is national integration. By integration we mean the forces that bind a social system together. In the new nations integration has to do with the socialization of diverse ethnic groups into a single political system - nation-state. Why should political leaders bother to socialize ethnic groups into the political system? First, ethnic groups are particularistically oriented. They do not differentiate between political obligations on the one hand and ethnic obligations on the other. This problem leads to corruption and nepotism in the public service. Members of the bureaucracy often make decisions not on the basis of the merit of the case at hand, but on how the case affects their ethnic group. Secondly, secessionist movements based on ethnic groups have been and still are one of the problems plaguing the new nations. Only a handful of the new nations can claim to be free of a separatist movement. Some of the attempts, e.g. Ibos in Nigeria, Bengalis in Pakistan, Baganda in Uganda, have led to internal armed conflict. In an introduction to a text devoted to examining problems of "nation-building", Karl W. Deutsch states:

Tribes or other smaller ethnic or cultural groups could be politically related to the state and the nation in several ways. They may flatly deny

membership in the nation, refuse obedience to the state, and rise in war against other groups of those who are officially supposed to be their fellow citizens. If they are less hostile or less self-confident, they may passively obey the government and comply with its demands as long as they are being supervised more-or-less directly by government officials and soldiers, but they may rise against the state in times of crisis in order to secede. . . . They. . . will require garrisons of national troops whose presence in these districts of the amalgamated national state will express the latent danger of civil war and the continued lack of integration.¹

The danger of disintegration of the political systems of the new nations is therefore real. Deep seated suspicions among ethnic groups abound. Later on we shall show that the causes of some of the discontent is made worse by the distribution of modernity. In other words, national integration may to some extent be determined by the ability of the national government to promote a policy of balanced growth, i.e. the even spread of modernity.

Modernization and Administration

What was said about the process of modernization and political phenomena holds for administrative phenomena as well. However, there are a number of factors that may be said to characterize modernizing administrative systems. First,

¹K. W. Deutsch, "Some Problems in the Study of Nation-Building," in Nation-Building, edited by K. W. Deutsch and W. J. Foltz (New York: Atherton Press, 1963), p. 6.

in most of the new nations of Asia and Africa, administrative structures were set up long before political structures such as political parties appeared. These administrative structures have a long tradition which spreads over a number of decades. The traditions did not disappear with the attainment of independence. The civil servants in each new state continued to be heavily influenced by the standards of their former colonial power. This, of course, made innovation difficult to promote. Social scientists who have visited or carried out research in the new nations are struck with the ubiquity of the bureaucracy. The public bureaucracy is the major employer; it runs hospitals, schools, universities, etc. Thus, with increase in the tempo of modernization, there is an increase in the size of the public bureaucracy. The two tend to co-vary. For example, bureaucracies have to write development plans and have to attempt to implement them as well. It is this aspect of the bureaucracies in developing countries that differentiates them from those in the Western countries. Bureaucracies are viewed as agents of innovation. They not only write development plans but take part in mobilizing people to participate in development.¹

¹N. Nyangira, Chiefs' Barazas as Agents of Administrative and Political Penetration, Institute for Development Studies, University of Nairobi, 1970 (mimeographed).

Why does bureaucracy expand at such a pace? Max Weber, writing on bureaucracy observed:

The decisive reason for the advance of bureaucratic organization has always been its purely technical superiority over any other form of organization. . . . bureaucratization offers above all the principle of specializing administrative function according to purely objective considerations. Individual performances are allocated to functionaries who have specialized training and who by constant practice learn more and more.¹

There is no doubt about the expansion of bureaucracy in the new nations as the process of modernization has proceeded to intensify. However, its expansion may lie more in its rationality, i.e. it is the only realistic alternative available for getting things done. Its alleged efficiency and superiority is still a matter of debate. Furthermore, functionaries in the bureaucracies of the new nations find themselves being guided by both traditional and modern behavior.² In a number of the new nations, e.g. Pakistan, the civil servants are recruited according to achievement criteria but once in service, they tend to identify with fellows from their ethnic groups.

¹H. H. Gerth and C. W. Mills, From Max Weber: Essays in Sociology (New York: Oxford University Press, 1946), p. 214.

²R. Braibanti, "Public Bureaucracies and Judiciary in Pakistan," in Bureaucracy and Political Development, ed. by J. Lalombara (Princeton, N.J.: Princeton University Press, 1963), p. 170.

Finally, we might hypothesize that as the process of modernization continues, bureaucracies of the new nations will continue to expand, but will not necessarily become like the older bureaucracies of the West. Fred Riggs,¹ for example, has gone to great detail to explain the influence of culture on administrative practices and structures in an attempt to show that bureaucracies in the new nations are different from Western bureaucracies.

Modernization and Economic Growth

The major factor underlying modernization process is economic growth.² No society could be said to be modernizing if it did not experience economic growth. Modernizing societies begin to lay down the foundation of modernization by construction of the infra-structure -- transportation and communication systems, power facilities, and shift from agriculture as the basic mode of income to industrialization. These factors are necessary if economic growth is to be

¹F. W. Riggs, The Ecology of Public Administration (Bombay: Asia Publishing House, 1961).

²There is no doubt that one of the major differences between the new nations and Western countries is that the latter are able to sustain economic growth. This point is emphasized by M. F. Millikan and D. L. M. Blackmer in a book they edited, The Emerging Nations: Their Growth and United States Policy (Boston: Little, Brown and Co., 1961), p. 45. This same point is also emphasized by B. F. Hoselitz, Sociological Aspects of Economic Growth (Glencoe, Illinois: The Free Press, 1960), pp. 85-114.

sustained. They lay the basic foundation. No country may modernize without the building of an infra-structure. There are, of course, other conditions that go towards ensuring that self-sustaining growth is maintained. Two of these include savings and investment. A society that is rural, consisting predominantly of peasants, does not rely on the modern market mechanism for livelihood. A peasant society consumes what it produces, hence no surplus is left for plowing back into the economy as investment. But a modernizing society experiences increase in income; people save and the savings are reinvested in the economy. Another economic factor that is crucial to a modernizing social system is expansion of trade. A casual observer of the economies of highly modernized countries will notice that these countries engage in trade with other foreign countries. The volume of their exports tends to grow each year. This means that modernization process entails increase in volume of trade with other countries. Hence, as modernization process intensifies, the volume of trade to other foreign countries would tend also to grow.

Finally, the three factors (increased savings, investment, trade) can hardly be realized without increased production per worker. What this means is that each worker has to produce more goods, otherwise no sustained growth can be realized. This means adapting use of modern technology.

For example, farmers must apply fertilizer to land and increasingly use mechanized equipment instead of relying on human labor.

Modernization and Social Organization

Social scientists who study social aspects of modernization focus on changes in the role structure. Friedland¹ argues that social modernization is a process whereby roles in a society change in order to cope with changes in the environment. Thus the social structures, once faced with a challenge, undergo adaptation, usually by role reorientation. This involves reorganization of the social structures. For example, a simple society which makes its living from subsistence farming has changed its patterns of life once the old ways of doing things have been challenged by external forces. The common example cited is the introduction of the market economy, which undermines the extended family and kinship structures. In a modernizing society the division of labor becomes increasingly based on skills other than on sex or age set as the process of modernization intensifies. This means that greater functional specialization is stressed.

¹W. H. Friedland, "A Sociological Approach to Modernization," in Modernization by Design, Social Change in the Twentieth Century, edited by C. Morse, D. E. Ashford, et al. (Ithaca: Cornell University Press, 1969), pp. 34-84.

Furthermore, both the family and kinship structure undergo certain changes. Four of these changes are: adaptability, urbanization, secularization and instability. Thus families are forced to adapt their way of life in the face of changes within the social system. Secondly, the rural areas are influenced by the urban way of life. This is due to increased contact between urban and rural people. Thirdly, individuals begin to think and behave more rationally and analytically when faced with problems (see discussion relating administrators' characteristics to self-help allocations in Chapter Seven.) No longer do they feel that supernatural forces guide all their lives. For example, there is a tendency to pursue material gains which lead to a better way of living. Fourthly, the family and the kinship structure become unstable. For example, there is a tendency for a man to work in an urban area and his wife and children to remain in the traditional area.¹

Modernization and the Individual

We discussed above the fact that there are two theories of how modernization takes place and that one of these lays emphasis on the individual's motivation. This approach is

¹B. Lang, Some Aspects of Urbanization in Machakos Township, Institute for Development Studies (Cultural Division), University of Nairobi, 1970, mimeographed.

espoused mainly by psychologists.¹ The argument is that there must be something that drives certain people to engage in activities that are profitable to them and to shun those situations that are not. In other words, what leads x to exploit y opportunity? The force that drives x to exploit opportunities whenever he detects their existence is, according to social psychologists who work under this paradigm, a special type of trait -- "need for achievement".² David McClelland, one of the proponents of this approach, argues that a modernizing individual will have need for achievement as he detects opportunities that exist. These opportunities may be explicitly made to him or they may simply exist in society without anybody urging x to take them up.

If this approach is taken seriously, then modernization process is reduced to modernization of the individual and all other aspects of the process are then seen as consequences of the individual's motivation.

We have up to this point briefly discussed the concept of modernization and gone on to survey some of its

¹D. H. Smith and A. Inkeles, "The OM Scale: A Comparative Measure of Individual Modernity," Sociometry, 29 (December, 1966), pp. 353 - 377.

²D. C. McClelland, The Achieving Society (New York: The Free Press, 1961).

political, administrative, economic, social and psychological aspects. We have argued that the process of modernization should be viewed as adaptation of institutions for production of modernity and that modernization as a process has to do with growth, differentiation, integration, specialization and complexity of those institutions which are adapted. We are now in a position to move on to a discussion of the other concepts in our effort to pave the way for relating aspects of public policy to relative modernization in the next chapter.

Relative Modernization

In the above brief survey of modernization process we have taken the position that modernity is unevenly distributed. Geographers¹ have demonstrated this unevenness by mapping the spatial diffusion of modernization. Other social scientists² have shown how certain ethnic groups that

¹An increasing number of geographers have shown the uneven spatial distribution of modernity. P. R. Gould, "Tanzania, 1920-63: The Spatial Impress of Modernization Process," op. cit.; E. W. Soja, The Geography of Modernization in Kenya (Syracuse: Syracuse University Press, 1968); J. B. Riddell, The Spatial Dynamics of Modernization in Sierra Leone (Evanston: Northwestern University Press, 1970); D. J. Siddle, "Rural Development in Zambia: A Spatial Analysis," op. cit.

²J. S. Coleman, Nigeria: Background to Nationalism (Berkeley: University of California Press, 1958); David B. Abernethy, The Political Dilemma of Popular Education: An African Case (Stanford: Stanford University Press, 1969).

first came into contact with the Western world have acquired greater modernity than neighboring ethnic groups whose contact with the Western world came later. It is not just the social scientists that have noted the variation in levels of modernization; journalists and politicians have talked about this phenomena. In this study we take the notion of variation in levels of modernization seriously. We believe that this variation is a cause of many other phenomena -- political and administrative. But taking it seriously is not enough; we find that concepts such as uneven development have connotations that blur their meaning, hence making them unsuitable for guiding scientific inquiry. The concept we relate to this phenomenon of observed variation in aggregate level of modernity in the new nations is relative modernization. For those who are looking for a definition, relative modernization is the variation in the levels and rate of modernization among individuals, institutions, and areal units. We find this concept relevant to ecological analysis. This is because ecological analysis aims at explaining variation among units. Thus we may gather data on individuals, organizations, or areal units such as villages, districts, regions and nation-states. Data on individuals may be gathered via survey research whereas data on organizations or areal units may be gathered either by survey or we may use government census statistics, etc. We stress the

units on which data may be gathered because the way we order our data is important for the types of studies we do. But just as it is important to know the unit of analysis, it is equally important to specify the indicators of the concept of relative modernization.

Relative modernization may be measured by indices of demography, transportation, communication, urbanization, education, industrialization, wealth, political participation and mobilization. For example, if a given country has high indices of literacy, urbanization, wealth (per capita income), then that country will be higher on the scale of modernization than a country which has comparatively lower indices on these indicators.

Relative modernization is therefore an operational concept, hence its relevancy and potency for social inquiry. Finally, how is the concept of relative modernization related to public policy outcomes? This question will be dealt with in the second chapter. At this point we may add that scholars taking the concept of relative modernization seriously would attempt to gather data on subunits of the social system and compare the subunits as to their levels of modernization. This approach would yield data that policy makers can hardly be expected to ignore since the data would be a reflection on how values are allocated in that political system.

The Political System

In discussing modernization process above, we have from time to time used the concept of political system. Conceptualization of political systems abound in political science. Scholars who take Max Weber's approach view the political system as "the interactions which affect the use or threat of use of legitimate physical coercion."¹ The key factor here that demarcates a political system from other systems (e.g. economic) is the "use of legitimate physical compulsion". Thus the individual or group of individuals whom the social system has invested with rights to use coercion become important in any analysis of the relationship the political system has with the environment.

Other political scientists have defined the political system in terms of allocation of values. The political system, they contend, is, ". . . all those kinds of activities involved in the formulation and execution of social policy. . . ." ² Social policy is an all encompassing term that includes public policy. We find this latter definition of a political system relevant to our inquiry. When we talk of

¹G. A. Almond and G. B. Powell, Jr., Comparative Politics: A Developmental Approach (Boston: Little, Brown and Co., 1966), p. 18.

²D. Easton, The Political System (New York: Alfred A. Knopf, 1965), p. 129.

the political system in this study we shall be referring to the activities of the individuals occupying roles in administrative agencies, political parties, and interest groups. We shall be attempting to explain the influence political party functionaries, administrative officers, clan leaders, and leaders of organizations such as co-operatives have on public policy outcomes. These individuals perform roles that allocate values by determining who gets what and when. In our case, the values allocated are public policies.

In an attempt to explain the relationship that exists between political system variables (made up of the actions of the above individuals, groups and institutions) and public policy outcomes, we shall focus on relevant behavior of the former. Our concern will be directed to the behavior that has consequences for public policy outcomes.

Finally, there is a second set of variables that are part of the political system. This is the political culture of the political system.¹ In the case of the new nations,

¹This is a concept that has become increasingly important in political science. In this study it refers to attitudes the individual has towards a political system -- especially authorities. Some of the literature that discusses this concept include: G. A. Almond and S. Verba, The Civic Culture: Political Attitudes and Democracy in Five Nations (Boston: Little, Brown and Co., 1963); L. W. Pye and S. Verba, eds., Political Culture and Political Development (Princeton: Princeton University Press, 1965); P. H. Merkl, Modern Comparative Politics (New York: Holt, Rinehart and Winston, Inc., 1970), pp. 148-231; G. A. Almond and G. Powell, Jr., Comparative Politics: A Developmental Approach, op. cit.

one ethnic group may resist change by preferring to remain attached to traditional practices whereas another ethnic group may embrace change. Such behavior has been shown to have impact on the way the two groups modernize.

Public Policies

In our brief discussion of the political system we concluded that the political system allocates values and that these values constitute public policy. But what are these values, or for that matter, what are public policy outputs? We are not looking for a theoretical definition of public policy. In this study we stress the operational side of public policy. Thus we focus on governmental expenditures. Expenditures are allocations of the political system; they affect the values of that system. The public policy outcomes we are focusing on are therefore distributive, or what some scholars refer to as "substantive".¹

We have now introduced the four key concepts that are crucial to the analysis of variation in public policy outcomes which is to follow. Our last task remains. We have to

¹Interest in systematic analysis of public policy has led to various attempts at classification of public policy contents. One of these attempts is Lewis A. Froman, Jr.'s, "The Categorization of Policy Outcomes," in Political Science and Public Policy, ed. by A. Ranney (Chicago: Markham Publishing Co., 1971), pp. 41-52.

"tie" the concepts into an analytic framework which will show the hypothesized relationships among them. It is to the development of this analytical framework that we now turn.

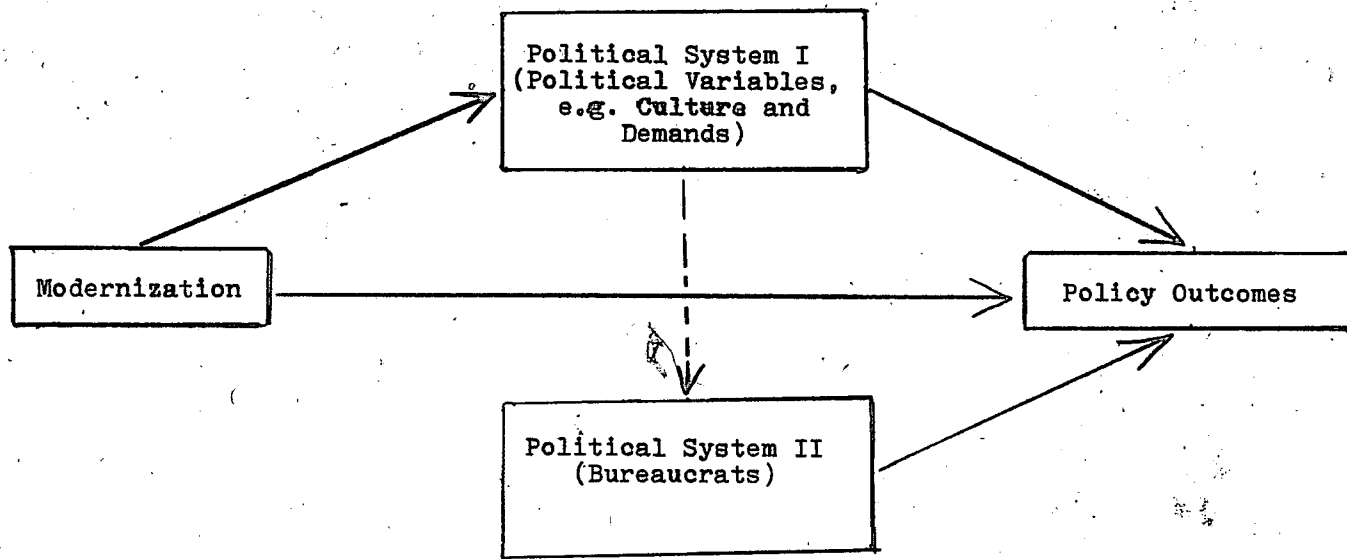
Working Analytic Model

Everything we have discussed up to this point was meant to clear the way for this section of the Chapter. In this section we sketch our model, i.e. we show the theoretical relationships among the concepts that we have already introduced. In our case, a model is a set of assumptions about a hypothesized relationship among phenomena. Models in social science are used not just to show relationships as we have asserted above, but also to identify the important linkages among the relationships, demarcate the subject matter, and to simplify complex inter-relationships.¹ Our model, illustrated in Figure I, goes back to David Easton and has since been modified by scholars of comparative state politics.² One of the problems of a model like ours

¹J. M. Beshers, "Models and Theory Construction," American Sociological Review, 22 (February, 1957), pp. 32-38; P. Meadows, "Models, Systems and Science," American Sociological Review, 22 (February, 1957), pp. 3-9; V. VanDyke, Political Science, A Philosophical Analysis (Stanford: Stanford University Press, 1960), pp. 104-107; A. Kaplan, The Conduct of Inquiry, Methodology for Behavioral Science (Scranton, Pennsylvania: Chandler Publishing Co., 1964), pp. 258-293.

²David Easton, A Framework for Political Analysis (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1965). Analysts of public policy who have borrowed David Easton's

FIGURE I
ANALYTIC MODEL OF PUBLIC POLICY OUTCOMES



is the idea of boundaries shown by the square boxes. The boundaries are introduced purely for analytical purposes; there is no sharp, clear-cut boundary between, for example, political system environment and modernization (system resource) environment. The basic problem we are attempting to investigate is: What accounts for variation in public policy outcomes among a set of given units? The units of analysis may be organizations, villages, districts, provinces, or nation-states. This type of approach to the study of public policy is not new; political scientists have already shown the potency of this approach by comparing policy outcomes among American states.¹ By hypothesizing that socio-economic (modernization) variables are the principle causes of variation in public policy outcomes, these social scientists have

theoretical conceptualization of the political system have tended to minimize the role of the allocators of values which Easton stressed. These include: T. R. Dye, Economics, Politics and the Public: Policy Outcomes in the American States (Chicago: Rand, McNally, 1966); R. E. Dawson and J. A. Robinson, "Inter-Party Competition, Economic Variables and Welfare Policies in the American States," The Journal of Politics, XXV (1963), pp. 265-289; R. I. Hofferbert, "Ecological Development and Policy Change in the American States," in Policy Analysis in Political Science, ed. by I. Sharkansky (Chicago: Markham Publishing Co., 1970), pp. 149-168. Our above model (Figure I) restores the role of policy allocators.

¹I. Sharkansky, ed., Policy Analysis in Political Science, op. cit.; T. R. Dye, Economics, Politics and the Public: Policy Outcomes in the American States, op. cit.

challenged the age old ideas about public policy outcomes.¹

In the above Figure, modernization variables do not just influence public policy outcomes, but they also influence the type of political system that may exist in time and space. The latter relationship is not a subject of inquiry in this study. We are concerned with the former (see our causal model above). One cautionary note may be sounded at this point. Although the relationship between modernization variables and public policy has been shown to exist, this approach to the study of public policy tends to be "static". To move away from this statism, we have injected intervening variables in the model (see Figure I). We have not only introduced political system variables in the model as the intervening variables, but we have made a distinction between the cultural and demand side of the political system and the decisional side. The cultural-demand side is indexed by such

¹One of the objectives of political science as a discipline has been to attempt to explain how public policy is formulated by focusing on the roles of public officials. This tradition stretches back several hundred years and is reflected in works such as: C. J. Friedrich, Man and His Government, An Empirical Theory of Politics (New York: McGraw-Hill Book Co., Inc., 1963); R. A. Dahl, Who Governs? Democracy and Power in an American City (New Haven: Yale University Press, 1961); H. D. Lasswell and A. Kaplan, Power and Society, A Framework of Political Inquiry (New Haven: Yale University Press, 1950); H. D. Lasswell, Who Gets What, When and How? (New York: McGraw-Hill Book Co., 1936); V. O. Key, Jr., Southern Politics (New York: A. A. Knopf, 1949); J. M. Mitchell and W. C. Mitchell, Political Analysis and Public Policy: An Introduction to Political Science (Chicago: Rand McNally and Co., 1969).

phenomena as political party affiliation of a unit, elite behavior, etc. The decisional side is measured by the actions of authorities (administrators). With the introduction of political system variables, public policy ceases to be wholly dependent on levels of modernization. In other words, public policy outcomes are conceptualized as being caused by both modernization variables and political system variables. The causal linkages are shown in Figure I.

Political Culture and Policy Outcomes

For our purpose, political culture is the pattern of orientations of individuals towards politics. It has to do with an individual's knowledge, feelings, opinions and judgments of the role of government in a given political system in which he is a member.¹ These individual attitudes or opinions about politics in a social system may be measured through survey research or content analysis. The political culture approach has increasingly become popular in political science literature² because it focuses on the individual.

¹G. A. Almond and S. Verba, The Civic Culture, op. cit.

²Political scientists have come to regard the concept of political culture as useful in providing links between the micro aspects of political life and the traditional macro aspects. Scholars who have examined individuals' attitudes as they relate to political process include: Fred I. Greenstein, The American Party System and the American People (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963);

For instance, Almond and Powell have isolated three components of orientations which they associate with any individual in a political system. These three are: cognition, affectivity and evaluation.¹ Cognitive orientation has to do with knowledge of politics, especially individuals in politics, their ideologies, symbols, etc. Affective orientation focuses on one's feelings of politics and his participation or non-participation in political process. Finally, evaluative orientation is concerned with one's judgement and general opinions about politics. It is here that one uses his own values to assess any political situation.

The above orientations are important in that we may use them to assess how individuals in a given political system view political process. But of what relevance are these orientations to public policy outcomes? In any political system, demands are the making of individuals. Thus, in order for us to know what type of demands, and especially the volume of demands that are likely to be generated, we need an understanding of the orientations of the individuals in that political system.

J. W. Pronthro and C. M. Grigg, "Fundamental Principles of Democracy: Base of Agreement and Disagreement," Journal of Politics, Vol. 22 (March, 1960), pp. 276-294; A. Campbell and D. E. Stokes, "Partisan Attitudes and the Presidential Vote," in American Voting Behavior, ed. by E. Burdick and A. J. Brodbeck (Glencoe, Illinois: The Free Press, 1959).

¹G. A. Almond and G. B. Powell, Comparative Politics: A Developmental Approach, op. cit., pp. 50-72.

Thus policy outcomes in any polity will tend to reflect the orientation of the individuals in that polity. In other words, policy outcomes are partly influenced by the expectations and behavior of people. In a political system where there is a high level of participation and general involvement in political process, the volume and level of policy outcomes that are likely to result will be different from the policy outcomes in a political system where individual participation and involvement are low. Finally, individual orientation is closely related to the level of modernization of an area. Political systems that are experiencing high levels of modernization are likely to have individuals who have more knowledge of the political process, are able to express their feelings on political issues, and to make individual judgements on a variety of political issues (see discussion of individual administrators and policy outcomes in Chapter Seven).

Demands and Authorities (Bureaucrats)

When discussing the relationship that exists between individual orientation and policy outcomes above, we observed that generation of demands is closely related to the former -- i.e. individual orientation. When we talk of demands we mean statements that are articulated by individuals or groups and

channelled to the authorities for action.¹ Usually the statements would oblige the authorities to take action. The importance of demands in a political system is clearly expressed by David Easton who writes: ". . . demands constitute the flesh and blood of all political systems, from the smallest to the largest and from the simplest to the most complex. . . without some inflow of demands there would be no raw material for the system to process, no conversion work for it to do."² Thus in our model above, demands are mainly directed towards the authorities. It is the authorities who convert demands into policies that are allocated. But who are the authorities? Authorities for our purpose are individuals who perform bureaucratic and political roles. They include provincial or regional commissioners, district commissioners, district field staff, chiefs, headmen, government ministers, members of parliament and district political party chairmen.

In many of the new nations where the masses have been mobilized, their expectations of the performance of the authorities tend to be high. For example, the demands they make are directed towards the need for improved housing,

¹D. Easton, A Systems Analysis of Political Life (New York: John Wiley and Sons, 1965), p. 38.

²Ibid., p. 48.

educational opportunities, employment opportunities, health facilities, etc. Arguments have been made by some social scientists that people of the new nations do not necessarily need the material things that Western scholars think they do. The data in Chapter Four of this study disputes this view. As we shall later note when we analyze the variation in self-help projects in Kenya, individuals in the new nations are not satisfied with their social-economic status quo. Other studies¹ that have been done in other countries show this. What is more, there is variation in the geographical pattern of volume of demands. Demands made upon authorities do not originate evenly throughout the territory of each of the new nations. In other words, not each group, e.g. ethnic group, makes an equal volume of demands upon the authorities. The geographical areas that are relatively more modernized make more demands upon the authorities than the areas which are less modernized. This is a hypothesis that may be taken up for testing.

Authorities and Policy Outcomes

Most of the traditional political science literature has focused on the above relationship.² In the new nations

¹D. Abernethy, The Political Dilemma of Popular Education: An African Case, op. cit.

²The study of the behavior of political power holders and the policies they take is several hundred years old. N.

two broad categories of authorities (traditional and modern) exist. The former may have no formal power, but may still be influential, as we shall later observe in Chapter Six. For the moment we are concerned with the theoretical relationship between authorities and policy outcomes. Policy outcomes are allocated by authorities. These allocations are goods or services which the members of a political system need. The allocations are by and large political decisions that the authorities make. In making the allocations the authorities expect to win support from the masses. Incidentally, it is not just the authorities in the new nations that hope to win support by allocating resources -- the same applies to authorities in Western political systems. This does not mean that authorities in the new nations are guided only by mass pressure to allocate their resources. On the contrary, authorities in the new nations are influenced by a host of other factors. One of these is that allocations are made as political trade-offs, i.e. areas which have elites that are strategically placed are likely to realize above average allocations. But since these areas are likely to be those that are relatively modernized, our basic logic is not violated.

Machiavelli's, The Prince (Chapel Hill: The University of North Carolina Press, 1944) stands out.

CHAPTER II

RELATIVE MODERNIZATION AND POLICY OUTCOMES -- HYPOTHESES

In the above chapter we stressed that modernity is valued and coveted by most people. Thus most people and authorities in the new nations are continually engaged in programs designed to increase modernity. There are efforts to improve transportation, education, mass communication and the industrial, agricultural and commercial sectors of the economy. But we observed earlier that distribution of these goods and services is uneven, i.e. relative. This means that one of the problems that faces the allocators of values in the new nations is that of equity in distributing goods and services. Economists¹ have, for instance, argued that the process of economic growth, which is one of the components of modernization, does not take place uniformly, i.e. in all regions of any given nation-state. Certain factors, e.g. distribution of natural resources, influence the pattern of development which is reflected in the estab-

¹An increasing number of economists have within the last few years stressed the need for taking into account spatial problems of allocation of resources. This concern with geographical allocation of resources has, for instance, been well analyzed in Regional Development and Planning, ed. by John Friedmann and William Alonso (Cambridge, Massachusetts: M.I.T. Press, 1964).

lishment of growth points. Emergence of growth points ". . . means that international and interregional inequality of growth is an inevitable concomitant and condition of growth itself. Thus, in the geographical sense growth is necessarily unbalanced."¹ This phenomenon has been well documented and analyzed not just by economists but by geographers² as well. For example, the southern part of Nigeria is more prosperous than the north, the Copperbelt in Zambia has a higher per capita income than the rest of the country, etc. In this study, as indicated above, our units of analysis are the areal units (villages, districts, regions). When we talk of an allocation problem, we are thinking of the spread of the goods and services among these areal units.

Allocation of goods and services by the authorities in the new nations is characterized by great variation. This

¹A. O. Hirschman. "Interregional and International Transmission of Economic Growth," in Regional Development and Planning, ed. by J. Friedmann and W. Alonso, op. cit.

²A recent paper by a geographer takes the problem of uneven growth seriously. Richard D. Tabors', "A Regional Model for the Analysis and Monitoring of Spatially Distributed Development Goals: Regional Development Planning and Implementation in Bangladesh," (Harvard University Center for Population Studies), unpublished paper presented to the annual meeting of the American Society for Public Administration, New York City, March 24, 1972.

variation, we argue, is mainly influenced by modernization. We believe that the allocation of services by authorities co-varies with the level of modernization of a given unit. This Chapter, therefore, theoretically relates the concept of relative modernization to a number of possible policy outcomes. The effort is one of raising some hypotheses which may be tested by interested scholars. The hypotheses are related to policy outcomes in the areas of: (a) location of industry, (b) expenditures on education, (c) expenditures on agriculture, (d) allocation of land for settlement, (e) expenditures on transportation, (f) expenditures on health, (g) expenditures on commerce, (h) expenditures on communication, (i) expenditures on electrification, (j) expenditures on community development, and (k) expenditures on tourism. The basic logic here is that areas with high levels of modernization will tend to receive high allocations of expenditures on each of the above sectoral areas. This is a fact of life, for one of the basic questions that policy makers have to face is that of raising returns on both expenditures and other inputs that go into the above sectors. A rational policy will thus tend to dictate that the areas with relatively high levels of modernization are the places in which to invest resources. The reasons for this seemingly unavoidable circumstance will emerge during the course of the discussion in this Chapter.

Relative Modernization and Location of Industries

In this study, when we talk of industry, we shall be using it in the narrow sense to include activities in mining, power and light utilities, food processing, textile milling, petroleum refining, chemical extraction and processing, footwear processing, wood and pulp processing. Industrialization may be viewed as a necessary, though not a sufficient factor of modernization. In many of the new nations of Asia, Africa and the Middle East, population growth continues to create a situation whereby more people will have to find an alternative means of livelihood other than relying on agriculture. In other words, there is excess labor which may be absorbed by industrialization. Indeed, in many of the new nations light industries have been established. Many of these industries, as may be observed from our above enumeration, are in the area of mineral mining and food processing. A few of the new nations like India are at a relatively more advanced stage of industrialization than other countries, notably new nations in South East Asia and Africa South of the Sahara. The few industries that exist tend to be located in pockets where the level of modernization is relatively high. Obviously, establishment of any industrial plant is dependent on many other factors, e.g. availability of power, transportation system, etc. But the harsh realities of allocating indus-

tries in areas with high levels of modernization is that these areas continue to enjoy relatively higher standards of living than the rest of the country. The alternative course is to disperse industry in the hope that it will act as a catalyst to stimulate local motivation. This is not just an academic question.

The politics of modernization tend to revolve around the allocation of resources -- who gets what. For example, in 1966 the Kenya People's Union (now banned by the incumbent government) accused the ruling party (Kenya African National Union) of having ". . . totally failed in its policy to encourage planned industrial development as a means of narrowing the gap in incomes between the different parts of the country."¹ Demands for spreading out the industries are made not only by opposition parties but by various individuals who see their geographical areas lagging behind in the general process of modernization. The realities of the situation are that industries depend on many other factors, besides resources, such as skills,² and these factors are available in areas with high levels of

¹The Kenya People's Union Manifesto, reprinted in Government and Politics in Kenya, ed. by C. Gertzel, M. Goldschmidt and D. Rothchild (Nairobi: East African Publishing House, 1969), p. 152.

²D. S. Pearson, Industrial Development in East Africa (Nairobi: Oxford University Press, 1969), pp. 84-93.

modernization. Policy makers have to take this into account. We may therefore hypothesize that the greater the level of modernization of a unit (village, district, region), the greater the number of industries located in that area.

Relative Modernization and Education

Education has become a universally recognized achievement factor. The recognition acquires great proportions in modernizing societies. Through education we are able to communicate with other people over long distances, the patterns of interactions change and access to modernity is even enhanced. In the new nations education provides skills which are used to achieve elite status. Those who enter the elite acquire positions of power and wealth. It is they who formulate policy, run both public and private institutions. This phenomena has far reaching implications for the rest of the social system. Let us quickly review some of them. First, areas which first acquired high levels of modernization sent their children to school and the children acquired skills which enabled them to go on to serve the colonial government. After the colonial power departed, these individuals remained in positions of power and influence with a hold on executive positions both in government and in the private sector, thereby ensuring continued preferential treatment of future elites from their traditional areas of origin. Thus, it is

not uncommon to hear charges of nepotism¹ being made against officials in high public or private office in the new nations. Furthermore, by maintaining a grip on policy making, these elites give priority to areas of high levels of modernization which are the same areas from which they originated.² Secondly, the relative nature of modernization has other consequences that may be manipulated indirectly by the elite. For example, during the colonial period the colonial government aimed at controlling the number of people who were to receive formal education. The controls were instituted either through limited funding for school buildings or through payment of school fees. The latter was widely used by the missionaries. The institution of school fees has been continued by some of the regimes of the new nations as a device for controlling the number of

¹Unemployment tends to be high in the modern sector of the economy of each of the new nations. Usually the number of people who have completed school and are unemployed is greatest from areas experiencing high levels of modernization. These areas happen to be the same that have many individuals working in the modern sector. Thus when new positions arise in the modern sector of the economy, more recruits are made from areas experiencing high levels of modernization. Viewed this way the use of the concept of nepotism does obscure the true nature of the problem.

²R. Clignet, "Education and Elite Formation," in The African Experience, ed. by J. N. Paden and E. W. Soja (Evanston: Northwestern University Press, 1970), pp. 304-330.

primary school graduates entering the labor markets. However, this is not of central concern to this study in which we are primarily concerned with the unevenness in the allocation of resources towards education. From the above example it is evident that areas with high levels of modernization stand a better chance of being able to pay school fees than those areas with low levels of modernization. But there is another reason why allocations to education are higher in highly modernized areas than in areas that are less modernized. Areas with high levels of modernization tend to attract more highly qualified teachers whose salaries are higher than those of poorly trained teachers in less modernized areas of the country. Also, it could be argued that students in areas with high levels of modernization with better teachers perform comparatively better on national tests than students in less modernized areas with relatively fewer well qualified teachers.¹ The result of this is that the prestige of the schools in more modernized areas is enhanced and with that there is a better chance of attracting more resource allocations.

¹J. Cameron, The Development of Education in East Africa (New York: Columbia University Press, 1970).

Third, education brings with it increased political participation.¹ This means that areas within the new nations that have high literacy rates will tend to have a high level of involvement in political and other organizational activities. Take the Almond and Verba five nation study.² The authors found that in nations where many individuals received a post-high school education, the level of participation, not just in politics, but in other civic activities, was higher than in countries where fewer individuals received a post-high school education.

Relative Modernization and Agricultural Allocations

One of the "enemies" of man is the fear of starvation. The great majority of the human race still does not have enough to eat, or if it has enough, the diet is unbalanced, resulting in malnutrition. Of the countries that have the problem of not having enough food to feed their people, the new nations predominate. Most of the farmers in

¹This increase in the level of participation and hence knowledge of the political system has far reaching consequences for the authorities. See David Abernethy, The Political Dilemma of Popular Education: An African Case, op. cit. Abernethy, for example, found that as more students completed secondary schools in Nigeria, they had more knowledge of the life style of politicians, which was generally corrupt, thus they tended to distrust not just the individual politicians but the whole political structure.

²G. A. Almond and S. Verba, The Civic Culture: The Political Attitudes and Democracy in Five Nations, op. cit.

the new nations are peasants, they still farm as their forefathers did. These people constitute by far the largest single group in most of the new nations. Thus the new nations' economies are still largely dependent on agriculture. Their way of farming has increasingly been referred to as "traditional agriculture". Traditional agriculture is characterized by three factors. First, knowledge does not advance. The contemporary peasant in the new nations, be it in China, India, Nigeria or Tunisia, still farms more or less like his forefathers three or four generations ago did. The knowledge he has of crops was passed to him by the generation which preceded him -- usually it would have been by word of mouth since most of the peasants do not read or write. The other method that the peasant would have acquired his knowledge through is demonstration.

The second characteristic of peasant agriculture is that incentives to change are extremely low. When peasants grow crops or raise cattle, sheep or chickens and attempt to market them, they receive poor prices. Thus the incentive to produce more is damaged. A third characteristic of traditional agriculture is the high increase in the population. The population increase is not matched with increase in arable land. As population increases, the man/land ratio becomes critical -- that is, if a break out of traditional agriculture is not made.

In discussing problems involved in modernization of agriculture in the new nations, Professor T. W. Schultz has identified four factors,¹ namely, lack of advanced knowledge, price system, low investment in agricultural-connected research and low investment in human capital. Let us briefly discuss three of the four factors that are relevant to this inquiry. These three are need for advanced knowledge, low investment in agricultural research and low investment in human capital.

We know, for example, that in industrialized nations of the West such as the United States, the number of farmers has continued to decrease, yet production per acre has continued to grow -- why? The farmer in the Western countries has access to new inputs into agriculture that have been brought about through research. An example would be use of improved seed and machinery which is able to cultivate, sow, weed and harvest faster than man. But key to solving these obstacles is capital, and where is capital mainly located within the new nations? The areas that have higher economic growth rates within the new nations will tend to have more capital than areas which are experiencing

¹T. W. Schultz, Transforming Traditional Agriculture (New Haven: Yale University Press, 1964).

low or negative economic growth rates. This means that traditional agriculture will continue to be practiced in areas where levels of modernization are low, whereas in areas where the process of modernization is high, modern agriculture will predominate. It is in the latter areas that the governments of the new nations will invest most of their resources.

Relative Modernization and Settlement Schemes

The settlement schemes we have in mind are those that were conceived as a means of alleviating population pressures in areas of relatively high population density.¹ This type of settlement scheme is largely a post-colonial phenomenon arising in former colonies where European settlers had earlier in the century alienated land from the indigenous people. With the attainment of independence, the governments of the new nations made a policy commitment to allocating land previously farmed by the European settlers to the indigenous population, but giving priority to people from areas within the new nation-state which have relatively high population densities. Since such areas coincided with

¹There have been various types of settlement schemes in the new nations. For a discussion of the ones in former British colonies see Settlement Schemes in Tropical Africa: A Study of Organizations and Development by R. Chambers (New York: F. A. Praeger, 1969).

the areas that had high modernization, it meant that most of the indigenous settlers came from these areas. The result is that individuals from areas with high levels of modernization received on the aggregate greater acreage of land in settlement schemes than individuals from less modernized areas.

In cases like that of Kenya, the land on which the people from areas with high population densities were settled has an excellent agricultural environment.¹ Thus the new settlers have enhanced their chances to modernize further. There is, of course, another factor involving individuals who volunteer to settle in a new area. Usually traditional man tends to shun change and to resist it if possible. He also tends to be emotionally attached to his place of birth.² Thus any individual who shows inclination to leave his place of birth and to start life in a different geographical location has exhibited a trait of

¹H. Ruthenberg, African Agricultural Production: Development Policy in Kenya 1952-1965 (New York: Springer-Verlag, 1966).

²Anthropological literature which has attempted to show the stubborn resistance traditional man has put up against change include: C. R. Wharton, Jr., "Risk, Uncertainty, and the Subsistence Farmer," in Economic Development and Social Change, ed. by G. Dalton (New York: The Natural History Press, 1971), pp. 566-574; C. J. Erasmus, Man Takes Control: Cultural Development and American Aid (New York: The Bobbs-Merrill Co., Inc., 1961).

change however minimal this may be. The mere fact that individuals are willing to take this step, i.e. to leave the ancestral home and to move to a different environment means that these individuals see benefits to be gained by settling in areas away from their traditional homes.

Relative Modernization and Transportation Expenditures

One of the factors that is important in order for economic growth to occur in the new nations is the expansion of the rail, road and air transport network. In many of the new nations the process of penetration into the hinterland started at the sea ports and expanded into the interior.¹ Usually the expansion was aimed at linking the seaports to administrative centers, areas which yield cash crops (e.g. cacao or coffee), or to mineral sites. This pattern of expansion influenced modernization process, thus some of the areas that were first penetrated are some of the highly modernized areas. The new governments that came into power after the colonial administration had departed tend to maintain and improve the transportation systems in areas of fairly high modernization. In other words, areas

¹E. W. Soja, The Geography of Modernization in Kenya, op. cit., and J. B. Riddell, The Spatial Dynamics of Modernization in Sierra Leone, op. cit.

that have high levels of modernization are more likely to receive greater resources allocated for transportation than the less modernized areas. Take the case of Zaire in Africa -- here is a case whereby very little attempt has been made to expand the transportation network since independence. The present regime has concentrated on maintenance of the transportation system that existed in areas where process of modernization is comparatively high, leaving out areas that are less modernized but have substantial mineral deposits.

Relative Modernization and Health Services

One of the factors that differentiates the new nations of the world from the post-industrial societies is the general level of health of the people. In the new nations malnutrition¹ tends to afflict more people than it does in the post-industrial societies. Furthermore, the general health of the people in the new nations is relatively poorer than that of individuals in post-industrial societies. This state of affairs has implications for modernization, especially for economic development, for a healthy person can obviously outperform an unhealthy person.

¹p. Belli, "The Economic Implications of Malnutrition: The Dismal Science Revisited," Economic Development and Cultural Change, 20 (October, 1971), pp. 1-23.

The general health of a labor force in any country is important if that country is to continue to experience increasing levels of modernization.

Let us now descend from the level of the nation-state to that of subunits within a nation. At this level (village, district, region), one finds that areas with high levels of modernization have more health services than areas that have lower levels of modernization. Take the example of Central and Nyanza Provinces in Kenya. In 1962 the former Province had a population of 1,324,200 and the latter 1,634,100. It is clear that Nyanza Province had more people, yet when one looks at the people/hospital beds ratio, one finds that Central Province had 839 people per hospital bed whereas Nyanza Province had 1685 people per hospital bed. The patient/doctor ratio also reflects this situation. This is not just a phenomenon that is found in Kenya; on the contrary, it is widespread in the new nations. Of what relevancy is this to public policy? In this study public policy consists of expenditures or allocations of revenue to services. The allocation of revenue to health services reflects the uneven pattern of modernization. Areas with high levels of modernization receive more resource allocations regardless of the size of the population.¹ These re-

¹This hypothesis is supported by an empirical study

source allocations do not just go into the maintenance of existing facilities, but into construction of new facilities as well.

Relative Modernization and Commercial Credits

Eighteenth and Nineteenth Century colonialism was partly motivated by commercialism.¹ Indeed, some of the areas that were colonized were initially governed by trading companies. There were other factors that colonialism brought with it to the areas of colonization. These included the importation of semi-skilled labor to the colonies. For example, the British brought the Indians from India to work on the railway in East Africa. With the completion of the railway the Indians emerged as the dominant commercial group in the whole of East and Central Africa. In West Africa the Lebanese emerged as a powerful commercial group. Other areas such as South East Asia found their commercial life dominated by Chinese.

There are, of course, many factors that influenced the near total monopoly of commerce in the new nations by

in Ghana made by M. J. Sharpston, "Uneven Geographical Distribution of Medical Care: A Ghanaian Case Study," in Journal of Development Studies, 8 (January, 1972), pp. 163-182.

¹G. Bennett, Kenya, A Political History: The Colonial Period (Nairobi: Oxford University Press, 1963), pp. 1-40.

citizens of the colonial power, foreign minorities or certain ethnic groups. One of the factors, we shall argue, was that these individuals were modern men who saw commerce as a way of satisfying their material wants. But following decolonization, the individuals who had been colonized acquired political power which they have proceeded to use to acquire commercial holdings within their countries. Thus, transfer of commercial enterprises from either citizens of the departed colonial power or other foreigners became a political issue that has not subsided in many of the new nations.¹ The clamor for "Africanization," "Malayanization," etc. of commercial life has not completely subsided. In an attempt to "indigenize" the commercial enterprises, new nations often resort to making available cash credits for their citizens to use to buy out the foreigners. But to run a modern business enterprise, whether small or large, requires that the individual have a certain amount of knowledge, e.g. bookkeeping. What this means is that credits go to individuals with the necessary skills to run whatever

¹The strain and suspicion between emerging local entrepreneurs and established foreign entrepreneurs is partly due to the fact the latter do not reinvest the profits where they are earned but transfer them to the countries of their nationality. An example of the tension between the two types of entrepreneurs is discussed in R. J. H. Church, Environment and Policies in West Africa (New York: D. Van Nostrand Co., Inc., 1963), pp. 119-121. Also see H. C. G. Hawkins, Wholesale and Retail Trade in Tanganyika: A Study of Distribution in East Africa (New York: F. A. Praeger, 1965.)

business enterprises they are interested in. It happens that most of the individuals who have the business skills required originate in relatively modernized areas. Thus individuals from areas with high levels of modernization receive more commercial credit than individuals from less modernized areas, thereby widening the gap between haves and have nots. Consequences do follow from this disparity in distribution of commercial credit. The common one is political tension between ethnic groups, sometimes manifesting itself in rioting, formation of splinter political parties or outright secession attempts. A detailed account of this phenomena will be discussed in Chapter Three.

Relative Modernization and Communication

Unlike the other services that we have related the concept of relative modernization to, communication may be considered the least costly in terms of resources.¹ It does not cost much to buy a radio, a newspaper, or to view a government sponsored movie which would be free in many of the new nations. On the other hand, to build a modern house or to install electricity costs far more than

¹I. de Sola Pool, "Communication and Development," in Modernization: The Dynamics of Growth, ed. by M. Weiner (New York: Basic Books, Inc., 1966), p. 98.

buying a newspaper or checking out a book from a public library nearby. There are very few places on the globe today where there are no radios, books, post offices or newspapers -- not to mention television, movies, periodicals and telex. The importance of communication to the survival of the new nations is a recognized fact among the authorities of these nation-states. With relatively good communication systems the authorities are able to inculcate political beliefs, e.g. ideologies, upon their citizens. But above all, they need telephones in order to efficiently conduct business and the radio for education and entertainment and libraries for the spread of knowledge. But what is the geographical distribution of these services like within any of the new nations? Although the authorities in the new nations promote communication within the masses in the rural areas, they do so mainly through the radio and by verbal communication. The other aspects of communication, e.g. newspapers, libraries, movies, periodicals and television are found mainly in urban areas or areas adjacent to urban centers. We know that the greater the level of urbanization, the greater the level of modernization. We may therefore conclude that areas with high levels of modernization will spend more on communication services than areas with low levels of moderniza-

tion. Finally, it should be noted that mass forms of communication are associated with the transportation system. The transportation system may be considered as a prerequisite to mass communication as it is to many other indices of modernization.

Relative Modernization and Rural Electrification Expenditures

Roads and rail systems make travel easier and therefore contact with other people possible; the post office enlarges contacts even further, but electricity alters the pace and pattern of life. Having electricity means that one can acquire a refrigerator or read at night without strain. For those people who are financially able, cooking becomes much easier and even cleaner. In the new nations use of electricity in rural areas is still a luxury for only a few people. This luxury, however, is desired by many, regardless of their financial status.

¹Studies that have been conducted in the new nations have shown that inhabitants of these countries are motivated to consume more, contrary to some of the notions that are prevalent in the literature which hold that individuals in the new nations are not oriented towards material consumption. An example of the above studies is Contemporary Change in Traditional Societies, ed. by J. H. Steward (Chicago: University of Illinois Press, 1967).

The expansion of electrical service follows the growth in urbanization in an areal unit. Areas with high levels of urbanization command the financial resources which warrant installation of electricity. In other words, allocation of resources for expansion and maintenance of electricity is governed by the modernization factor of a unit.

Relative Modernization and Expenditures
for Community Development

Community development may be considered a post World War II phenomenon, at least as it is manifestly organized in the new nations. In most cases it preceded decolonization. Its emphasis was on self-reliance. The belief was widespread that what most people in the new nations lacked was technical instruction. Thus what one needed to do was to provide them with instruction and they would adopt the techniques for use in solving their problems. The problems were mainly of poverty. To understand how seriously social scientists took this approach, one needs to look at the literature¹ that expounds the community development

¹F. Young and R. C. Young, "Towards a Theory of Community Development," in The Challenge of Development: Theory and Practice, edited by R. J. Ward (Chicago: Aldine Publishing Co.); L. K. Sen, Modernization in Village India (Hyderabad: National Institute of Community Development, 1966); U. C. Ghildyal, Objectives of Community Development and its Role in National Development (Hyderabad: National Institute of Community Development, 1967).

approach to modernization. The method that the anthropologists relied on was the case method. But this did not deter them from making comparisons about the success of community development programs in one area and their failure in another area. For example, the differences in ethnicity of the two areas that might have been studied was taken as the explanation for the success or failure of a community development program. But is this necessarily true?

In this study we argue that variation in modernization influences involvement in community development. First, community development as an approach to socio-economic improvement relies heavily on local resources. This means that areas with high levels of modernization would have more skilled manpower within its population than areas that are less modernized. Why is skilled manpower important to community development programs? The emphasis of community development in the new nations has been on expanding modern services, e.g. building schools, dams, roads, houses, etc. To successfully build these projects a community needs a certain amount of expertise and skills. These skills are more likely to be available in an area where more people are literate than in an area where illiteracy is very high. Secondly, in building projects a

community has to buy certain materials that are not available locally. To do this, it needs money, (which) is likely to be easier to raise in an area which is relatively well modernized compared to an area still shrouded in traditionalism. Third, community development entails change in organizational patterns of the people who are the target of community development programs. The objective is to shift the community from a simple mode of organization to one that is deemed to be more productive. The more modernized areas are likely to make the change faster than the less modernized areas. Furthermore, areas that are relatively modernized have been able to develop a different psychological orientation towards the material world. This group of people tend to believe that the environment is capable of being manipulated. In other words, given resources and technical know-how, most problems are solvable.

We stress the differences between the traditional individual on the one hand and the modernizing individual on the other because these two types of individuals approach problems with varying attitudes.¹ This leads us to hypothesize that the success or failure of community development projects is related to levels of modernization of the

¹A. Inkeles, et al., The Modernization of Man (Cambridge: Harvard University Press, forthcoming).

recipients of the programs. If this relationship holds, it means that studies on community development, or indeed, on any program involving planned change, have to control for modernization when evaluating the failure or success of the change programs -- especially if any generalizations are to be made by the scholar or researcher.

Relative Modernization and Expenditures on Tourism

Tourism is not necessarily an important policy aspect of many of the developing countries. It is discussed here because it happens to be an important policy area in Kenya, from which the empirical data in Chapters Three and Four of this study is derived. Unlike the other public policy aspects we have related to the concept of relative modernization, tourism expenditures are best explained by using ethnic groups as the units of analysis. What is interesting here is that the areas where tourism facilities (roads, lodges) are build are some of the least modernized areas, but the people who run the lodges, the transportation trucking system and the booking business are mainly from the more modernized ethnic groups. This means that the spill-over from the tourist business to the immediate neighboring geographical area is so small, if any, that the geographical area where lodges and game parks are located benefit least from the business.

Modernization -- Public Policy
Outcomes Linkage: A Summary

In this Chapter we have attempted to raise some hypotheses on linkages that may be expected to exist between modernization variables and eleven aspects of policy outcomes. The policy outcomes in the form of expenditures to education, transportation, health, communication, tourism, and investment in agriculture, industry and related services are considered as dependent on modernization process, i.e. variation among these outcomes is explained by different levels of modernization. It is important to point out here that policy outcomes, (e.g. levels of education, health services), have a reverse influence on process of modernization. Underlying this conceptualization of the relationship between process of modernization and policy outcomes is the assumption of sustained economic growth. We assume that economic growth, one of the major components of modernization, is sustained as modernization takes place.

Having theorized about the relationships that exist between modernization and policy outcomes, we now move on to some empirical tests of some of our hypotheses concerning the co-variation between levels of modernization and policy outcomes. In the next four chapters we turn to a discussion of four of the eleven policy outcomes outlined above. These are allocations to agriculture, education, commerce and self-help projects (community development).

CHAPTER III

PATTERNS OF MODERNIZATION IN KENYA DISTRICTS

In the preceding chapters we have surveyed aspects of modernization, introduced the concept of relative modernization and related it theoretically to a number of public policy outcomes. We now attempt an empirical explanation of the hypothesized relationship. In doing so we are merely recognizing the place of empirical evidence in social science. Our theoretical assertions must be supported by plausible empirical findings. In the present chapter we therefore attempt to: (a) isolate various components of modernization in fourteen Kenya districts, (b) use the components or factors isolated to construct scales which yield important information regarding the patterns of modernization in Kenya, and (c) compare our findings with those of E. W. Soja.¹

Data

The sample of fourteen districts was randomly selected from a total population of thirty-eight districts, excluding the two districts in North-East Province and

¹E. W. Soja, The Geography of Modernization in Kenya, op. cit.

Nairobi district. These fourteen districts represent a cross-section of Kenya both ecologically and ethnically.

Our variables, whose data is presented in Appendix I, are drawn from several sources (see Table I). We started out with eighteen modernization variables. Five of these eighteen were dropped from the study since their factor loadings lacked meaningful association with the other thirteen variables. Three of the five variables that were dropped had missing values which had been removed by substituting expected values calculated by use of simple regressions. These three variables were: number of farm machines, number of senior employees in Department of Agriculture working in the field, and membership in young farmers' clubs (4K's). Apart from the three variables with expected values that were dropped, three others, variables 9, 11, and 12 (see Table I and Appendix I) had missing values which were eliminated by substituting values that were based on the knowledge¹ we had of the cases (Kwale, Taita, Baringo, West Pokot and Busia districts).

¹Missing values were removed by reviewing distribution of values of the variable for comparable cases. For example, in order to remove the missing value under variable 12 for West Pokot (see Appendix I), we examined the values for this same variable for Busia, Kwale, Taita -- cases which reflected more or less the same level of modernization.

Variable Transformation

Of the thirteen variables in Table I, five were found to be positively skewed,¹ i.e. they had a skewness index of over 1.0. In order to guard against possible distorting influence of these skewed variables on the factor analysis output, we decided to transform them, i.e. to reduce their skewness. The five variables included number of mail boxes, number of branches of banks, number of telephones, income from coffee,² and population density. The transformed values for these variables are presented in Appendix II.

The skewness indices were 1.625 for mail boxes, 1.709 for banks, 2.381 for telephones, 1.149 for income from coffee sales, and 1.134 for population density. Transformation of these variables involved computing the square root of each value. After the computation of the square roots, the skewness was reduced to .842 for mail boxes, 1.243 for banks, 1.217 for telephones, .859 for income from coffee sales, and .368 for population density. Except for number of banks and number of telephones, the skewness in-

¹Skewness has to do with the way values of a variable are distributed. A skewed distribution, then, is one that has extreme scores on one end. If a variable is skewed, it means that its mean will be located closer to the tail.

²Some of the cases in our sample do not grow coffee. These cases are few, e.g. Kwale.

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dex was reduced to less than 1.0. However, even for banks and telephones, the new skewed indices were lower than their former indices of 1.709 and 2.381 respectively. In transforming variables we sought to minimize situations where skewed values might distort the distribution of each variable.

Factor Analysis: Results and Interpretation

The results of factor analysis are presented in Tables II and III. Factor loadings show the correlation between the factor and the observed variable. In other words, intercorrelated variables load on the same factor. The resulting factors (rotated) are independent of each other. Thus, this statistical technique is useful for grouping those variables that are highly intercorrelated.

Table I presents the modernization variables on which data was gathered. The variables measure a number of phenomena which include communication (POBOXES and PHONES), wealth (COINCOME and STOCKEXP), education (PRIMED, SECED and CERTPASS), population growth (POPDENSE and POPSIZE), participation and complexity of social-economic organization (REGISOC and EXTENSTA), and urbanization (BANKING and ASIANPOP). Each of these variables may measure more than one aspect of modernization, e.g. POBOXES and PHONES may be considered as measuring urbanization in addition to measur-

TABLE I
DISTRICT MODERNIZATION VARIABLES

Name	Description
1. REGISOC	Number of registered cooperative societies
2. EXTENSTA	Number of agricultural extension staff
3. POPDENSE	Population per square kilometer
4. POPSIZE	Population size
5. SECED	Number of students attending secondary schools
6. PRIMED	Number of pupils in primary schools
7. CERTPASS	Number of students passing School Certificate and East African Certificate of Education
8. STOCKEXP	Livestock products sold in K£'000
9. COINCOME	Income from coffee in K£'000
10. POBOXES	Number of post office rental boxes
11. BANKING	Number of branches of banks
12. PHONES	Number of telephones
13. ASIANPOP	Size of Asian population

Sources: Republic of Kenya, Department of Co-operative Development Annual Report, 1962 (Nairobi: Government Printer, 1964), p. 23; J. Heyer, D. Ireri, and J. Moris, Rural Development in Kenya (Nairobi: Institute for Development Studies, 1969), p. 64; Kenya Population Census, 1969, Vol. I (Nairobi: Government Printer, 1970), pp. 3-68; Republic of Kenya, Ministry of Education Annual Report, 1969 (Nairobi: Government Printer, 1969), pp. 56-59; Republic of Kenya, Department of Agriculture Annual Report, 1966/67, Vol. I (Nairobi: Government Printer, 1969), p. 41; Kenya Post Office Directory (Nairobi: Kenya Litho Ltd., June, 1970); Kenya Telephone Directory (Nairobi: Kenya Litho Ltd., 1971).

ing communication. It is important to point out that although the fourteen districts are predominantly rural, three of them have urban areas with populations of over 5,000. These three are Embu, Murang'a and Nyeri. The respective population for these urban areas is 5,213 for Embu, 5,389 for Murang'a and 7,857 for Nyeri.

Before discussing the results of the factor analysis in Tables II and III, a brief statement about the use of factor analysis appears to be necessary. In this study we use factor analysis for two purposes. First, we are interested in identifying the patterns that underlie the thirteen variables. In other words, what variables are highly associated. We shall consider variables as being highly associated if they load at .50 or above on one component or factor. Secondly, we make use of factor analysis to construct a scale of modernization. The cases are ranked by means of factor scores which will be discussed later in this chapter. We may now move on to the description and interpretation of extracted factors of the thirteen variables.

Table II presents an unrotated factor matrix with three factors. The three factors account for 85.4% of the total variance. This is a fairly high proportion of variance accounted for. All the thirteen variables load on the first factor. These loadings range from a low of .59 to a high of .97. The loadings on the other two factors before

TABLE II
FACTOR LOADINGS BEFORE ROTATION

	F ₁	F ₂	F ₃	h ²
REGISOC	.84	-.40	.10	.88
EXTENSTA	.83	-.32	-.17	.82
POPDENSE	.70	-.35	.05	.62
POPSIZE	.81	-.45	-.10	.87
SECED	.97	-.12	-.08	.96
PRIMED	.90	-.15	-.30	.92
CERTPASS	.90	.17	-.17	.87
STOCKEXP	.74	.42	-.16	.75
COINCOME	.59	.68	-.40	.97
POBOXES	.89	-.12	.23	.86
BANKING	.68	.24	.65	.95
PHONES	.82	.41	.27	.91
ASIANPOP	.81	.26	.11	.73
Eigenvalue	8.56	1.61	.92	
% of Total Variance	65.9	12.4	7.1	

Calculated at Syracuse University Computing Center using Bio-medical Computer Programs, X-Series Supplement by W. J. Dixon, ed., (Berkeley: University of California Press, 1970), p. 90. Unities were entered in the diagonal as estimates of the communalities. Loadings have been rounded to two decimal places.

TABLE III
ORTHOGONALLY ROTATED FACTOR MATRIX

	F ₁	F ₂	F ₃	h ²
REGISOC	.87	.09	.35	.88
EXTENSTA	.85	.28	.14	.82
POPDENSE	.74	.08	.26	.62
POPSIZE	.91	.14	.15	.87
SECED	.80	.44	.33	.96
PRIMED	.81	.50	.11	.92
CERTPASS	.58	.66	.31	.87
STOCKEXP	.30	.75	.32	.75
COINGCOME	.05	.98	.12	.97
POBOXES	.70	.24	.56	.86
BANKING	.23	.18	.93	.95
PHONES	.29	.56	.72	.91
ASIANPOP	.41	.53	.53	.73
Eigenvalue	8.56	1.61	.92	
% of Total Variance	65.90	12.40	7.10	

Variance accounted for:

Scale	65.0%
Rural Economic Growth	12.4%
Linkage-integration	7.1%

Boxes above indicate the factor to which each variable loads. Loadings have been rounded off to two decimal places. Calculated at the Syracuse University Computing Center using Biomedical Computer Programs, X-Series Supplement, op. cit.

the rotation of the matrix is below .50 except for two variables -- COINGOME, which has a loading of .68 on F_2 and BANKING, which has a loading of .65 on F_3 . The first component, or F_1 accounts for 65.9% of the total variance, F_2 accounts for 12.4% and F_3 accounts for 7.1%.¹ The rotated factor matrix (Table III), gives us a pattern of modernization process at district level in Kenya. The factor analysis results show that all the thirteen variables registered loadings over .50 on F_1 in Table II.

In Table III, the variable loading pattern is altered; each variable in this case tends to load highly on only one component. However, a few variables, PRIMED, CERTPASS, POBOXES, PHONES and ASIANPOP, have loadings of over .50 on at least two of the three extracted factors, i.e. on the rotated factor matrix. After careful observation we have decided to label F_1 as a population size factor (SCALE), F_2 as rural economic growth (RUMIGRO) and F_3 as linkage-integration with the Nairobi core (LINKGRAT).

¹For a factor to be extracted and printed out if the constant C is not specified, the eigenvalue must be at least 1.0 or more. Thus to extract a factor whose eigenvalue is less than 1.0, the researcher or whoever is engaged in using a computer to factor analyze data must specify the number of the eigenvalue. In the present case we punched .9 on the problem card to force the printing out of F_3 whose exact eigenvalue is .92414.

F₁ -- Scale

The eight variables loading on this factor (REGISOC, EXTENSTA, POPDENSE, POPSIZE, SECED, PRIMED, CERTPASS and POBOXES) have loadings of over .58 after rotation of the factor matrix. F₁ taps the organizational scale of a district. This organizational scale¹ is based on population size. The larger the population size of a district, the larger the organizational scale of that district. Thus districts with large population sizes will manifest not only complex organizational relationships, but the scale of the relationships is likely to extend to other external societies. Communication is one of the factors that differentiates large complex and modern societies from simple societies. Our findings show that POBOXES, one of the variables that measure level of communication, loads on two components of which F₁ in Table III is one.

Let us briefly discuss other variables that load on this component. The two variables closely related to this component are POPSIZE and POPDENSE. These two variables

¹In naming the first component (F₁) SCALE, we aim at linking our findings to those of Godfrey and Monica Wilson, The Analysis of Social Change (Cambridge: Cambridge University Press), 1968, pp. 24-44. One of the distinguishing features of the concept of scale is the size of a unit. This size is measured in terms of the number of people. In other words, the larger the number of people in a given unit, the larger the scale of social, economic and political organization.

have a significant simple correlation (see Appendix III). Population density is connected with population pressures. Where there is high population one finds many people gaining access to education, to cities, etc. Population density therefore acts as a stimulus to mobilization of a given society. Once land becomes scarce, individuals travel great distances in search of an alternative means of livelihood. This is because traditional agriculture does not have innovative capacity to support large numbers of people.

The high bivariate correlation with REGISOC reinforces the argument that a significant relationship exists between mode of organization and population. REGISOC, apart from serving economic interests (those of helping the farmer by giving him a channel in the form of an organization through which he can market his produce), teaches the farmer the benefits that may be accrued from large organization. Furthermore, membership in REGISOC offers opportunities for participation, e.g. in politics. This is because members of REGISOC do discuss and take stands on political questions that affect their interests.

In the next section of this chapter we shall concentrate on the analysis of RUMIGRO and LINKGRAT which directly tap variation in modernization. We shall attempt

to classify the districts in the sample using the factor scores of these two components (RUMIGRO and LINKGRAT). But before we do so, a brief discussion of each of the two components, RUMIGRO and LINKGRAT, is our next task.

F₂ -- Rural Economic Growth

Six of the thirteen variables have a loading of over .50 on this dimension. Two of the six variables (namely PRIMED and CERTPASS) also registered loadings of over .50 on the population size factor. One important question for the reader is likely to be about the labelling of F₂ as Rural Economic Growth (RUMIGRO). Of the six variables that load on F₂, only two have loadings above .70. These two are STOCKEXP, .75, and COINCOME, .98. Of the remaining four variables, three have a direct relationship with agriculture which characterizes RUMIGRO. One of the prerequisites of modern agriculture is elementary education (PRIMED), for farmers have to keep simple records and accounts and should be able to know the utility of using fertilizer, etc. Thus the association of PRIMED, STOCKEXP and COINCOME is not just an accident or something due to chance. The association shows that these variables are important in a rural economy, which Kenya happens to be. And underlying economic growth in Kenya is expansion of modern agriculture, which is the important index of this

component which we have labelled Rural Economic Growth (RUMIGRO). The other variable that is related to this component is CERTPASS. It is acknowledged that areas that have relatively high rural economic growth show indices of STOCKEXP and COINCOME. These are also the same areas that register relatively high levels of high school graduates.

The third variable that has a direct relationship with STOCKEXP is ASIANPOP. This variable (ASIANPOP), which indexes the number of Indians and Pakistanis found in each of the fourteen districts, has relevance here in that Asians in Kenya have acted as middlemen and bought from Black African farmers and resold the produce in the main metropolitan areas outside the districts or exported it to the other East African countries or overseas. Finally, this component forms the backbone of modernization process in the districts in Kenya. It underscores the often talked about relationship between elementary education and modern agriculture.

F₃ -- Linkage-Integration

This factor, which accounts for 7.1% of the total variance, is definitely non-agricultural. The variables that load on it include POBOXES, BANKING, PHONES and ASIANPOP. BANKING has the highest loading of .93 on this factor (after the factor matrix has been rotated). But what emerges

to an observer is that all four variables that load on this factor are usually found concentrated in the core of any social system. In the case of Kenya the core is Nairobi City. It is in Nairobi that one finds concentration of POBOXES, BANKING, PHONES and ASIANPOP. Moreover, the banks that are found in the districts are merely branches of those that are located in Nairobi. And if one looks at ASIANPOP, one finds that out of a total of 139,037 Asians in Kenya, 67,189, or some 49% live in Nairobi. Thus F_3 indexes the linkage of the districts to the core (Nairobi).

F_2 as the Dominant Modernization Component

The emergence of agriculture as the main modernization factor in this study is not surprising since Kenya is predominantly an agricultural country. About 60% of its national income is derived from agricultural products. Agriculture employs more than 85% of the adult working population. Some of these people are peasants, i.e. they produce mainly for their own consumption. Let us examine systematically the relationship between agriculture and modernization. First, the modernization process, it may be argued, leads to increase in per capita income. In the case of Kenya, per capita income increased from U.S. \$112 in 1964 to U.S. \$140 in 1970. This is a substantial increase in a period of six years (barring the effects of inflation).

Moreover, we noted that modernization is indexed by rapid urbanization. In Kenya the number of people moving from rural areas to urban areas has been substantial. Kenya has also experienced high population growth -- around 2.5% annually. This means that more food must be produced to feed these people. There are, of course, other reasons why agriculture is the most important modernizing component in the Kenya districts. We observed in Table III that STOCKEXP and COINCOME loaded on F_2 component at .75 and .98 respectively. These two variables reflect the importance of agriculture in general -- hence their close association with this dimension. Thus we find that although over 75% of Kenya's exports are agricultural, her foreign exchange reserves stood at U.S. \$215.6 million in the last quarter of 1970. This is partly due to the growth in agricultural production.

Finally, agriculture generates capital. This capital may be used for reinvesting in other sectors in an attempt to diversify the economy. Thus in the present study only four districts, Embu, Meru, Murang'a and Nyeri (see Table IV), may be expected to have a substantial income from agriculture that they may use to reinvest in other sections of the economy. A fourth district (Machakos) is a borderline case. It has a factor score of 0.40. The Machakos case raises questions about the population problem.

This district ranks second in population size, behind Kakamega, yet it registers a positive score on RUMIGRO component. We might speculate that if Machakos district controlled population growth, it might experience even higher rates of agricultural growth.

Relative Scales

Table IV presents factor scores of each of the three components. It is with Table IV that the concept of relative modernization acquires some of its potency. This is because the cases are indexed according to their relative strengths on each of the three factors. Let us briefly discuss each of the three scales -- organization scale (SCALE), rural economic growth (RUMIGRO), and linkage-integration (LINKGRAT). We begin with SCALE. Of the fourteen cases, only five have positive factor scores on this component. In order of rank these are: 1.82 for Kakamega, 1.48 for Machakos, 1.16 for Kisii, .99 for South Nyanza and .64 for Murang'a. These indices compare favorably with the raw data of SCALE in Appendix I. Four of the five districts (Murang'a, Kisii, South Nyanza and Kakamega), have high population densities -- over 114 people per square kilometer. Machakos, which has a low of 50 people per square mile, is the only exception -- but its low POPDENSE index is due to the physical conditions in the district. Large areas

TABLE IV
FACTOR SCORES FOR EACH DISTRICT

DISTRICT	SCALE	RUMIGRO	LINKGRAT
Kwale	-0.93	-0.35	-0.30
Taita	-0.81	-0.40	-0.39
Embu	-0.68	0.66	-0.43
Machakos	1.48	0.40	-1.00
Meru	-0.44	1.46	0.35
Murang'a	0.64	1.97	-1.53
Nyeri	-0.31	1.45	2.58
Baringo	-1.01	-0.53	-0.44
Nandi	-0.55	-0.99	0.89
W. Pokot	-1.03	-0.68	-0.45
Kisii	1.16	-0.64	0.77
S. Nyanza	0.99	-0.86	-0.04
Busia	-0.32	-0.73	-0.58
Kakamega	1.82	-0.76	0.60

Calculated on a computer at the Syracuse University Computing Center using Biomedical Computer Programs, X-Series Supplement, op. cit. Factor scores have been rounded off to two decimal places.

of the district are arid -- approaching semi-desert conditions -- hence they are sparsely populated. The high population in this district is concentrated in the small part of the district that is well-watered.

We may now turn to the rural economic growth (RUMIGRO) scale. It is this scale and the linkage-integration scale that we are concerned with most. These are the two scales that measure modernization. Of the fourteen districts, only two have positive modernization scores on both scales (RUMIGRO and LINKGRAT). Five districts (Embu, Machakos, Meru, Murang'a and Nyeri) have positive factor scores on RUMIGRO. The range is wide, the district showing least modernization on this dimension (Nandi) having a factor score of $-.99$, whereas the most modernized district (Murang'a) has a factor score of 1.97 . The significance of this scale cannot be overemphasized. If these findings are any indication as to what is happening in the process of modernizing agriculture, it means that nine of the fourteen districts, or 64% of the districts, are not showing positive gains in modernizing their agriculture -- hence are not experiencing rural economic growth.

Our third scale measures the communication and integration that exists between the core (Nairobi) and the districts. This scale yields interesting results. From an a priori standpoint one would tend to associate the core

with adjacent areas. Thus the farther away one moves from the capital city, which forms the core, the less integrated with the core are the farthest points. According to these findings, this is not the case. Areas like Kakamega, Meru or Kisii, which are located more than 150 miles from Nairobi, have higher factor scores on this component than areas that are closer to the core, e.g. Murang'a, Machakos, Embu.

Table V presents the pattern of modernization in the fourteen districts. These districts have been classified according to their factor scores on RUMIGRO and LINKGRAT components. We shall now turn to a discussion of each of these four "cells". The discussion will focus on two areas. First, a comparison of the four categories in Table V will be attempted. For example, why should Nyeri and Murang'a, which are not only located in the same province but share a common boundary, have different factor scores on LINKGRAT component? The same question applies to Kakamega and Busia. Secondly, an attempt will be made to generalize our findings to the rest of the provinces, i.e. the whole of Kenya.

The First Pattern (Meru, Nyeri)

It is only Nyeri and Meru districts that have positive factor scores on both RUMIGRO and LINKGRAT. Nyeri's factor scores are significant -- 1.45 on RUMIGRO and 2.58 on

TABLE V
 PATTERNS OF MODERNIZATION IN KENYA DISTRICTS

		Linkage-Integration (LINKGRAT)	
		Low	High
Rural Economic Growth (RUMIGRO)	High	Murang'a Embu Machakos	Nyeri Meru
	Low	Kwale Taita Baringo W. Pokot S. Nyanza Busia	Nandi Kisii Kakamega

Source: Table IV

LINKGRAT. On the other hand, only one of Meru's factor scores is significant, i.e. RUMIGRO, where Meru district registers 1.46, but only .35 on LINKGRAT factor score component. Both districts underwent rapid change during the Mau Mau rebellion of the 1950's when the Colonial administration instituted its policy of land consolidation which involved the merging of scattered landholdings, culminating in receipt of title to the holdings by each farmer. Any holding over seven acres was deemed as economically viable and thousands of such holdings were registered in Meru and Nyeri. The process of consolidating land in these districts was facilitated by the existence of emergency regulations. This meant that opposition to the scheme was muted due to fear of being singled out as a Mau Mau adherent or sympathizer. Land consolidation took place in other districts, but only in Nyeri, Meru plus Kiambu, Embu and Murang'a did it make a substantial impact on changing land tenure practices, i.e. from traditional to modern. What is important for our purpose is that possession of land titles enabled the inhabitants of these districts to receive agricultural development credit from the national government following the overthrow of the colonial government. The land titles served as security for the government in case a farmer defaulted in repaying the loan he had received.

Secondly, these two districts are favored physically in that they are located at the foothills of two mountain ranges at elevations that dispose them to a temperate-like climate. Nyeri is located at the Aberdare foothills whereas Meru is located at the foothills of Mount Kenya. Owing to the rich soils around these mountains, it is not surprising that the two districts are leading producers of dairy products and coffee. Nyeri also produces tea and pyrethrum. All these crops (coffee, tea, pyrethrum) are chief earners of foreign exchange for Kenya.

The Second Pattern (Murang'a, Embu Machakos)

These are the districts that have positive factor scores on RUMIGRO but negative factor scores on LINKGRAT. The districts have factor scores of 1.97 for Murang'a, .66 for Embu and .40 for Machakos on RUMIGRO. Murang'a, like Nyeri, is part of Central Province, which is exclusively populated by the Kikuyu. Embu, though located in Eastern Province, is culturally and ethnically close to Central Province (Kikuyu). Like Nyeri and Meru, the two districts (Murang'a and Embu) underwent consolidation of land in the 1950's. What sets Murang'a and Embu apart from Nyeri and Meru is their low level of integration with the core, i.e. Nairobi. This does not mean that these two districts are isolated. What we are suggesting from our empirical ob-

servations is that these two districts are not linked or integrated with the capital city of Nairobi to the degree that Meru and Nyeri are. These are at least the conclusions we draw from our statistical analysis.

Finally, the third district related to this pattern (Machakos), did not experience large scale land consolidation as the other four (Meru, Nyeri, Murang'a and Embu) did. In terms of geographical conditions, Machakos has more in common with Embu than Murang'a. Some areas of both Machakos and Embu districts are dry and plagued by intermittent droughts (rainfall in these parts of the districts lasts only two to three months).¹ In summary, this pattern of modernization is one of continuing increase in agricultural production. Viewed from this standpoint, the Embu-Murang'a-Machakos pattern shares growth in agriculture with Meru and Nyeri.

The Third Pattern (Nandi, Kisii, Kakamega)

All three districts are located in Western Kenya but in different provinces. Nandi is located in Rift

¹The climatic environmental conditions of the two districts are discussed by P. Mbithi, Famine Crises and Innovation: Physical and Social Factors Affecting New Crop Adoption in the Marginal Farming Areas of Eastern Kenya (Makerere: Makerere University College), mimeographed paper, no date.

Valley, Kisii in Nyanza and Kakamega in Western Provinces respectively. Nandi and Kakamega share a common border even though the two districts are located in different provinces. All three districts have negative factor scores on the most important modernization component -- RUMIGRO. The factor scores for the districts on RUMIGRO are -.99 for Nandi, -.64 for Kisii and -.76 for Kakamega. What are the implications of these scores? Without attempting to read too much out of Table IV, it means that none of the three districts are experiencing economic growth since agriculture is the backbone of Kenya's economy. The three districts have favorable climatic conditions, however two of them -- Kisii and Kakamega -- have the highest population densities (see Appendix I).

But if the areas are well-watered, why haven't they shown as much progress on RUMIGRO as Meru or Nyeri? First, these districts did not experience the brunt of Mau Mau, which made conditions easier for the colonial administration to push land consolidation (reform) in Meru, Embu or Nyeri. The minimal consolidation that was achieved was largely voluntary. Failure to consolidate scattered holdings accompanied with reluctance to register holdings on the part of those who had consolidated meant that farmers in these districts could not acquire agricultural credit. This meant that these districts would lag behind in

economic growth and therefore they could not be expected to experience positive socio-economic growth. Secondly, population size was a problem in two of the three districts, namely Kisii and Kakamega (see Appendix I). This meant that individual land holdings in some parts of these districts were so small that they were unlikely to sustain a single family. Table IV shows that LINKGRAT is the common positive factor underlying these districts -- Nandi has a factor score of .89, Kisii .77 and Kakamega .60. Thus the three districts are well integrated with the core, even though they are not experiencing positive economic growth.

The Fourth Pattern (Kwale, Taita, Baringo,
W. Pokot, S. Nyanza, and Busia)

The districts under this pattern (except for S. Nyanza) have negative factor scores on all three components -- SCALE, RUMIGRO and LINKGRAT. South Nyanza, which has a positive factor score on SCALE, has negative factor scores on RUMIGRO and LINKGRAT. These districts are widely distributed geographically. Kwale and Taita are located in the Coast Province, Baringo and West Pokot in Rift Valley, S. Nyanza in Nyanza, and Busia in Western Province. The one common factor seems to be that they are all on the periphery of the socio-economic system -- assuming that Nairobi is the center of the core. They are all located at a distance of over 240 miles from Nairobi. Except for

South Nyanza and Busia, all of them have population densities of between six and twenty-five people per square kilometer. Generally these are districts which the colonial administration never attempted to develop. For example, no big push was made to consolidate land. But above all, these areas have comparatively low literacy levels. This lag in literacy and the fact that these areas are peripheral to the core obviously places them at a great disadvantage in terms of acquiring resources. A word of caution should be sounded at this point. Our observation on the socio-economic status of the six districts in no way implies that these districts are destined to poverty. Some of them have potential which may be exploited. For example, the cashew nut farming potential exists in Kwale, cotton in S. Nyanza and Busia, etc. Obviously, one asset which some of the districts (Kwale, Taita, Baringo and West Pokot) have is the low population density.

How General is the Above Modernization Pattern to Kenya?

Our sample is drawn from all the provinces except North-East, which was excluded because of its special geographical conditions (most of it is semi-desert and supports a population of only 245,757 according to the 1969 census). What has emerged from our findings is that the area that is experiencing economic growth is the Meru, Nyeri, Embu,

Murang'a districts and to a lesser extent, Machakos. The Machakos index of factor scores is marginal, hence no conclusion as to its direction of modernization on RUMIGRO may be confidently made. These findings at district level do reflect the general pattern of modernization in Kenya. The Nyeri, Murang'a, Meru, Embu areas reflect the process of modernization in Central Province which is predominantly Kikuyu ethnically. In a recent paper on the process of socio-economic development in Kenya, Professor Colin Leys writes:

Any discussion of the social and economic structure of Kenya's rural sector must begin by making clear distinction between its major regions. First there is Central Province, immediately to the north of Nairobi, the homeland of the Kikuyu, plus the Districts of Embu and Meru in Eastern Province, immediately to the north-east on the opposite slopes of Mount Kenya. These peoples are ethnically and linguistically close to the Kikuyu and practice a similar type of agriculture on similar terrain. Taken as a whole, this is the most productive and densely populated area of Kenya. . . .¹

Our statistical findings in this study go a long way towards confirming Ley's observations. However, we take exception to Ley's assertion that Central Province plus the districts of Meru and Embu are the most densely populated areas in Kenya. Table VI shows that Nyanza Province is the most

¹C. Leys, Politics in Kenya: The Development of Peasant Society (Nairobi: Institute for Development Studies, University of Nairobi, 1970), p. 8.

TABLE VI

DISTRIBUTION OF POPULATION IN KENYA PROVINCES, THE DISTRICTS OF MERU AND EMBU, AND NAIROBI CITY

Privinces and Districts	Population Size	Sq. Kilo-meters	Density
NAIROBI CITY	509,286	693	734
CENTRAL PROVINCE	1,675,647	13,233	127
COAST PROVINCE	944,082	83,325	11
EASTERN PROVINCE	1,907,301	160,139	12
NORTH-EASTERN PROVINCE	245,757	126,626	2
NYANZA PROVINCE	2,122,045	12,628	168
RIFT VALLEY PROVINCE	2,210,289	177,631	12
WESTERN PROVINCE	1,328,298	8,276	161
CENTRAL PROVINCE PLUS MERU AND EMBU DISTRICTS	2,451,065	25,632	95

Source: Kenya Population Census, 1969, Vol. I (Nairobi: Government Printer, 1970), p. 1.

densely populated province with 168 people per square kilometer, followed by Western Province with 161 people per square kilometer. Central Province proper (excluding Meru and Embu Districts), has 127 people per square kilometer. When Meru and Embu districts are added, the population density drops even further to 95 people per square kilometer.

The remaining districts, Nandi, Kisii and Kakamega, represent some of the progressive areas in Rift Valley, Nyanza and Western Provinces respectively, at least as far as literacy (see Appendices IV and V) and linkage with the core are concerned. In the case of Nyanza, the level of modernization in South Nyanza does not necessarily reflect the modernization pattern in either Siaya or Kisumu districts, just as Busia is not typical of Western Province as a whole. The two districts -- S. Nyanza in Nyanza Province and Busia in Western Province -- are relatively less modernized than the other districts within the two provinces. For example, Kisii in Nyanza and Kakamega in Western Province have positive factor scores on LINKGRAT.

Our above findings then do show that the variation in levels of modernization in Kenya districts reflect the variation that exists at the provincial level. In order to examine this point we have included in this study Appendices IV and V. Appendix IV, which shows the distribution

of teachers per district, presents an interesting case. For example, both Kisii and S. Nyanza had a total population of 1,338,214 in 1969 compared with 806,165 for Nyeri and Murang'a, yet the latter (Nyeri and Murang'a) had 82 secondary schools staffed with 533 teachers compared to 86 secondary schools staffed with 441 teachers for the former districts. The two Western Province districts (Kakamega and Busia) fare even worse than Kisii and South Nyanza. With a total population in 1969 of 983,072, they commanded only 69 secondary schools staffed with 389 teachers.

Moving on to Appendix V, we find that the distribution of children of primary and secondary school age attending school again reflects the variation in the levels of modernization within the provinces. Central Province, in which Nyeri and Murang'a districts, which had positive factor scores on RUMIGRO, are located, had 64% of the children of primary school age enrolled in school in 1969. This was higher than the enrolment of children of the same age group in primary schools in the capital city of Nairobi which had only 61% enrolled. The second province (but third when Nairobi District is included) that had the next highest number of children of primary school age enrolled was Eastern Province -- 47%. Again, it is in this province

(Eastern) that the remaining three districts (Embu, Meru and Machakos) which had positive factor scores on RUMIGRO component are located.

Let us now look at the enrolment in secondary schools. Again, Central Province, of which Nyeri and Murang'a are a part, comes out way ahead of any other province with 18% of all the children of secondary school age enrolled in school (1969), i.e. when we exclude Nairobi District. The rest of the provinces average about 7.5% secondary school enrolment. This average figure of 7.5% does not change even when North-East Province is excluded. What this means is that save for Nairobi District, the number of pupils attending secondary schools in the province leading in level of modernization (Central), is more than double the national average of about 8.3%, i.e. excluding Nairobi. When Nairobi is included, the average number of pupils of secondary school age attending school rises to 13% for the whole country. Still, the 18% for Central Province is way above the 13% figure. But Nairobi is no exception to Kikuyu dominance. In this city (Nairobi) where 46% of the children of secondary school age are enrolled in school, the majority are Kikuyu since the largest single ethnic group in that city are the Kikuyu.¹ This enrolment

¹Republic of Kenya, Kenya Population Census, 1969, Vol. I (Nairobi: Government Printer, 1970), p. 70.

is not conditioned by the population size of the provinces, for three provinces, (Eastern, Nyanza and Rift Valley), each have population sizes that are larger than Central Province (see Appendix V). Variation in enrolment can only be attributed largely to differing levels of modernization. Thus variation in secondary school enrolment goes a long way towards confirming our theory that the pattern of modernization we mapped in Kenya districts is generally representative of the modernization process in that country

How Do the Above Findings Compare with Soja's?

Before we compare our findings with those of E. W. Soja, we have to point out that Soja's study is based on the entire population, i.e. 41 districts. Our study, on the other hand, is based on a sample of fourteen of the forty-one districts and descends to the levels of the Administrative Division, the Location (village) and the individual in subsequent chapters. The comparison will be limited to our findings at the district level. What we shall attempt to compare is the observed similarities in our findings and those of Soja. A second difference between our findings and those of Soja that we have to note before proceeding

¹E. W. Soja, The Geography of Modernization in Kenya, op. cit., pp. 77-100.

with the comparison is the number of variables used in the two studies. Soja uses twenty-five variables; our study, on the other hand, uses thirteen variables to measure modernization in Kenyan Administrative Districts.

Of the thirteen variables in our study, seven were also used by Soja. The difference here is that the data of each of the seven variables is different. Most of Soja's data reflected modernization in Kenya during the colonial period. Our data is mostly post-independence. These seven variables that are common to both studies are POPDENSE, SECED, PRIMED, CERTPASS, COINCOME, PHONES and ASIANPOP. There are slight differences in the seven variables although they measure more or less the same phenomena. For example, where one of Soja's variables was number of individuals receiving post secondary education, we have SECED (number of individuals receiving post primary education). Again, Soja had as one of his variables the number of pupils passing the Kenya Preliminary Examination instead we used data on the number of students passing the School Certificate Examination. One could argue that during the colonial period an individual who passed the Kenya Preliminary Examination was assured of a white collar job in the urban centers of the country. However, as more individuals

completed primary school and flooded the employment market, those who had completed high school had a better chance of being hired for a white collar job.

Most of the seven variables load significantly on the first component in Soja's study. This is the component Soja has labelled "Development". Soja argues that "Development" has fewer connotations. We take exception to this argument; we think that this component taps a specific phenomenon, i.e. size or scale, and should be logically labelled as such -- SCALE. In fact, in examining the variables that load on this component in Soja's study, one finds that most of the variables measure the size or scale factor. Development is a nebulous concept -- one that should not be applied to F_1 . If this component taps development as Soja argues, what about the variables that do not load on it such as income of Africans, number of individuals with post secondary education, high taxes per capita, per centage of individuals passing the Kenya Preliminary Examination. Are these variables not related to development?

The second component, i.e. on the rotated factor matrix, is labelled by Soja as "Modernization Subsystems". Again, this is utterly confusing. All these components, F_1 through F_3 , tap a different aspect of modernization and these different aspects should be identified and label-

led accordingly. What is the subsystem that Soja is talking about? This subsystem should be identified and F_2 should then be labelled accordingly. This is not a critique of Soja's study which on the whole is well researched and makes penetrating insights into modernization process. Nevertheless, the labelling of the extracted components or factors is not logically thought out.

Two of our seven variables which load significantly on our F_2 (CERTPASS and COINCOME) index the same phenomena that Soja's two variables -- Africans with Post Secondary Education and High African Income, index. Incidentally, these two variables also load significantly on Soja's F_2 . We have in our study labelled F_2 as Rural Economic Growth (see Table III). Our above analysis of this component shows that it underlies the main process of modernization in rural districts of Kenya. On this point we at least come close to Soja's argument that his F_2 represents modernization in districts that are predominantly African. It is these districts that comprise most of our cases.

The ranking of our sample districts on levels of modernization using factor scores compares favorably with that of Soja. For example, Kakamega (North Nyanza), Murang'a (Fort Hall), Machakos, Kisii, all with high factor scores on our F_1 , also rank fairly high on Soja's F_1 . In fact, Nyeri, which is the district that emerges as the most

modernized in our sample, ranks consistently high -- above the other thirteen -- on all the four components in Soja's study. We also find that certain districts, e.g. Kwale, Taita, W. Pokot, cluster together in Soja's Figure 37 and in our Table V. The second cluster consists of Nandi and Kisii, and the third cluster consists of Murang'a (Fort Hall), Embu and Machakos (see Soja's Figure 37 and our Table V).

Finally, we have consistently argued and shown that modernization does not take place uniformly. Our findings, for example, show that Kisii has a higher level of modernization than South Nyanza, although the two districts are physically located in the same province. The same is true of Nyeri and Murang'a. The former has a higher level of modernization than the latter. Soja's findings lend support to this argument.

Summary

In this chapter we have mapped the variation and patterns of modernization process in Kenya districts. Our findings yielded three components -- SCALE, RUMIGRO and LINKGRAT. Of these three components, only RUMIGRO and LINKGRAT index the process of modernization proper. Of the fourteen districts, only two (Meru and Nyeri), have positive

factor scores on the two modernization components (RUMIGRO and LINKGRAT). These findings raise a number of questions. For example, what are the long term political consequences of this pattern of modernization? Are we witnessing formation of socio-economic classes in Kenya? If variation in the process of modernization reflects ethnic stratifications, what does this do to political integration? Some of these questions will be taken up for discussion in the next chapter, particularly the concluding part of Chapter Four.

CHAPTER IV

RELATIVE MODERNIZATION AND POLICY OUTCOMES IN KENYA DISTRICTS

In this chapter we shall first present our data on the dependent variables. Second, we shall factor analyze the dependent variables in an attempt to produce a scale which will later be treated as a dependent variable of the combined three variables of agricultural, commercial and educational allocations. Third, regression tables for the three dependent variables and one composed of the scale will be presented. Fourth, we shall control for population size (see Appendix VI) in an attempt to observe the influence of modernization on the dependent variables in the absence of population size factor.

Table VII presents the distribution of agricultural and commercial credits to farmers and traders, and expenditures on education in the districts. The mean amount allocated to each district in agricultural credits is K£ 31,973. Nine districts received allocations below this figure, or 62% of our cases. Five districts received above average agricultural allocations. The agricultural resources that were allocated to these five accounted for K£ 326,085, or 73% of the total allocations. Two districts that had the highest factor scores on RUMIGRO (Murang'a and Nyeri)

received 32% of the total allocations whereas six other districts (Kwale, Taita, Embu, Baringo, West Pokot and Kisii) received K£ 43,639, or about 9% of the total allocations. Population size is not a factor here since the two districts (Murang'a and Nyeri) have a population of 806,155 compared with 1,414,496 for the six districts.

The raw data for commercial allocations in Table VII also shows that nine districts received less than the average total allocations. However, these are not necessarily the same districts that received less than the mean allocation of agricultural allocations. The five districts that received above average resource allocations, like Kwale and Kisii, fared better in commercial allocations. They received above average resources. Incidentally, the two districts which received a very high percentage of agricultural allocations (Murang'a and Nyeri), did not receive above average commercial allocations.

The third dependent variable (Educational Expenditure) has a mean of K£ 305,000. Seven districts received allocations below this figure. Of the five districts that received above average allocations, Murang'a and Nyeri received nearly 28% of the total educational expenditures. This is a substantial figure and compares favorably with the 32% the two districts received in agricultural allocations.

TABLE VII
DISTRIBUTION OF THE RESOURCES ALLOCATED TO DISTRICTS

District	Agricultural Credits in K£	Commercial Credits in K£	Educational Expenditure in K£'000
KWALE	7,659	114,000	67
TAITA	7,659	94,000	113
EMBU	8,327	97,000	186
MACHAKOS	74,190	99,000	606
MERU	24,630	287,000	448
MURANG'A	71,049	47,000	540
NYERI	72,971	81,000	474
BARINGO	3,530	25,446	70
NANDI	29,024	30,500	140
W. POKOT	7,659	25,446	69
KISII	8,905	135,000	390
S. NYANZA	63,264	113,000	371
BUSIA	24,124	77,000	160
KAKAMEGA	44,611	240,000	639
Total	447,602	1,465,392	4,273
Mean	31,973	104,706	305
Standard Deviation	27,635	76,228	212

Sources: Report of the Board and Accounts, the Agricultural Finance Corporation (Land and Agriculture Bank of Kenya, December 31, 1966), p. 26; J. Hyer, D. Ireri, and J. Morris, Rural Development in Kenya, p. 39.
The means and standard deviations have been rounded off.

TABLE VIII
DEPENDENT VARIABLES FACTOR ANALYZED TO PRODUCE A SCALE

Name	Description
AGREDIT	Agricultural credit to farmers
COREDIT.	Commercial credit to traders
EDEXP	Educational expenditures in districts

Source: Table VII.

Table VIII is a description of the three dependent variables that we have been discussing above. They are presented in this table as a first step before they are factor analyzed. We therefore move to Table IX, which presents the factor loadings of the three dependent variables. Before we turn to the discussion of the factor loadings in this table, a restatement of the theoretical basis for opting to factor analyze the three dependent variables is necessary. We argued in the preceding chapters that resources allocated to agriculture, education, health, transportation, commerce, industry, etc. are policy outcomes. If we then take each of these sectors as a variable, it means that allocations to agriculture, commerce and

education will load significantly on one component or factor. But should they not load on the same factor, then our argument that the three dependent variables represent policy outcomes cannot hold.

Together the three dependent variables (AGREDIT, COREDIT and EDEXP) account for 65.4% of the total variance (Table IX). This is not an impressive percentage of the total variance accounted for, but it is significant enough to give meaning to our findings. However, the communality of COREDIT is low (.33), suggesting that most of its variance is associated with some other factor. What this other factor might be is the subject of discussion in Chapter V. But even with a low communality for COREDIT, the three dependent variables load on the same component or factor which from here on we shall refer to as resource allocation scale (ALSOURCE). Both the unrotated and rotated factor loadings are the same. Two dependent variables, AGREDIT and EDEXP, have impressive significant loadings. From these loadings we are led to infer that there is a strong association between AGREDIT and EDEXP. More analysis of the variation in the dependent variables in this chapter and the subsequent ones should be able to show this. Finally, a continuation of observation of the communalities of the three dependent variables yields more information. We mentioned above that the communality of COREDIT was low. What

TABLE IX
FACTOR LOADINGS OF RESOURCE ALLOCATION

	Unrotated Factor	Rotated Factor	h^2
AGREDIT	.82	.82	.68
COREDIT	.57	.57	.33
EDEXP	.97	.97	.96
Eigenvalue	1.96		
% of Total Variance	65.36		

Calculated at Syracuse University Computing Center using Biomedical Computer Programs, X-Series Supplement, op. cit. Unities were entered in the diagonals as estimates of the communalities.

about that of the other two dependent variables -- AGREDIT and EDEXP? AGREDIT has a communality of .68, which is moderate. This means that this variable, AGREDIT, has more than half of its variance associated with this factor or component that we have labelled ALSOURCE. In the case of EDEXP, an overwhelming proportion of its variance (.96) is associated with the ALSOURCE component. It is therefore unlikely that EDEXP would load on any other factor but ALSOURCE.

Table X presents the factor scores of the dependent variables. One of our objectives in this section of the chapter is to compare our finding on this scale with that of the raw data above. When discussing the raw data in Table VII, we noticed that nine districts received less than the mean allocated resources for agriculture and commerce, and seven districts received less than average resources in the sector of education. Table X shows that eight districts have negative factor scores. These eight are Kwale, Taita, Embu, Baringo, Nandi, West Pokot, Kisii and Busia. These, in fact, are the same districts that received below average resource allocations in agriculture. Only Meru is not included. The remaining six districts have factor scores that are over .66 each. The two cases or districts that have the highest scores are Kakamega and Machakos. These two districts (Kakamega and Machakos) each have large popu-

TABLE X
RESOURCE ALLOCATION SCALE

District	Factor Score
KWALE	-0.89
TAITA	-0.86
EMBU	-0.67
MACHAKOS	1.33
MERU	0.92
MURANG'A	0.93
NYERI	0.93
BARINGO	-1.29
NANDI	-0.72
W. POKOT	-1.23
KISII	-0.03
S. NYANZA	0.66
BUSIA	-0.57
KAKAMEGA	1.49

Calculated from data in Table III at the Syracuse University Computing Center using Biomedical Computer Programs, X-Series Supplement, op. cit. Scores have been rounded off to two decimal places.

lation sizes. But what relationship exists between resource allocation and population size? This is a question that is discussed below.

At this stage the population size variable which is associated with SCALE has emerged as an important factor that influences resource allocation. In order to observe its power of influence in accounting for variation in resource allocation, we control for it.

Table XI presents resource allocation factor scores, but this time population size is controlled for. The two districts that had each large population size and hence the highest factor scores in Table X (Kakamega and Machakos) register either negative or insignificant factor scores in Table XI. Machakos has a factor score of .39 and Kakamega, which ranks at the top in population size, has a negative score of -.14 in Table XI. The only two districts that have significant positive factor scores are Murang'a and Nyeri. These are the two districts that we identified as having high resource allocations when we discussed the raw data of the dependent variables. There is more evidence in support of the argument that variation in resource allocation is influenced by a number of factors that tap modernization phenomena. Districts such as Taita and West Pokot which have comparatively small population sizes (see

TABLE XI
 RESOURCE ALLOCATION SCALE AFTER
 CONTROLLING FOR POPULATION SIZE

District	Factor Score
KWALE	-1.19
TAITA	0.34
EMBU	0.23
MACHAKOS	0.39
MERU	-1.11
MURANG'A	1.55
NYERI	2.21
BARINGO	-1.14
NANDI	0.31
W. POKOT	0.27
KISII	-0.92
S. NYANZA	-0.23
BUSIA	-0.56
KAKAMEGA	-0.14

Calculated at the Syracuse University Computing Center using Biomedical Computer Programs, X-Series Supplement, op. cit. Factor scores have been rounded off to two decimal places.

Appendix I), do have positive factor scores in Table XI. These scores are not significant but by virtue of being positive rather than negative, they indicate that another factor of modernization rather than size is partly responsible for influencing variation in policy outcomes. This other factor, we shall argue, is RUMIGRO. We now have two factors of modernization that determine variation in resource allocation in the Kenyan districts -- SCALE and RUMIGRO. We shall proceed to restate two hypotheses connected with these two factors.

H_1 The greater the population size of a Kenyan administrative district, the greater the amount of resources allocated to it.

Our findings in Table XII support the above hypothesis. It was on the first component (see Table III) that population size variable (POPSIZE) loaded. This component is labelled as SCALE. Its factor scores that we use in computing the bivariate correlation coefficients are shown in Table IV. This explanatory variable (SCALE) correlates significantly with at least two of the three policy outcomes (AGREDIT and EDEXP). The correlation therefore shows that although bivariate correlations do not offer a strong basis for accurate prediction (since they relate only two variables), they do give some indication as to the relationship that exists between the correlated variables. The

TABLE XII
 BIVARIATE CORRELATIONS OF REGRESSION VARIABLES

	1	2	3	4	5
1. AGREDIT					
2. COREDIT	.05				
3. EDEXP	.78	.52			
4. SCALE	.62	.39	.84		
5. RUMIGRO	.45	.17	.47	.00	
6. LINKGRAT	.12	.23	.15	.00	-.00

Calculated on a computer at the Syracuse University Computing Center using Biomedical Computer Programs by W. J. Dixon, ed. (Berkeley, University of California Press, 1970), p. 60. Correlation coefficients have been rounded off to two decimal places.

above correlation between SCALE and AGREDIT does indicate that variation in agricultural allocations is indeed moderately related to population size. The same cannot be said of COREDIT. No significant correlation exists between SCALE and COREDIT. This lack of relationship between SCALE and COREDIT should not be interpreted as invalidating our primary hypothesis since there is a moderate relationship between AGREDIT and COREDIT which constitute policy outcomes.

The correlation between SCALE and EDEXP is the strongest and therefore most significant of the three relationships. It leaves no doubt that variation in resource allocations to education is related to SCALE. We may now proceed to the discussion of our second hypothesis.

- H₂ The greater the level of economic growth in a Kenyan administrative district, the greater the amount of resources allocated to it.

The second modernization component that we extracted in Table III is RUMIGRO. We have argued that this is the principal modernization factor, i.e. if we take modernity to mean increase in standard of living of a given society. Table XII shows that this component, RUMIGRO, has a somewhat below average correlation with AGREDIT and EDEXP. There is almost no relationship with COREDIT. The two relationships involving RUMIGRO/AGREDIT and RUMIGRO/EDEXP cannot be dismissed as weak relationships, especially since our sample

TABLE XIII
VARIABLES USED IN REGRESSION ANALYSIS

NAME	DESCRIPTION
<u>Dependent Variables</u>	
AGREDIT	Agricultural credit to farmers
COREDIT	Commercial credit to traders
EDEXP	Educational expenditures in districts
ALSOURCE	Combined resources factor scores
<u>Independent Variables</u>	
SCALE	Complexity of socio-economic organization
RUMIGRO	Modern agriculture factor scores
LINKGRAT	Linkage-integration factor scores

Source: Dependent variables, Tables I and IV.

is not too large. We believe that our above hypothesis is supported by these findings and cannot be ruled out.

Before passing to the discussion of the regression results, which involve a more powerful statistical technique than bivariate correlations in that they take into account the influence of several independent variables, thus reflecting the "real world", a statement on variables in Table XIII is in order. These are the variables used in the regression study in an attempt to explain observed variation in policy outcomes in rural Kenya. The data of AGREDIT, COREDIT, and EDEXP is raw, but in the case of AL-SOURCE, we are using factor scores in Tables X and XI. The data of the three independent variables (SCALE, RUMIGRO and LINKGRAT), on the other hand, consists of the factor scores we computed in Table IV.

Table XIV summarizes the results of the multiple regression analysis where population size, the major variable underlying SCALE factor, is not controlled for. The question we shall attempt to answer is: Which of the three components or factors tapping modernization phenomena explain significantly the variation in resource allocation? There are three explanatory variables -- SCALE, RUMIGRO and LINKGRAT. Let us take one dependent variable at a time for examination, starting with AGREDIT. Seventy-eight per cent of the variance of AGREDIT is accounted for.

TABLE XIV

MULTIPLE REGRESSION ANALYSIS OF POLICY OUTCOMES IN KENYA
N=14

<u>Dependent Variables</u>	<u>Independent Variables</u>					
	SCALE	RUMIGRO	LINKGRAT	R ²	F-RATIO	P ₀
AGREDIT 31973.01	17019.95* (5509.81)	12622.07* (5512.12)	3293.40 (5511.21)	78	5.05	<.05
COREDIT 104706.51	29951.81 (21051.40)	13264.68 (21060.21)	17415.45 (21056.75)	49	1.04	>.05
EDEXP 305.21	179.01* (12.88)	100.75* (12.89)	33.41* (12.89)	98	86.96	<.01

Calculated on a computer at the Syracuse University Computing Center using Statistical Package for the Social Sciences by N. Nie, D. H. Bent and C. H. Hull (New York: McGraw-Hill, 1970), pp. 174-195. Figures bracketed are the standard errors of the regression coefficients, which together with regression coefficients have been rounded off to two decimal places. * Significant regression coefficients.

The strongest predictor of variation in AGREDIT is SCALE, followed by RUMIGRO. This is a logical relationship. We know that in the new nations where most of the people still live in rural areas (over 85% in Kenya), most tend to be concentrated in pockets where physical agricultural environment favors growth of food crops. This means that these areas attract substantial agricultural credits in order to be able to produce sufficient food crops to sustain the number of people that live in these areas. A second modernization factor, RUMIGRO, is also a determinant of allocation of agricultural resources to the predominantly rural districts of Kenya.

Table XIV shows that RUMIGRO has strong causal relationship with AGREDIT. Appendix VII, which carries the standardized regression coefficients which give the reader a comparative index showing the relative strength of each of the independent variables in accounting for the variance of the dependent variable (AGREDIT), supports this.

The only independent variable that does not have significant causal relationship with AGREDIT is LINKGRAT. However, we speculate that if we related resource allocations in the sector of transportation or communication, a causal relationship would not be ruled out.

Our second dependent variable, COREDIT, is apparently not significantly related to any of the three explanatory

variables -- SCALE, RUMIGRO and LINKGRAT. This raises the question: What accounts for variation in commercial allocation in Kenyan administrative divisions? This is a question we shall discuss further in Chapter V. At this point it is important to note that this dependent variable (COREDIT) did not have a significant bivariate correlation with any of the three independent variables in Table XII. Thus the lack of causal relationship with any of the three explanatory variables in Table XIV is not a surprise.

Finally, the third dependent variable, EDEXP, has significant causal relationship with each of the three independent variables. An amazingly large proportion of the variance of EDEXP is accounted for -- 98%. If there was any doubt about what accounts for variation in policy outcomes, the findings in Table XIV, where EDEXP is the dependent variable, lays that doubt to rest. However, we still have to guard against the possibility of the influence of the SCALE factor. Thus Table XV presents the regression analysis of the same dependent and independent variables. However, this time, SCALE has been controlled for.

The findings show that the scale factor is one of the important causal variables influencing variation in AGREDIT. The relationships involving SCALE with AGREDIT, and RUMIGRO with AGREDIT, which were significant in Table XIV, virtually disappear in Table XV. However, the percentage of

TABLE XV

MULTIPLE REGRESSION ANALYSIS OF POLICY OUTCOMES IN KENYA --
CONTROLLING FOR POPULATION SIZE FACTOR

N=14

<u>Dependent Variables</u>	<u>Independent Variables</u>					
	SCALE	RUMIGRO	LINKGRAT	R ²	F-RATIO	P
AGREDIT 0.09	0.004 (0.016)	0.023 (0.016)	0.000 (0.000)	43	0.73	>.05
COREDIT 0.31	-0.061 (0.063)	0.023 (0.062)	-0.000 (0.000)	63	2.22	>.05
EDEXP 16.0	0.287 (1.275)	3.614* (1.276)	0.651 (1.276)	67	2.78	>.05

Calculated on a computer at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Figures bracketed are the standard errors of the regression coefficients, which together with regression coefficients have been rounded off to two decimal places. *Significant regression coefficient.

of the variance of COREDIT accounted for increases from 49% to 63%, but its regression coefficients remain insignificant.

We now come to EDEXP. The causal relationship between SCALE and EDEXP which was very strong in Table XIV disappears as expected. Also to disappear is the significant relationship involving LINKGRAT. But what about the relationship where RUMIGRO is the independent variable? This is the one explanatory variable that has a significant regression coefficient with EDEXP. Thus economic growth in rural areas of Kenya is one of the determinants of allocation of educational resources. A clear indication of the comparative strength of RUMIGRO in predicting resource allocation when population size is controlled for is shown in Appendix IX. The comparative coefficients of RUMIGRO with AGREDIT and EDEXP is moderate. There is one final observation that demands an explanation, i.e. the causal relationship between SCALE and COREDIT and LINKGRAT and COREDIT. The relationships are negative.

Commerce thrives in areal units where there is a high concentration of population, e.g. cities. Thus when we control for population size, it is logical that the SCALE/COREDIT relationship should turn out to be negative. What about the negative causal relationship with LINKGRAT?

TABLE XVI
 MULTIPLE REGRESSION COEFFICIENTS OF THE THREE DEPENDENT VARIABLES
 N=14

<u>Dependent Variables</u>	<u>Independent Variables</u>					
	SCALE	RUMIGRO	LINKGRAT	R ²	F-RATIO	P
ρ ALSOURCE 0.07	0.72* (0.13)	0.43* (0.13)	0.16 (0.13)	.90	14.71	<.01

Calculated on a computer at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Figures bracked are the standard errors of the regression coefficients, which together with regression coefficients have been rounded off to two decimal places. *Significant regression coefficients.

This explanatory variable taps the transportation/communication factor of modernization, a factor which is not strong in areal units that are sparsely populated. Hence when we control for population size, the causal relationship between LINKGRAT and COREDIT turns out to be negative.

In Tables X and XI we constructed a single scale of policy outcomes from the three dependent variables. This scale is in effect a dependent variable of policy outcomes. In the first scale in Table X we did not control for the influence of population size. Table XI controls for the influence of population size. We are now at the stage where we test the possible existence of a causal relationship between each of the independent variables (SCALE, RUMIGRO, LINKGRAT), and the combined variable (ALSOURCE) which is made up of the three dependent variables, AGREDIT, COREDIT and EDEXP. Table XVI presents the multiple regression results.

Our objective in relating ALSOURCE to each of the independent variables is to observe whether a combined scale of the three dependent variables has a causal relationship with each of the independent variables. First, 90% of the variance of the dependent variable is accounted for. This is a very high percentage of the accounted for variance. The two independent variables, SCALE and RUMIGRO, which had

TABLE XVII

MULTIPLE REGRESSION COEFFICIENTS OF THE THREE DEPENDENT VARIABLES --
CONTROLLING FOR POPULATION SIZE FACTOR

N=14

<u>Dependent Variables</u>	<u>Independent Variables</u>					
	SCALE	RUMIGRO	LINKGRAT	R ²	F-RATIO	P
α						
ALSOURCE 0.00	0.10 (0.26)	0.51 (0.26)	0.22 (0.26)	57	1.59	>.05

Calculated on a computer at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Figures bracketed are the standard errors of the regression coefficients, which together with regression coefficients have been rounded off to two decimal places.

a significant relationship with AGREDIT and EDEXP in Table XIV have a significant relationship with ALSOURCE in Table XVI. Again SCALE is the strongest predictor of resource allocation (see Appendix VIII). In an attempt to check on the influence of RUMIGRO (see Table XVII), we had to control for the population size factor which is one of the principal variables measuring SCALE. Once population size is controlled for, the strong causal relationship between SCALE and ALSOURCE disappears, but that of RUMIGRO is very close to being significant.

Population Size (POPSIZE) and Policy Outcomes

In Appendix I of Chapter Three the raw population data shows that the least POPSIZE variable value is for West Pokot (82,458), whereas the maximum value for this variable is 782,586 for Kakamega District. The median POPSIZE value is 284,956. Of the fourteen districts in the study, seven have POPSIZE values below this median. These seven include West Pokot, Taita, Baringo, Embu, Busia, Kwale and Nandi. The seven districts plus Nyeri have POPSIZE values below the mean of 384,263. Now let us look at SCALE factor scores that were briefly discussed in Chapter Three and are shown in Table IV. The eight above cases which have values below the mean, plus Meru, register negative factor scores ranging from -1.01 for West

Pokot to -0.32 for Busia. The districts that have POPSIZE variable values exceeding the mean are Murang'a, Meru, S. Nyanza, Kisii, Machakos and Kakamega. All these districts, with the exception of Meru, have positive factor scores on the SCALE component ranging from $.64$ for Murang'a to 1.82 for Kakamega. How does the distribution of population compare with the distribution of AGREDIT, COREDIT and EDEXP? According to the regression results in Tables XIV and XVI, there is a causal relationship between SCALE and both AGREDIT and EDEXP. For example, three of the fourteen districts with large population sizes (Kakamega, Machakos and South Nyanza) received agricultural allocations above the mean of K£ 31,973. When we look at EDEXP distribution in Table VII, the districts with the largest population sizes (Kakamega, Machakos) again received the largest allocations -- over K£ 600,000 each. The potency of SCALE as a predictor of variation in AGREDIT and EDEXP, we contend, is due to per capita distribution of the two dependent variables. Thus, when we reduce the aggregate data of the two variables (AGREDIT and EDEXP) to a per capita index for each, SCALE ceases to be a potent explanatory variable.

What are the long term consequences of population growth in each of these districts on resources? The above

figures show that distribution of AGREDIT and EDEXP on a per capita basis is related to SCALE. This is a critical policy issue which policy makers at the national level will have to address themselves to. Population size factor has emerged from these findings as a critical factor in resource distribution. And since we know that no significant economic growth may be realized when there is an explosion in population growth, a need for family planning programs is of paramount importance.

Consequences of Relative Modernization in Kenya

Each of the districts we have been analyzing is populated predominantly by a single ethnic group. For example, Meru District is predominantly Meru, Kisii is predominantly Gusii, S. Nyanza is predominantly Luo, Kakamega and Busia are predominantly Luhya, etc. From the factor analysis that we performed in Chapter Three, only five of these districts (Embu, Machakos, Meru, Murang'a and Nyeri) had positive factor scores on RUMIGRO, which is the main component of modernization in rural areas in Kenya. This means that the remaining nine districts, populated by eight different ethnic groups, are not experiencing economic growth.

For example, Murang'a and Nyeri, which have modernization factor scores of 1.97 and 1.45 (RUMIGRO) respectively,

also show the highest factor scores on resource allocation scale, .55 and 2.21, respectively. Thus the Kikuyu ethnic group which inhabits these two districts is acquiring more modern "goods" than the other ethnic groups. If we take the above statistical analysis as indicating the pattern of modernization in Kenya as a whole, then what we are beginning to see is the socio-economic stratification of Kenyan society. The socio-economic stratification is organized along geographical and ethnic lines.¹ The most favored districts are Murang'a, Nyeri, Meru and Embu. The least favored are the areas with high population densities -- Kisii, Kakamega and South Nyanza. If this trend continues, violent conflict cannot be ruled out. There are several patterns such a conflict might take. Let us discuss a few of them. First, there is a possibility of an elite -- peasant confrontation. The peasants in the districts that are not experiencing modernization pay taxes, most of which are indirect, mainly in the form of import and excise duties. This means that a rise in excise duties hurts the peasant from districts and provinces whose economic growth is close to zero. Peasants are not known for modern, complex organizational skills, but they are capable of being aroused by some individuals eager to champion their grievances.

¹L. Kuper, "Plural Society: Perspectives and Problems," in Pluralism in Africa, ed. by L. Kuper and M. G. Smith (Berkeley: University of California Press, 1956), pp. 7-26.

Inherent in this situation is a possibility of struggle between individuals in highly modernized areal units versus individuals in relatively less modernized areal units. Individuals in the latter units are deprived,¹ in other words, they receive less, if not token resource allocations, that they believe do not meet their needs. This is a situation that has led to many internal conflicts throughout the Third World. The case of the Sudan is a classic example. The southern part of that country was less modernized than the north when the Sudan won its independence from Britain. The regime that succeeded the colonial administration continued to allocate less resources to the southern part of the Sudan. This act led to the demand for secession by the south which was later transformed into an armed struggle.

Depriving a region or a district of an equitable share of national resources has therefore the effect of intensifying deprivation in a given areal unit. The resulting conflict may be between the masses against the elite or between one ethnic group occupying a less modernized areal unit against another ethnic group² occupying a well-modernized areal unit like the case of the Sudan.

¹T. R. Gurr, Why Men Rebel (Princeton, New Jersey: Princeton University Press, 1970).

²D. Rothchild, "Ethnic Inequalities in Kenya," The Journal of Modern African Studies, 7:4 (1969), pp. 689-711.

What can the government do in the face of these problems? The realistic option, it appears, is to direct more resources into the districts or provinces whose economic growth is near zero or negative. This is a difficult option to take given potential pressures from the elites from the well-to-do districts or provinces. In order to avert possible future conflict, this option merits serious consideration. The alternative to this option is the use of force to suppress the demands of the dissatisfied ethnic groups. This is a policy that seeks to maintain the status quo. It merely pushes into the future the inevitable conflict. Moreover, it adds to tension and weakens morale of individuals within the elite who are from the ethnic groups whose demands are being forcefully suppressed.

Conclusion

The above regression analysis made use of three independent variables -- SCALE, RUMIGRO and LINKGRAT. All three were factor scores which were generated from a factor analysis of thirteen modernization variables. Our findings are therefore limited to the relationships involving these three variables and the three resource allocation variables (AGREDIT, COREDIT, EDEXP). In other words, the findings are tentative; they give us some indication as to possible

causal relationships that exist between levels of modernization in rural areas of Kenya and resource allocations. The variance accounted for in AGREDIT and EDEXP suggests that a causal relationship does exist between level of modernization and policy outcomes in Kenya, thus lending support to our original hypothesis -- the greater the level of modernization, the greater the resources allocated to that unit.

Finally, modernization, as we illustrated in this chapter, accounts for only part of the variance in resource allocation. What then accounts for the rest of the variance? This is a question we shall discuss in the next chapter.

CHAPTER V

POLITICAL (INTERVENING) VARIABLES AND POLICY OUTCOMES IN KENYA

In this chapter we first relate political variables (data presented in Appendix X) to resource allocations. The attempt here is to observe the relationship that exists between political variables and policy outcomes. Second, we perform a stepwise multiple regression using modernization factor scores which were extracted in Chapter III and the political variables. Our objective in this section of the chapter is to obtain the best predictors of variation in resource allocation in the districts under inquiry. Third, we perform another multiple regression using the explanatory variables that are the best predictors of variation in resource allocation. This third step constitutes an effort on our part to make our findings parsimonious.

Table XVIII presents political variables that measure various political phenomena. Our choice of these variables was made on the basis of the model we sketched in Chapter I where political and administrative phenomena are cast as the intervening variables. Each of these variables is briefly discussed below. In every society elites occupy the most important political, social, economic, and cultural positions. They own or control most of the material

TABLE XVIII
 POLITICAL VARIABLES USED IN REGRESSION ANALYSIS

Name	Description
ELITE	Number of social and political elites
MINISTER	Number of Assistant and Cabinet Ministers
POLPARTY	Dominant political party in early 1960's
VOTETURN	Voter turnout in 1961 General Election

Sources: Who's Who in East Africa, 1965-66 (Nairobi: Marco Publishers (Africa) Limited, 1966), pp. 1-154; G. Bennett and C. G. Rosberg, The Kenyatta Election: Kenya, 1960-61 (New York: Oxford University 1961), pp. 210-216.

goods. Political as well as civil elite in the new nations exercise vast power over resource allocation.¹ A district or a region that has several elites well-placed in influential roles, e.g. the national political party, cabinet, army, civil service or in business, is likely to work through these individuals in its attempt to win more resources from the national government. Hence we hypothesize:

- H₁ The larger the size of a district's elite, the more resource allocations it is likely to receive.

Our second variable (MINISTER) attempts to measure the participation of each of the districts in national decision making at the executive level, especially the various ministries that are responsible for drawing up budget proposals for their respective sectors, e.g. agriculture, education, and commerce and industry. There are two categories of ministerial appointment. First, we have the Cabinet Ministers. These individuals are elected representatives of constituencies; they compete for parliamentary office just like any other elected members of the National Assembly. However, appointment to ministerial of-

¹G. Parry, Political Elites (New York: Praeger Publishers, 1969).

office endows them with additional political power. Some of them have been known to use their ministerial office for personal aggrandizement.¹

The second category of MINISTER consists of Assistant Ministers whose power is less than that of Cabinet Ministers. Their status within the government hierarchy is such that they have access to governmental information and often participate in decision making on certain issues that are outside the duties of the ordinary Member of Parliament (backbencher). These ministers often work in an atmosphere in which loyalty to the family, clan and ethnic group tend to take precedence over national concerns. Moreover, these officials identify closely with the extended family and members of their respective ethnic groups. Both their relatives and their ethnic groups look to them for assistance in providing badly needed material things. This is the environment in which Kenya Ministers often find themselves and is illustrated by the report of the Commission of Inquiry published in 1966² in which a Member of Parliament and a government Minister was alleged

¹O. Odinga, Not Yet Uhuru (New York: Hill and Wang, 1967); J. D. Greenstone, "Corruption and Self-Interest in Kampala and Nairobi," in Political Corruption, ed. by A. J. Heidenheimer, (New York: Holt, Rinehart and Winston, Inc., 1970), pp. 459-468.

²Republic of Kenya, Report of Maize Commission of Inquiry, 1966 (Nairobi: Government Printer, 1966).

to have used his position as Chairman of the Maize Marketing Board to sell part of the produce illegally. According to the Commission of Inquiry into this alleged corruption, the wife of the Minister and several members of his ethnic group were implicated. Thus we hypothesize:

H₂ The greater the number of Cabinet and Assistant Ministers from a district, the greater the amount of resources allocated to the district.

Before the emergence of nationwide political parties, Kenya African National Union (KANU), Kenya African Democratic Union (KADU) and the African Peoples Party (APP), politics was conducted through District Associations. The colonial regime first outlawed national political parties following the outbreak of Mau Mau, but in 1955 it let African members of the Legislative Council organize District Associations in their respective districts. These Associations included Nairobi District African Congress, Taita African Democratic Union, Nakuru African Progressive Party, Abagusii Association, etc. Most of these District Associations were concerned with local issues and viewed the district's member of the Legislative Council as their spokesman. Thus, when national political parties were founded, they reflected the outlook of the District Associations. Members of each of the political parties looked at their respective

parties as vehicles for not just winning political freedom which they all desired, but also as vehicles for improving the material life of their districts through provision of better public services in their respective districts.

The three political parties, KANU, KADU and APP, drew their strengths from particular ethnic groups. KANU, which won the 1961 General Election, drew its strength from the Kikuyu, Meru, Embu, Kisii and Luo ethnic groups. KADU, which was the main opposition, drew its strength from the Abaluyia, Kalenjin and Coast Province ethnic groups. Finally, the short-lived African Peoples Party (APP) founded by Paul Ngei drew its strength from the Akamba. Thus Nyeri, Murang'a, Embu, Meru, Kisii and South Nyanza Districts were dominated by the Kenya African National Union whereas Kwale, Taita, Baringo, Nandi, West Pokot, Busia and Kakamega were dominated by the Kenya African Democratic Union. The remaining district in our sample (Machakos) was dominated by the African Peoples Party. The important thing here is that the areas dominated by the Kenya African Democratic Union and the African Peoples Party were opposition strongholds and hence could not expect to participate in decision making as the areas which were strongholds of the Kenya African National Union which had emerged from the 1961 General Election with a clear majority and had gone on to become the

ruling political party.¹ This hypothesis may be restated as follows:

- H₃ The more a district is dominated by an opposition political party, the less resource allocation it receives.

Our fourth and last political variable is VOTETURN. This variable measures the degree of participation and mobilization of the masses. One of the burning issues during the nationalist struggle for political independence in Kenya was the need for enfranchising Black Africans who had been disenfranchised by the colonial regime. Thus the general elections for the Legislative Council from which our election data is drawn, represented expansion of the suffrage by enfranchising over two million voters -- the overwhelming majority of whom were peasants. The enfranchisement of these peasants and their subsequent exercise of that franchise represents establishment of channels (i.e. elections) through which voters could express their preferences by electing candidates who articulated policies that were favorable to their own interests. We therefore hypothesize:

¹The variable was coded as follows: Opposition (KADU, APP) 1; KANU 0.

TABLE XIX

BIVARIATE CORRELATION MATRIX OF THE POLICY OUTCOMES AND POLITICAL VARIABLES

Variable	1	2	3	4	5	6	7
1. ALSOURCE							
2. AGREDIT	.82*						
3. COREDIT	.57*	.47					
4. EDEXP	.98*	.78*	.52*				
5. ELITE	.78*	.56*	.54*	.79*			
6. MINISTER	.48	.38	.22	.51*	.50*		
7. POLPARTY	-.41	.07	.22	.16	.03	.54*	
8. VOTETURN	.38	.33	.03	.46	.33	.34	.44

* Significant correlation coefficients

Calculated on a computer at the Syracuse University Computing Center using Biomedical Computer Programs, op. cit. Coefficients have been rounded off to two decimal places.

- H₄. The greater the level of political participation within a district, the greater the amount of resource allocation it receives.

Table XIX presents the bivariate correlations of the dependent variables (policy outcomes) and political explanatory variables. The relationship involving AGREDIT, COREDIT and EDEXP was discussed in Chapter IV and will not be repeated here except as it relates to the political variables. The above correlation matrix shows that a moderate relationship exists between AGREDIT and ELITE on the one hand, and COREDIT and ELITE on the other. Our remaining two dependent variables (ALSOURCE and EDEXP) are strongly correlated with ELITE. From these relationships we are led to project ELITE as the strongest predictor of variation in resource allocation (AGREDIT, COREDIT and EDEXP). No other explanatory variable, including SCALE, correlates significantly with all three of the dependent variables. Of the remaining explanatory variables, only MINISTER has a significant correlation with one of the dependent variables (EDEXP).

Before we discuss the hypotheses formulated above, let us briefly examine the relationship between MINISTER and ELITE on the one hand and POLPARTY and MINISTER on the other. An observation of Table XIX shows that there is a significant bivariate correlation in both cases. In the new nations such as Kenya it is usually the elite which has

access to ministerial posts. Out of a cabinet of 21 in 1966, 18 had attended college, and of this group of cabinet ministers who had attended college, four held advanced degrees. In the case of the latter relationship, political party leadership in Kenya is overwhelmingly dominated by the elite. Individuals who are elected to the national assembly are the same people who are leaders of the loosely organized political party, KANU. We should point out that whereas there is a moderate correlation between MINISTER and ELITE, and POLPARTY and MINISTER, each of these explanatory variables measures a different political phenomenon. Furthermore, the correlation is not so strong as to invalidate the independent status of each of them.

Let us now turn to the hypotheses that we presented above. Our findings in Table XIX strongly support our first hypothesis, and to a lesser extent, our second hypothesis. In the case of the second hypothesis, the relationship is limited to EDEXP. Hypotheses three and four are not supported by the bivariate correlations in Table XIX. The findings in Table XIX are not, however, sufficient for ruling out the possible existence of causal relationships. In order to rule out possible causal relationships between two or more variables, we have to turn to multivariate analysis. The multivariate statistical technique we have employed throughout this study whenever we have asserted

causation is multiple regression analysis. Let us now turn to the discussion of the findings of the regression analyses. Table XX presents the multiple regression analysis of policy outcomes in Kenya using political variables as predictors. We shall discuss the findings in this table in order of the dependent variables, starting with AGREDIT through to ALSOURCE.

None of the regression coefficients in the table in which AGREDIT is the dependent variable are significant. As we argued in Chapter III, rural economy in the Kenya Districts is based on cash crops such as coffee, tea, sugar cane and pyrethrum which are grown mainly for export. Thus if our hypothesis about the relationship between modernization and resource allocation is to hold, most of the political variables will account for relatively small variation in AGREDIT. The results in Table XX and Appendix XIII show that ELITE and VOTETURN are positively related to AGREDIT, but MINISTER and POLPARTY are negatively related to it. From observation of the social, political and economic conditions in Kenya, these relationships, we shall argue, are credible. First, the Kenyan elite is mainly from rural areas. These rural areas are represented in the districts under investigation. But we have already hypothesized that areas that receive more resource allocations, e.g. EDEXP, will have more schools, hence more high school

TABLE XX

MULTIPLE REGRESSION ANALYSIS OF POLICY OUTCOMES IN KENYA USING POLITICAL VARIABLES

N=14

<u>Dependent Variables</u>	<u>Independent Variables</u>						
	ELITE	MINISTER	POLPARTY	VOTETURN	R ²	F-RATIO	P
α AGREDIT 25960.88	670.45 (403.96)	-2026.58 (9510.30)	-16214.56 (21341.22)	36.95 (899.89)	61	1.39	>.05
COREDIT 444889.61	2862.36* (958.43)	-32063.41 (22564.05)	-105820.83* (50633.98)	-3529.84 (2135.06)	74	2.68	<.05
EDEXP 232.59	7.45* (1.96)	-27.40 (46.17)	-168.57 (103.60)	0.49 (4.37)	87	6.86	<.01
ALSOURCE 1.05	0.039* (0.009)	-0.218 (0.212)	-1.050* (0.475)	-0.012 (0.020)	88	7.38	<.01

* Significant regression coefficient

Calculated on a computer at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to two decimal places except for coefficients for ALSOURCE which have been rounded off to three decimal places.

and college graduates. These are the individuals who are recruited into the elite at a later date. The ELITE/AGREDIT relationship, though not significant, shows that elites account for a sizable amount of variation in AGREDIT.

We now turn to commercial allocations (COREDIT). The regression results for this dependent variable are presented in Table XX and Appendix XIV. But before we attempt to explain the relationships, we have to draw the reader's attention to the political and administrative environment in Kenya relating to commercial life. Throughout the years Kenya was a British colony, its commerce was dominated by Asians. With the achievement of political independence, Black Africans for the first time began to participate in the commercial life of the country. The participation took three forms: buying properties of Asians who left the country, establishing brand new commercial enterprises, and finally, expanding the volume of commercial holdings, e.g. from a store that sold one item to one that sold many items. To accomplish this changeover in commercial life of the country from foreign domination to nationals, a mechanism was established to supervise, encourage and finance the process. It is this mechanism that is described below and is typified by the relationship between COREDIT and ELITE.

Let us now turn to a description of the procedure which an individual in rural districts of Kenya goes through

before receiving commercial credits. The prospective recipient of a commercial credit begins his long journey by filling out a form and handing it to a District Trade Officer who interviews the applicant. If the District Trade Officer is satisfied with the ability of the applicant to repay the loan, he passes the form to the District Commissioner. The District Commissioner usually consults with his field staff, e.g. District Officer or Chiefs, before forwarding the form to the Provincial Trade Officer who then forwards the form to the Industrial and Commercial Development Corporation in Nairobi (ICDC). According to administrative rules, forms that are forwarded to ICDC in Nairobi should be sanctioned as meeting the set requirements which an applicant must satisfy in order to receive a commercial credit. Thus, once a form reaches ICDC, it should proceed with the advancement of the required commercial credit. However, this is not always what happens in practice. ICDC, in many cases, makes its own independent investigation, thereby making the waiting period extremely long. The procedure then subjects the applicant to a long, often frustrating, period of uncertainty. To add to this frustration, the applicant often has only elementary school knowledge, hence finds the bureaucratic red tape puzzling.

What this procedure does in effect is to discourage ordinary workers and peasants from applying for commercial

credit, at least through normal channels. This means that for one to receive COREDIT, one must know one or more members of the elite that one can rely on to get his application for commercial credit approved and funded. First, it's not just the filling of a form and handing it to a trade officer that an ordinary worker or peasant has to do when applying for COREDIT. The applicant has to be able to understand the terms of the loan which are usually printed in English or Swahili -- two languages that are spoken mainly in urban areas. He is therefore forced to rely on one or more members of the elite to get the forms completed.

The applicant's dependence on the elite, therefore, begins in the initial stages of completing forms and lasts through the entire process involving approval of commercial credit. What observations then emerge from this relationship? To begin with, a district with large numbers of elites strategically placed may be expected to receive more COREDIT than one that has a small ELITE. In other words, variation in commercial allocations is partly influenced by SCALE (Appendices XI and XII), which in turn is related to ELITE. For example, when SCALE factor is controlled for, the relationship between COREDIT and ELITE not only disappears, but becomes negative. At this stage it is possible to conclude that prospective traders go through the elite in order to receive COREDIT. But what does this mean?

What transactions govern elite/commercial credit applicants? Unless this question is answered, it would be naive on our part to expect the elite to provide services for traders without something in return. In other words, what does the elite get in return for its services to prospective traders that are out of their day-to-day line of duty? Obviously an individual elite expects to receive something in form of a payoff¹ for his services in urging other officials to approve an applicant's request for commercial and other credits.

Finally, why do we attribute the relationship between COREDIT and ELITE to graft and not to patronage? An observation of Table XXII shows that the second explanatory variable that is significantly but negatively related to COREDIT is POLPARTY (Table XX and Appendix XIV). If patronage were involved, the latter relationship would be positive, and not negative.

The causal relationship between ELITE and our third dependent variable, EDEXP (Table XX and Appendix XV) presents a clear-cut case in that our regression coefficient is more than three times the standard error coefficient and

¹Republic of Kenya, Report by the Controller and Auditor-General on Appropriation Accounts, Other Public Accounts and the Accounts of the Funds of the Republic of Kenya for the Year Ended 3rd June, 1966 (Nairobi: Government Printer, 1967).

thus yields a convincing case for the existence of causal relationship.¹ In Kenya, recruitment into the elite is overwhelmingly determined by education. In 1965-66, out of a total of 1534 elite,² 93.4% had at least nine years of formal schooling. Within this group, 30.6% were high school graduates, 25.8% had attended some college, and 30.2% were college graduates. The composition of the Kenyan bureaucracy shows that 71.3% of the elites in the Kenya civil service in 1965-66 were either high school or college graduates. This data shows that the chances of being recruited into the elite without a high level of education are very slim. The higher up one moves on the education ladder, the greater the chances of being recruited into the elite. Now, when we come to resource allocations to education, we quickly notice that these allocations are the decisions of the elites, but once they have been made, they have a feedback impact, i.e. they help determine the volume of individuals receiving education in the districts. And as we have already argued, the individuals who get formal schooling are the ones that are likely to become political and bureaucratic decision-makers.

¹According to our causal model in Figure I, the political elite influences distribution of policy outcomes.

²M. Chaput and L. Venys, A Survey of the Kenya Elite (Syracuse: Program of Eastern African Studies, Syracuse University, May, 1967).

When we use a scale (ALSOURCE) constructed from AGREDIT, COREDIT and EDEXP, the results present a convincing case of causal links involving ELITE and POLPARTY (see Table XX). Three of our four explanatory variables including POLPARTY yield negative relationships. Thus we reject Hypotheses two, three and four. Only the first hypothesis holds. When ELITE is matched against six other possible explanatory variables that account for variation in ALSOURCE (Appendix XVI), it turns out to be the third strongest predictor after SCALE and RUMIGRO in that order. The relationships involving the three independent variables, SCALE, RUMIGRO and ELITE in Appendix XVI would probably be even stronger if in constructing ALSOURCE we had omitted COREDIT which is poorly correlated with AGREDIT and only moderately correlated with EDEXP (Table XIX).

In summarizing our analysis up to this point in this chapter, we find that Hypothesis one is supported by our findings in Table XX. ELITE is by far the most powerful variable that explains variation in resource allocation. On the other hand, Hypotheses two and three are not supported by the findings. However, the relationships involving POLPARTY are significant though negative. The fourth hypothesis is not supported by the findings in Table XX. These findings leads us to conclude that ELITE is the most

important intervening variable that accounts for significant variance in policy outcomes.

Our objective up to this point has been to explore the hypothesized causal relationship between: (1) Modernization and resource allocation and (2) political variables and resource allocation. But the two sets of explanatory variables (modernization and politics) do not necessarily exist in isolation of each other. Indeed, socio-economic variables in this inquiry exist side by side with the political variables. Our isolation of socio-economic variables from political variables is done purely for analytical purposes. Having systematically examined the relationship policy outcomes have with (a) socio-economic phenomena and (b) political phenomena, we have combined socio-economic variables and political variables in Tables XXI - XXIII in an attempt to identify the best predictors of variation in policy outcomes. The question we are asking is: Which of the seven variables (socio-economic plus political) is the best predictor of variation in resource allocation? In an attempt to come to grips with this problem we employ stepwise multiple regression technique in which the explanatory variables that are the strongest predictors of variation in a dependent variable are computed first.

Table XXI presents the results of the stepwise multiple regression analysis in which the dependent variable

TABLE XXI

STEPWISE MULTIPLE REGRESSION ANALYSIS OF POLICY OUTCOMES IN KENYA
USING SOCIO-ECONOMIC AND POLITICAL VARIABLES AS PREDICTORS

N=14

Dependent Variable: Agricultural Allocations (AGREDIT)

<u>Independent Variable</u>	Regression Coefficient	Standard Error Coefficient	Standardized Regression Coefficient	R ²	F-Ratio	P
SCALE	22140.80	12803.51	0.800	60	2.99	<.05
RUMIGRO	20562.05	11955.08	0.743	77	2.96	<.05
LINKGRAT	9142.14	11835.92	0.331	78	0.60	>.05
POLPARTY	19579.86	31897.72	0.364	80	0.38	>.05
VOTETURN	-225.97	872.79	-0.083	80	0.07	>.05
ELITE	-254.68	733.95	-0.216	80	0.12	>.05
MINISTER	3001.64	11196.58	0.126	81	0.07	>.05

Calculated on a computer at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Regression and standard error coefficients have been rounded off to two decimal places and standardized regression coefficients have been rounded off to three decimal places.

is AGREDIT. The question is: Which of the seven explanatory variables in Tables XIII and XVIII is the best predictor of variation in allocation of agricultural resources? Table XXI shows that SCALE is by far the strongest predictor of variation in AGREDIT. It has the highest F-Ratio index (2.99) and a standardized regression coefficient of .800. The only other explanatory variable that has a regression coefficient that is closer to being significant is RUMIGRO. Table XXI strongly supports our initial hypothesis, i.e. modernization is the main cause of variation in resource allocation. Another observation that is worth our attention is that none of the four political variables that we treated as intervening variables in our initial model has a significant regression coefficient in Table XXI. These findings are comparable to those in Table XX. In the latter table, none of the four political variables had a significant regression coefficient; the same is true of Table XXI. Finally, VOTETURN and ELITE have negative regression coefficients. The above regression results (Table XXI) do not support Hypotheses one, two, three and four.

Let us now turn to COREDIT. This dependent variable correlates significantly with only one of the seven explanatory variables (ELITE). From this relationship we might conclude that ELITE is likely to have a significant causal relationship with COREDIT in any multiple regression analysis.

Such an inferential conclusion, if made, would be misleading. Table XXII presents the results of the stepwise multiple regression in which COREDIT is the dependent variable. Among our seven possible predictors of variation in commercial allocations, ELITE is by far the strongest, even though the regression coefficient is not significant. Again, when we turn to the standardized regression coefficients (which give a comparative index that shows the relative strength of each of the explanatory variables in accounting for the variance in the dependent variable), we find that ELITE is still by far the best predictor of variation in resource allocation in the above table. Of the remaining six explanatory variables, none appears to be a possible cause of variation in COREDIT. POLPARTY, which has a significant regression coefficient, is negatively related to COREDIT. When we compare the results of the stepwise multiple regression in Table XXII where COREDIT is the dependent variable with those of Tables XIV and XV, we quickly notice that political variables (although they do not have significant regression coefficients) are, in general, better predictors of variation in COREDIT than SCALE, RUMIGRO and LINKGRAT which were extracted from the modernization variables.

The findings in Table XXII show that modernization variables are the least powerful predictors of variation in COREDIT. Although the number of explanatory variables

TABLE XXII

STEPWISE MULTIPLE REGRESSION ANALYSIS OF POLICY OUTCOMES IN KENYA
 USING SOCIO-ECONOMIC AND POLITICAL VARIABLES AS PREDICTORS

N=14

Dependent Variable: Commercial Allocations (COREDIT)

<u>Independent Variable</u>	Regression Coefficient	Standard Error Coefficient	Standardized Regression Coefficient	R ²	F-Ratio	P
ELITE	4460.33	2660.78	1.379	54	4.26	<.05
POLPARTY	-165711.93	93908.78	-1.116	58	3.11	<.05
VOTETURN	-3354.36	2569.55	-0.448	66	1.70	>.05
MINISTER	-49248.67	32963.40	-0.748	74	2.23	>.05
LINKGRAT	-31534.20	34845.65	-0.414	75	0.82	>.05
SCALE	-24820.82	37694.28	-0.325	76	0.43	>.05
RUMIGRO	-18820.72	35196.45	-0.247	77	0.29	>.05

Calculated on a computer at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Regression and standard error coefficients have been rounded off to two decimal places and standardized regression coefficients have been rounded off to three decimal places.

included is small, the findings do suggest that variation in COREDIT is influenced by political variables and not modernization variables.

Our third stepwise multiple regression is shown in Table XXIII where EDEXP is the dependent variable. The three strongest predictors of variation in EDEXP are SCALE, RUMIGRO and ELITE, in that order. Two of the three explanatory variables (SCALE and RUMIGRO) are significant at less than 1%. This causal relationship, like the one in which AGREDIT is the dependent variable, strongly supports our basic proposition, i.e. modernization is the primary explanatory variable that accounts for variation in resource allocation among Kenya districts. The strong causal relationship between ELITE and EDEXP was to be expected since both of them partly measure the literacy level. However, the relationship does not invalidate our basic proposition as stated above.

One of the factors that is important in political socialization is education. It is through political socialization that each political system inculcates in its youth the values that are dominant in that society. Those who go through primary, secondary and college ~~education~~ are subjected to various aspects of the socialization process. It is therefore logical for us to argue that individuals who attend the above educational institutions experience manifest

socialization which is difficult to be realized by individuals who are shut out. But we know that in the case of the developing countries and specifically Kenya, which we are analyzing, the elite are the ones who have attended primary and secondary schools or college. They may therefore be expected to have a wider perspective about the place and value of a Kenya nation. These are orientations and values that they could not have without going through the education system in that country.

The ELITE/EDEXP relationship in Table XXIII is sufficient to illustrate the importance of the former for the latter. We may therefore infer that districts which receive less EDEXP will have fewer young people experiencing manifest socialization than those in districts which realize high EDEXP. There are, of course, consequences for such a state of affairs, one of which is that districts which receive token EDEXP will participate minimally in the mainstream of Kenyan political process; hence individuals in these districts will remain parochially oriented. For them the idea of a Kenya nation will be vague and distant. But the few elites that may emerge from these districts may eventually work to gain more participation in the national government, failure of which might lead to secessionist demands.

TABLE XXIII

STEPWISE MULTIPLE REGRESSION ANALYSIS OF POLICY OUTCOMES IN KENYA
USING SOCIO-ECONOMIC AND POLITICAL VARIABLES AS PREDICTORS

N=14

Dependent Variable: Education Expenditure (EDEXP)

<u>Independent Variable</u>	Regression Coefficient	Standard Error Coefficient	Standardized Regression Coefficient	R ²	F-Ratio	P
SCALE	141.89	26.90	0.608	81	27.82	<.01
RUMIGRO	97.13	25.12	0.458	96	14.95	<.01
ELITE	2.98	1.54	0.329	98	3.74	<.05
MINISTER	-28.69	23.52	-0.147	98	1.48	>.05
POLPARTY	-33.40	67.02	-0.081	99	0.25	>.05
LINKGRAT	9.18	24.87	0.043	99	0.14	>.05
VOTETURN	-0.28	1.83	-0.014	99	0.02	>.05

Calculated on a computer at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Regression and standard error coefficients have been rounded off to two decimal places and standardized regression coefficients have been rounded off to three decimal places.

Finally, of the four political variables in the regression analysis (where EDEXP is the dependent variable), three, MINISTER, POLPARTY and VOTETURN, have negative regression coefficients. Prior to this regression analysis we noted that a bivariate correlation coefficient of .51 existed between MINISTER and EDEXP, suggesting that the former might be one of the significant explanatory variables that account for variation in the latter. According to Table XXI, the relationship was spurious. What has happened is that when MINISTER is matched against the other six explanatory variables, it yields no significant causal relationship with EDEXP. Another independent variable that showed a somewhat substantial but below average correlation with EDEXP in Table XIX was VOTETURN (.46). Again, when we examine Table XXIII, we notice that VOTETURN is the least powerful explanatory variable among the seven independent variables. What these two examples show is that bivariate correlations do not offer a sufficient basis for asserting causation.

This series of stepwise multiple regressions would not be complete if we did not include Table XXIV which has as its dependent variable ALSOURCE. Our objective here is to attempt to evaluate the relative strength of each of the seven explanatory variables in accounting for variation in ALSOURCE. Unlike Table XX where we attempted to evaluate

TABLE XXIV

STEPWISE MULTIPLE REGRESSION ANALYSIS OF POLICY OUTCOMES
USING SOCIO-ECONOMIC AND POLITICAL VARIABLES AS PREDICTORS

Dependent Variable: Resource Allocation Scale (ALSOURCE)

N=14

Independent Variable	Regression Coefficient	Standard Error Coefficient	Standardized Regression Coefficient	R ²	F-Ratio	P
ELITE	.020	.010	.470	79	4.16	<.05
RUMIGRO	.471	.161	.471	87	8.62	<.01
SCALE	.478	.172	.577	95	11.29	<.01
MINISTER	-.210	.150	-.243	96	1.95	>.05
PARTY	-.414	.428	-.212	97	0.93	>.05
VOTETURN	-.017	.012	-.173	98	2.11	>.05
LINKGRAT	.041	.159	.041	98	0.07	>.05

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to three decimal places.

the strength of the four independent variables by using only political variables, Table XXIV incorporates modernization explanatory variables as well. The strongest predictor of ALSOURCE is SCALE. What can we infer from this causal relationship? The most important variable that is related to SCALE is population size. Thus, districts which have large populations are likely to receive more resource allocations in agriculture, commerce and education. However, SCALE is but one of the independent variables that explain significant variation in ALSOURCE.

The second strongest explanatory variable that explains variation in overall policy outcomes is RUMIGRO. This explanatory variable, we argued above, reflects economic growth which in rural areas is based on cash crop agriculture. Thus, the districts with high levels of economic growth will receive on the aggregate more resource allocations than areas where there is no economic growth taking place.

Our third strongest variable that accounts for significant variation in policy outcomes in Kenyan administrative districts is ELITE. The ELITE/ALSOURCE relationship continues the trend set in Table XX. These findings support the logic behind our causal model that was sketched in Figure I. One of the implications of Figure I is that modernization variables are more powerful than intervening

variables in accounting for variation in policy outcomes. Observation of Table XXIV supports this argument (i.e. if we exclude LINKGRAT).

Table XXV is, in a sense, an extension of Tables XXI-XXIII which sought to extract the strongest predictors of resource allocations in the Kenya districts. Table XXV and Appendices XVI, XVII and XVIII consist of regression analysis using the three strongest predictors of resource allocations. Four explanatory variables were eliminated -- LINKGRAT, MINISTER, POLPARTY and VOTETURN -- because they proved to be generally poor predictors of resource allocation within the Kenya districts. In other words, we have rejected Hypotheses two, three and four.

Our discussion of Table XXV will proceed in order of the dependent variables, starting with AGREDIT. Of the three explanatory variables, only RUMIGRO has a strong and significant relationship with AGREDIT. The second predictor that has a near significant causal relationship with AGREDIT is SCALE. The comparative strength of prediction of each of the three explanatory variables (RUMIGRO, SCALE and ELITE) is shown in Appendix XV. We may now conclude from these statistical relationships that as far as AGREDIT is concerned, RUMIGRO is by far the best predictor (Appendix XVI). Turning to COREDIT in Table XXV, we notice that none of the three possible predictors has a strong relation-

TABLE XXV

MULTIPLE REGRESSION ANALYSIS OF POLICY OUTCOMES IN KENYA
USING THE THREE BEST PREDICTORS FROM TABLES XIII AND XVIII

N=14

<u>Dependent Variables</u>	<u>Independent Variables</u>						
	α	SCALE	RUMIGRO	ELITE	R ²	F-RATIO	P
AGREDIT 27844.06		14721.90 (7774.45)	12666.16* (5673.60)	150.21 (334.57)	78	5.02	<.05
COREDIT 66488.40		1941.60 (28317.04)	7980.32 (20665.09)	1661.35 (1218.61)	55	1.46	>.05
EDEXP 236.15		131.38* (19.19)	96.71* (14.01)	2.75* (0.83)	98	77.43	<.01
ALSOURCE -0.37		0.542* (0.135)	0.452* (0.094)	0.050* (0.006)	95	33.08	<.01

* Significant regression coefficients.

Calculated on a computer at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to two decimal places except for ALSOURCE coefficients, which have been rounded off to three decimal places.

ship, but ELITE is closer to being significant than the other two (SCALE and RUMIGRO). We now confidently rule out the hypothesized causal relationship between level of modernization and commercial allocations. This rejection of the hypothesized relationship between modernization and commercial allocation does not invalidate our broad and general hypothesis concerning co-variation between modernization and resource allocation. The reason why this is so may be observed in this same Table XXV where EDEXP is the dependent variable. The results reflect the pattern set in Table XXIII. All three explanatory variables, SCALE, RUMIGRO and ELITE which accounted for most of the variation in EDEXP in Table XXIII, also account for most of the variation in EDEXP in Table XXV. The regression coefficient of SCALE is over five times the standard error coefficient and that of RUMIGRO is over three times its standard error coefficient. There can be no doubt that these two explanatory variables plus ELITE are by far the best predictors of variation in EDEXP.

If EDEXP presents a convincing case, ALSOURCE confirms the potency and validity of our general hypothesis about the existence of co-variation between modernization and resource allocation (see Tables XXIV and XXV). All three regression coefficients under ALSOURCE are significant at less

than 1% level. Since ALSOURCE is the scale of the three dependent variables (AGREDIT, COREDIT and EDEXP), our hypothesis is credible.

Elite and Resource Allocation

This chapter has yielded three independent variables that are best predictors of resource allocation in Kenya districts. In order of their predictive strength these include SCALE, RUMIGRO and ELITE. Two of the three best predictors of resource allocation (SCALE and RUMIGRO) were discussed fully in Chapters III and IV and there is no need to repeat that analysis in the present chapter. This leaves us with ELITE for which a brief restatement and elaboration of the hypotheses that were stated and discussed above appears necessary.

We argued in Chapter One that modernization is a complex process. The Kenya data we have analyzed above attests to this complexity. On the one hand we have variation in modernization influencing variation in elite recruitment which in turn influences policy outcomes. But there is a feedback process as well. Disparity in allocated resources has impact on elite recruitment and on levels of modernization. The quest for modernization in Kenya and indeed in most developing countries has necessitated the building up of bureaucracies to run modernization programs. These in-

dividuals were recruited predominantly from high school and college graduates to fill posts formerly held by the British civil servants during the period Kenya was a colony. In the districts these individuals work in Ministries such as Agriculture, Natural Resources, Cooperatives, Communication, Transportation, Education, etc. The most powerful civil servants in Kenya are the District Officers, District Commissioners and Provincial Commissioners, who perform co-ordinating functions at the division, district and provincial levels respectively. Out of about 1534 elites listed by M. Chaput and L. Venys,¹ it was found that 601 individuals held posts in the civil service and another 150 of the elites were elected politicians. When civil servants are added to politicians, they comprise 49% of the total elite listed in Who's Who in East Africa.² What is the relationship these elites, i.e. the civil servants and politicians, have to resource allocation in Kenya?

The elite is at the center of modernization process; it controls resources and at the same time it encourages and actively participates in change programs in rural areas.

¹ M. Chaput and L. Venys, A Survey of the Kenya Elite, op. cit.

² Who's Who in East Africa, 1965-1966, op. cit.

Thus the elite in Kenya does not sit idle and wait for a period when the masses will rise up and begin to modernize. Instead, the elite goes to the masses and mobilizes it by promising more resources if the latter participates in modernization programs.

Summary

We started out with four hypotheses in this chapter. To these four may be added the two that were tested in Chapter Four, bringing the total to six. We may now ask: How many of the six hypotheses are supported by the above multiple statistical analyses? First, our analyses show that Hypothesis one, asserting a causal relationship between population size and resource allocation, and Hypothesis two, asserting a causal relationship between level of economic growth and resource allocation are both supported by the above findings. In the case of population size the relationship is not direct. However, population size is one of the variables that load on SCALE factor, hence the above relationship. Of the four hypotheses in the present chapter, only Hypothesis one is supported by our findings where EDEXP is the dependent variable. And more important is the result in this same table where ALSOURCE is the dependent variable. All the three hypotheses (i.e. SCALE and

ALSOURCE; RUMIGRO and ALSOURCE; and ELITE and ALSOURCE) are significant at less than 1% level, rendering them credible.

On the whole, the statistical analyses in this chapter have yielded better results than the analysis in Chapter Four. In general, SCALE and RUMIGRO are the two best predictors of variation in resource allocation, again showing that political variables are comparatively weaker predictors.

We are now left in this inquiry with the following tasks: (a) comparing modernization process in the Kenyan administrative divisions, (b) mapping patterns of modernization in Kenyan villages, (c) relating characteristics of administrators to policy outcomes, (d) comparing the level of modernization of villages with individual characteristics of administrators in those villages, and (e) discussing the implications of this study for research, theory and public policy. The first four relationships will be examined in Chapter VI, leaving the fifth to be investigated in Chapter VII.

CHAPTER VI

RELATIVE MODERNIZATION AND POLICY OUTCOMES IN KENYAN ADMINISTRATIVE DIVISIONS

Before we enter into an analysis of variation in levels of modernization in Kenyan administrative divisions, we have to restate our objectives in this chapter in the form of a brief outline that sets forth the problems to be examined. Thus we first compare variation in levels of modernization in two administrative divisions, Tetu and Vihiga. The question we ask is: Which of the two is more modern? Second, we move from the division level to the location (village) level and map the variation in modernization of these units. The ten villages are within the two above divisions. Our goal here is to observe variation in the pattern of modernization as we move from the levels of district and division to location. Third, we move from the level of location to the individual. In this section we show that civil servant Chiefs from locations that are more modern, rank high on individual characteristics which we later relate to an area of policy outcomes -- resource allocated to self-help projects. Fourth, we relate Chiefs' characteristics to the ability to generate and allocate resources. We argue in this section of the chapter that Chiefs who have characteristics that are relatively modern

will attract more resources from the central government for self-help projects. But above all, we observe that the two Chiefs' characteristics that are significantly associated with the ability to generate resources for self-help projects are strongest among Chiefs from locations that have high scores of modernization. Before discussing the relationship between Chiefs' characteristics and levels of modernization of each location, we shall introduce rural elites into the analysis and briefly show their relationship with the Chiefs in generating and allocating self-help resources. In the final section of this chapter we summarize our analysis by attempting to answer the following questions: What has our multi-level analysis demonstrated? How does this chapter tie in with the concept of relative modernization? How does this chapter relate to previous chapters which dealt with policy outcomes at the district level?

Relative Modernization in Tetu and Vihiga Divisions

Before we discuss the variables in Table XXVI, a brief statement concerning the two administrative divisions would suffice. Tetu and Vihiga are within Nyeri and Kakamega Districts respectively. The two divisions are characterized by basic variation, e.g. in ethnicity, geography, and historical experiences. Tetu is inhabited by the

Kikuyu whereas Vihiga is inhabited by the Abaluyia ethnic group. The two divisions are located over three hundred miles apart.

Our interest is in the levels of modernization in the two divisions. Table XXVI presents five variables that give an indication of how the two divisions measure up on ability to acquire modern goods or institutions. Let us discuss each of the five variables in that order. Co-operatives, as we stated above, play an important role in a modernizing society. They provide an organization mechanism through which individual peasants who have not participated in an economic organizational group may for the first time find a forum through which they may gain new ideas on available techniques in farming and marketing produce. It is through the co-operatives that extension staff may reach a large number of people. There are other advantages that a peasant may derive from belonging to co-operatives. For example, participation is often democratic, i.e. each member's vote counts since decisions are made on the basis of a majority. The idea of arriving at decisions through a majority principle has implications for the orientation of members of co-operatives towards political process. Each member is likely to be oriented towards a desire for seeing this principle applied to the political elections in his district, region or at national level. Apart

TABLE XXVI
 MODERNIZATION TRENDS IN TETU AND VIHIGA

	TETU	VIHIGA
1. Membership in coffee marketing co-operatives	5,652	5,709
2. Miles of bituminized road	148	32
3. Primary school enrolment	23,000	50,000
4. Number of major health care centers	4	4
5. Number of farmers' training centers	1	0
6. Population size	96,213	296,254

Sources: Special Rural Development Programme, Tetu Pilot Project, December 1969 (unpublished); Vihiga Special Rural Development Draft Action Programme, 1969 (unpublished); Republic of Kenya, Kenya Population Census, 1969, Vol. I, op. cit.

from the spread of modern ideas on participation, training, and management, co-operatives provide a mechanism through which farmers may pool their resources to acquire certain tools jointly, e.g. dairy processing plants.

Turning to the membership figures in coffee marketing co-operatives, we notice that Vihiga's membership is larger than Tetu's by only 57. This raw data is misleading if taken at face value, i.e. if we take it simply to mean that Vihiga has more farmers enrolled in coffee marketing co-operatives than Tetu. When we examine the population (variable six in Table XXVI) of the two divisions we find that according to the 1969 Kenya population census, Tetu had a population of 92,213 whereas Vihiga had a population of 296,254. Thus, Vihiga's population is more than three times that of Tetu; hence Tetu with 5,652 individuals enrolled as members of coffee marketing co-operatives is better off than Vihiga, i.e. it has more coffee farmers in comparison to its population than Vihiga.

Our second variable assesses the ability of the division to improve its transportation network. This variable refers to the hypothesis we discussed theoretically in Chapter Two. In that chapter we stressed the importance of infrastructure for the economy of a given areal unit. For example, without a sufficient transportation network, a unit's links with the external world is markedly reduced.

This variable shows that Tetu has more than four times as much bituminized road mileage as Vihiga. The importance of bituminized road is even more critical for Vihiga than Tetu since Vihiga's annual rainfall averages 60"-70" compared with 44" for Tetu.¹

The third variable gives us some indication of the number of pupils enrolled in primary schools. The number of children of primary school age in most underdeveloped societies constitute about one third of the population.² Working on this basis, it means that there are about 30,738 children of primary school age in Tetu and 98,752 in Vihiga. Thus Tetu has a little over 74% of children of primary school age enrolled in school compared to about 50% for Vihiga. The above figures therefore leave no doubt that Tetu has more children undergoing formal primary training than Vihiga.

Again we hypothesized in Chapter II that areal units with high levels of modernization will have more health services than areal units with relatively low levels of

¹Special Rural Development Programme, Tetu Pilot Project, December, 1969, p. 4; Vihiga Special Rural Development Draft Action Programme, 1969, p. 1.

²D. M. Heer, Society and Population (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1968), pp. 80-86.

modernization. In Table XXVI we observe that although the total population of Vihiga is over three times that of Tetu, the two divisions have the same number of major health care centers. Moreover, Tetu enjoys the health services of the Nyeri Provincial Hospital which has a large number of beds. Vihiga, on the other hand, does not have a hospital as large and as well equipped as the Nyeri hospital in Tetu Division. One may of course ask: What has health care got to do with modernization? To such a question we give the age old answer that a healthy body is likely to have a healthier, more creative mind, and creativity is essential to modernization.

The fifth variable in Table XXVI is the number of farmer training centers. If production of agricultural commodities is to increase, both farmers and their leaders need to acquire modern techniques of farming. A training center within the division helps to meet this objective. In Tetu the training of farmers takes place at Wambungu, which is within that division; on the other hand, farmers in Vihiga have to go to Bukura Farmers' Training Center, which is located in another division of Kakamega District.

Even without the use of multivariate statistical techniques, the data of the above variables leave no doubt that Tetu is more modern than Vihiga. What we have witnessed above is that the size of population is not a suf-

ficient cause of modernization, i.e. a unit may have a relatively small population but still modernize faster than a unit with a very large population size. We do not deny the importance of population size, but it appears that more research is needed to determine whether there is an optimum population size for a given unit.

Relative Modernization in Tetu
and Vihiga Locations. (Villages)

Table XXVII presents modernization variables which index various aspects of modernization at locational level. Population size has been discussed in relation to districts; its inclusion at the village level is to observe the component on which it loads. Will it load on the first component as it did in Chapter Three, or will it load on some other component? If it significantly loads on the first component, will the loading be positive or negative? The findings on how POPSIZE loads will lead us to either infer that POPSIZE still contributes towards scale component as it did in Chapter Three, or that it does not at the village level.

Our second variable, PROJECTS, indexes the number of projects that have been constructed by the use of self-help resources (see Appendix XX). It is important for the reader to note the distinction we make between these completed projects and the funds or resources that went into

TABLE XXVII
LOCATION MODERNIZATION VARIABLES

1. POPSIZE	Population size
2. PROJECTS	Number of self-help projects
3. TAX	Tax collected in Kenya shillings
4. BARAZA	Per cent of farmers attending Chiefs' meetings (barazas)
5. AGRIDEM	Per cent of farmers attending agricultural demonstrations
6. HUSDEM	Per cent of farmers attending animal husbandry demonstrations
7. FARMPLAN	Per cent of farmers attending farm planning demonstrations

Sources: Kenya Population Census, 1969, Vol. I, op. cit.; Provincial Graduated Personal Tax files at Kakamega and Nyeri, fiscal year 1969-1970; Special Rural Development Preliminary findings for Tetu and Vihiga Divisions, 1969 (unpublished).

building them. We treat the former as indexing some aspect of modernization and the latter, i.e. generation and allocation of funds that go into building these projects, as an aspect of public policy outcomes. It is the latter that we use in ranking Chiefs' ability to influence policy outcomes.

The third variable, TAX, indexes the percentage of adult males that paid Graduated Personal Tax in the fiscal year, 1969-1970. The rationale behind the inclusion of this variable is that Graduated Personal Tax (GPT) paying individuals in administrative units with high levels of modernization are more likely to pay in full their assessed share of the tax than individuals in less modernized areas; and as such, the variable can be treated as an indicator of modernization.

The variable, BARAZA, indexes the mode of communication. Throughout Kenya the main mode of communication used by the bureaucracy to reach the peasantry is in the form of speeches delivered at open air gatherings. These gatherings have been routinized so that there is at least one every week at the Chief's center in most locations. Attendance in some locations is mandatory, as a result of which this variable might not be a good measure of modernization. However, we included it here to observe its relationship with the other gatherings, i.e. AGRIDEM, HUSDEM,

and FARMPLAN, which are voluntary and which we believe index modernization since their activities are directly related to modern agriculture, which emerged as the main component underlying economic growth in rural areas (see Chapter III).

Table XXVIII presents the correlation matrix of the modernization variables in Table XXVII. Let us start its discussion by examining the correlation coefficients associated with POPSIZE. On a priori grounds some students of modernization might have argued that the number of self-help projects in any given unit will vary with population size. Although bivariate correlations are not known for offering powerful predictions, they do give us some indication of how one variable is related to another. The association between population size (POPSIZE) and self-help projects (PROJECTS) is $-.53$. This means that population size is significantly and negatively related to self-help projects. In other words, locations which have a large population size do not necessarily have more self-help projects than locations which have a small population size. For example, between 1964 and 1970, Thegenge Location in Tetu Division, with a population of 28,070 (1969 census), had over 20 self-help projects whereas West Bunyore in Vihiga Division, with a population of 53,485 (1969 census) had only three self-help projects. The same trend may be

TABLE XXVIII
CORRELATION COEFFICIENTS MATRIX

	1	2	3	4	5	6
POPSIZE						
PROJECTS	-.53					
TAX	.95	-.65				
BARAZA	-.02	-.53	.19			
AGRIDEM	-.12	.20	-.20	-.11		
HUSDEM	-.68	.60	-.74	-.09	.66	
FARMPLAN	-.77	.73	-.85	-.26	.44	.93

Calculated at the Syracuse University Computing Center using Biomedical Computer Programs, op. cit. Coefficients have been rounded off to two decimal places.

observed in the case of Muhoyas Location in Tetu Division. This location had a population of 16,417 (1969 census) and completed about ten self-help projects in 1970 whereas North Maragoli in Vihiga Division, with a population of 71,052 (1969 census) completed about four self-help projects in 1970 (see Appendix XX). These figures confirm our major hypothesis that it is the level of modernization that is the principal determinant of resource allocation to self-help projects.

The other positive correlation population size (POPSIZE) has is with TAX. This relationship, we believe, does not violate our argument that ability to pay tax is a reflection of how modern an area is. However, in some locations, Chiefs resort to punitive measures in order to extract taxes.¹ This practice is largely responsible for associating POPSIZE with TAX. Thus TAX is closely related to number of individuals in a location.

Moving on to the relationship between POPSIZE and BARAZA we notice that the association is almost non-existent. The ability to attend a Baraza is not related to how many people are in that location. This is but logical and was to be expected. Of the other three modes of communication or

¹This practice is discussed at length in The Role of Chiefs and Sub-chiefs in Administration in Vihiga by N. Nyangira (Nairobi: Institute for Development Studies, University of Nairobi, April, 1970).

dissemination of skills. POPSIZE is negatively and significantly related to animal husbandry demonstration gatherings and to farm planning demonstration gatherings. What this means is that ability of an individual in any of the ten locations to attend these demonstrations is not related to the size of the population within that location.

If there is any validity in the discussion of Table XXVIII, it lies in the association the second variable, PROJECTS, has with variables 4 - 7. Let us briefly discuss each of these associations. We stated above that BARAZA's value as an index of modernization has been distorted by its mandatory status, i.e. some location Chiefs have rules which require everybody to attend a Chief's or Sub-chief's Baraza. Thus this variable is made less useful as a measure of modernization. The distortion of this variable as an index of modernization is reflected in the correlation coefficient of $-.53$ between PROJECTS and BARAZA. In other words, BARAZA is negatively related to PROJECTS. The negative coefficient is significant. All the remaining three variables - AGRIDEM, HUSDEM, and FARMPLAN have significant correlations with PROJECTS. The significant correlation with FARMPLAN is particularly important and deserves a brief discussion. Farm planning demonstrations (FARMPLAN) teach peasant farmers how to plan their farms, i.e. the type of crops to grow and the farming techniques they re-

quire. It is well known that individuals that are tradition bound tend to resist change. This means that those who attend farm planning demonstrations have at least taken the first step towards changing their orientation towards life. They are no longer content with the traditional techniques they acquired from their forefathers. By attending a farm planning demonstration they show a willingness to refuse to entrust their future to chance, i.e. nature, for acceptance of the idea of planning means a change in basic outlook towards nature and the environment. These three variables then are important measures of modernization in locations.

Since bivariate correlations are associations of two variables, we need to move a step further to multivariate analysis. Thus the employment of factor analysis to construct scales of modernization of the locations is our next task. Table XXIX presents the results of our factor analysis. Three components were extracted. The first component (F_1) accounted for 60.54% of the variance, the second component (F_2) accounted for 17.15% of the variance, and the third component (F_3) accounted for 15.57% of the variance. All the three components, therefore, account for 93.25% of the total variance. Let us start the discussion with the unrotated factors or components. Five variables have loadings of over .78 on this component. A

TABL. XXIX

LOADINGS OF UNROTATED AND ORTHOGONALLY ROTATED MODERNIZATION FACTORS
FOR TEN LOCATIONS IN TETU AND VIHIGA

Variable	Unrotated Factors			Rotated Factors		Instruc- tion Mode	h ²
	F ₁	F ₂	F ₃	Modern Agriculture	Village Communication		
POPSIZE	-.84	-.32	.38	-.97	-.06	-.02	.95
TAX	-.91	-.12	.31	-.97	.16	-.09	.95
PROJECTS	.78	-.44	-.14	.62	-.65	.13	.83
BARAZAS	-.30	.91	-.03	.01	.96	-.04	.93
AGRIDEM	.46	.08	.86	.07	-.05	.98	.96
HUSDEM	.92	.19	.30	.72	-.09	.66	.96
FARMPLAN	.97	.03	.04	.83	-.26	.42	.94
Eigenvalues	4.24	1.20	1.09				
% of Total Variance	60.54	17.15	15.57				

Calculated at the Syracuse University Computing Center using Biomedical Computer Programs, op. cit. Unities were entered in the diagonals as estimates of the communalities. Factor loadings have been rounded off to two decimal places.

sixth variable is a borderline case with a loading of .46. In other words, nearly all variables load, as expected, significantly on F_1 before the rotation of the factor matrix. Since the unrotated components are not as independent as the rotated components, we do not intend to discuss them at length. We therefore proceed to a discussion of the rotated factor matrix.

We have labelled F_1 of the rotated factor matrix Modern Agriculture. In order to show why we labelled it Modern Agriculture we have to discuss the variables that load on it significantly. Five of the seven variables have loadings of over .62 on this component. Two variables which have the highest loadings are negatively related to this component. They are POPSIZE and TAX. We have discussed at length why these two variables are not related to one of the variables (PROJECTS) which loads on this component, and we do not need to repeat that discussion here. However, we need only point out that the two variables, POPSIZE and TAX are a function of scale. The implication of this relationship will be analyzed below in Chapter VII. Three variables have positive and significant loadings. These three are PROJECTS, HUSDEM, and FARMPLAN.

PROJECTS includes secondary schools, cattle dips and pig breeding facilities. These facilities did not exist in the traditional societies of the peasants. They are part of

the changes that are taking place in the life styles of the rural peasant farmer. In most cases they represent an effort on their part to do away with the traditional life and to move into the modern world. The other two variables, HUSDEM and FARMLAN, constitute a mode of communication of skills. In a society where there is skepticism, often based on mistrust of the officials, one effective way to communicate with the peasant is to show him practically the expected outcome of a given program. Demonstration serves this purpose and has proved to be an effective way of increasing farmers' skills. Some of the demonstrations take place at Farmers' Training Centers where crops are grown and animals, e.g. dairy animals, are reared. These plots serve the purpose of showing the peasants how a given crop is grown or a breed of cattle may be reared. Thus if the peasant is likely to be skeptical about verbal words of a bureaucratic official, he is not likely to disregard practical demonstrations that he is able to witness with his own eyes. There is therefore a definite difference between traditional agriculture and modern agriculture. What we are asserting is that a man engaged in modern agriculture is more modern than a peasant practising traditional agriculture.¹ This is

¹A few of the studies of modernization process in village communities of the Third World that discuss some of

the logic behind our analysis. We view modern agriculture as occupying a midway position between traditional agriculture and industrialization.

Finally, this first component (Modern Agriculture) is related to F_2 of the rotated factor matrix in Chapter III or RUMIGRO. They both tap changes that are taking place in agriculture, which is the main earner of cash income in rural districts and villages of Kenya.

We may now turn to rotated F_2 or Village Communication. Only two variables have significant loadings on this component. PROJECTS, which has a negative loading at $-.65$, and BARAZA, which has a positive and significant loading at $.96$. As we pointed out above, BARAZA is the main mode of communication within locations. It is a device that was used long before colonization. The colonial administration merely routinized the device by requiring every male adult to attend the gathering at a Chief's center on appointed days of the week. Although it is now open to women, it is still largely a man's affair. Very few women attend it. Its im-

these problems include: I. Adelman and G. Dalton, "A Factor Analysis of Modernization in Village India," in Economic Development and Social Change: The Modernization of Village Communities, ed. by I. Adelman and G. Dalton (New York: The Natural History Press, 1971), pp. 492-517; W. C. Neale, Economic Change in Rural India: Land Tenure and Reform in Uttar Pradesh, 1800-1955 (New Haven: Yale University Press, 1962); L. K. Sen, Modernization in Village India, op. cit.

portance as a means of bringing about participation in decision making, in addition to communication of government decisions has been a near total failure, for the authorities do not entertain questions that are critical to their policy decisions. Thus, as we demonstrated through bivariate correlations, it is negatively associated with PROJECTS, one of the principal variables measuring modernization.

Our next component is F_3 which we have labelled Instruction Mode. The three variables (AGRIDEM, HUSDEM, and FARMPLAN) that load positively and significantly on this component represent mode of communicating skills to the farmer.

It is the first component that we find most relevant for our analysis. This is because it is closely related to RUMIGRO in Chapter III. We intend to subject it to further analysis when we examine its factor scores in the next section of this chapter.

Table XXX presents factor scores for the ten locations. Our discussion will concentrate on factor scores on the Modern Agriculture component and on the Instruction Mode component for we believe that the two components are more meaningful in indexing modernization than Village Communications component which has only two variables loading on it significantly. Five locations, or half the sample, have positive factor scores on the first component,

TABLE XXX
 FACTOR SCORES FOR EACH LOCATION

Location	Modern Agriculture	Village Communication	Instruc- tion Mode
AGUTHI	0.24	-1.10	1.39
THEGENGE	0.83	-2.08	-0.49
TETU	1.29	0.49	0.25
MUHOYAS	1.29	0.81	0.58
E. BUNYORE	-0.26	0.71	-0.38
W. BUNYORE	-0.70	0.63	-0.46
N. MARAGOLI	-1.84	-0.21	0.70
S. MARAGOLI	-0.53	0.60	-1.24
TIRIKI	-0.73	-0.72	-1.48
NYANGORI	0.41	0.88	-1.36

Calculated on a computer at the Syracuse University Computing Center using Biomedical Computer Programs, op. cit. Factor scores have been rounded off to two decimal places.

which we have labelled Modern Agriculture. However, only three of these positive scores have coefficients that are large. Tetu and Muhoyas Locations have the highest factor scores, followed by Thegenge. All the three locations are located in Tetu Division. Thus these findings confirm our observation at the beginning of this chapter that Tetu is more modern than Vihiga. The fourth and last location in this division, Aguthi, has a positive factor score which happens not to be significant. How do locations in Vihiga Division measure up on this component? Five of the six locations have negative factor scores. Only one location has a positive factor score of .41. The factor scores on this component (Modern Agriculture) leave no doubt that Tetu is more modern than Vihiga.

On the component we have labelled Instruction Mode, three of the four locations in Tetu Division have positive factor scores. Only one location has a negative factor score. On the other hand, we find that only one of the six locations in Vihiga Division has a positive factor score; the rest have negative factor scores. The one location that has a positive factor score is North Maragoli.¹

¹These findings invalidate some observations made in an earlier paper (The Role of Chiefs and Sub-chiefs in Administration in Vihiga by N. Nyangira, op. cit.) In that paper South Maragoli appeared to be the most modernized loca-

TABLE XXXI

PATTERNS OF LOCATIONAL MODERNIZATION IN TETU AND VIHIGA

		<u>Modern Agriculture</u>	
		Low	High
<u>Instruction Mode</u>	High	S. Maragoli N. Maragoli	Muhoyas Tetu Aguthi
	Low	E. Bunyore W. Bunyore Tiriki	Thegenge Nyangori

Source: Table XXX

Table XXXI presents the pattern of village modernization in Tetu and Vihiga Divisions using locations as the units of analysis. Three locations have high factor scores on the two components, Modern Agriculture and Instruction Mode. All three are located in Tetu Division. On the opposite extreme are another three locations which have low factor scores on the two components. All three are located in Vihiga Division. There is one interesting finding and it concerns the locations of Thegenge and Nyangori. Thegenge, as we indicated earlier, is located in Tetu Division whereas

tion in Vihiga Division. However, since no statistical analysis was used in that paper, the present findings are more credible than the earlier observations.

Nyangori is located in Vihiga Division. These two locations are important for small scale tea farming. Tea is a crop that is generally grown on large plantations. Only Kenya in Africa South of the Sahara has been successful in supplementing its huge tea plantations with small scale plantations owned and operated by individual farmers. These two locations are areas where this effort has succeeded and they both have high scores on the Modern Agriculture component.

Our analysis of the patterns of village modernization would not be complete without a statement on the factor scores of the second component, Village Communication. Of the six villages in Vihiga Division, four have positive factor scores on this component as compared to two out of four in Tetu Division. Thus, more people attend Chiefs' Barazas in Vihiga than in Tetu Division.

Finally, only two locations have positive factor scores on all three of the components -- Tetu and Muhoyas. We may therefore conclude that Tetu and Muhoyas Locations are by far the most modernized of the ten locations. Again, since the two villages are located in Tetu Division, our contention that this division is more modern than Vihiga is strongly supported.

The question we have been building toward is: What is the relationship between areal units at a higher level of modernization and the orientations of individuals, e.g.

bureaucratic officials? Before we discuss this relationship, we have to analyze the relationship between individual characteristics of administrators and their ability to influence public policy outcomes.¹ It is to this discussion that we now direct our efforts in order to show the relationships involving modernization that exist from one unit of analysis to the next.

Individual Characteristics and Policy Outcomes

Table XXXII presents the variables in Spearman rank-order correlation (data presented in Appendices XIX and XXI.) Our dependent variable is based on the amount of resources in the form of money each Chief is able to raise for spending on construction of self-help projects. A Chief who raises the most money for allocation on construction of self-help projects is ranked higher on this variable than one who raises less money. What we are doing is to treat the allocation of money on self-help projects as a form of policy outcome. Also, a Chief in a village who

¹Applied anthropologists have argued consistently that certain individual characteristics are necessary for success of modernization programs. Some of these applied anthropologists are: C. M. Arensberg and A. H. Niehoff, Introducing Social Change: A Manual for Americans Overseas (Chicago: Aldine, 1964); A. H. Niehoff, ed., A Casebook of Social Change (Chicago: Aldine, 1966); W. H. Goodenough, Cooperation in Change (New York: Russell Sage Foundation, 1963). The arguments presented above are evidenced in

TABLE XXXII
 VARIABLES USED IN SPEARMAN RANK-ORDER CORRELATIONS

Name	Description
1. SELFHELP	Chief's success in generating self-help funds
2. TRAD	Degree of traditionalism exhibited by each Chief, e.g. total reliance on elders for advice
3. AGE	Age of each Chief
4. WEALTH	Non-salary income
5. SAFARI	Amount of travel outside own district
6. AGRI	Knowledge of modern farming techniques (e.g. use of fertilizer, machinery, etc.)
7. ORGANTEC	Organizational ability (e.g. committees, co-operatives he has organized)
8. PLAN	Method used for establishing modernization priorities -- ability to plan
9. DUTY	Days spent on self-help projects in a year
10. ED	Educational achievement
11. TRAIN	Period spent in inservice training (e.g. attendance at Chief's course at Maseno)
12. POLITICO	History of active involvement in party politics

Source: From interviews with Chiefs in Vihiga and Tetu Divisions, Kenya, December 1969 -- August 1970.

raises the most money receives large back-up resources from the central government. In other words, the more money Chiefs raise to allocate on self-help projects, the more they also receive from the central government to help them complete the projects. Thus the money spent on self-help projects is clearly a part of distributive policy outcomes. The operationalization of the independent variables is discussed below.

Having operationalized Chiefs' performance with regard to resources earmarked for self-help projects, we asked the question: What individual characteristics are associated with Chief's performance in generating and allocating funds to self-help projects? We begin the analysis with the description and operationalization of each independent variable.

TRAD: Our first independent variable measures a Chief's characteristics related to traditionalism. Chiefs who relied less on advice of village elders and who were not fatalistic

Agricultural Innovation in Indian Villages by F. C. Fliegel, P. Roy, L. K. Sen, J. E. Kivlin (Hyderabad: National Institute of Community Development, 1968). This is an empirical study that measures success or failure of agricultural change programs.

in their outlook toward life were ranked higher than those Chiefs who relied heavily on the advice of village elders and were fatalistically oriented. A person who holds that his destiny is predetermined by some forces over which he has no control is less likely to be innovative. Such a person has no confidence in his ability to influence social, political or economic outcomes in his village. We may restate this hypothesis as follows:

- H₁ Chiefs who are less traditional in both their administrative practices and their personal outlook towards nature succeed in generating and allocating more self-help resources than traditional Chiefs.

AGE: This is another individual characteristic which we related to ability of civil servant Chiefs to initiate self-help projects. In the new nations of Asia and Africa which gained independence within the last two decades, youth is accepted as representing receptivity to change. The young bureaucrats, including civil servant Chiefs, are more likely to be receptive to change than the older bureaucrats or Chiefs. For example, in Tetu Division of Nyeri District, the least modernized location is Aguthi. This location is the largest in terms of population and land area. However, it is more sparsely populated (i.e. number of people per square kilometer) than the other three locations (Thegenge, Muhoyas and Tetu). In spite of the population size,

Aguthi ranks lowest in the number of modernization self-help projects. The consensus among the senior members of the Provincial Administration was that Aguthi has a Chief who was both traditional and advanced in age, and hence ~~less~~ innovative. The average age of Chiefs was 41. The youngest was around 32 and the oldest was over 60. In this study the youngest Chief is scaled as 1 and the oldest is scaled as 10. We now hypothesize:

H₂ Younger Chiefs generate and allocate more self-help resources than older Chiefs.

WEALTH: One of the most effective means of communication in rural areas is through demonstration. Chiefs who succeed in modernizing their farms or businesses are likely to set an example that may be emulated by the peasants. Moreover, Chiefs who acquire substantial material things are generally "modern men" and will see self-help projects as one way of satisfying both their material and psychic needs. In this study the most wealthy Chief was ranked as 1 and the least wealthy was ranked as 10. The above hypothesis may be restated as follows:

H₃ Wealthy Chiefs are more likely to generate and allocate more self-help resources than less wealthy Chiefs.

We have to emphasize that when we speak of wealthy Chiefs we

are merely using this term in a relative sense. What we actually mean is that some Chiefs have more material things than others. The material things were measured in terms of non-salary income. Such income was derived from cash crops or partnership in a business.

SAFARI: This variable measures the frequency of travel outside the indigenous district by each Chief. Travel provides an individual with opportunity to learn. Often individuals change their traditional ideas once they travel and see for themselves changes that are taking place in other geographical areas. For example, a Chief who travels often is likely to observe the self-help efforts that are being made in other parts of the country and the techniques they use to raise needed revenue. In this study the most travelled Chief is scaled as 1 and the least travelled is scaled as 10. We may now hypothesize:

H_4 Well travelled Chiefs are more likely to succeed in generating and allocating more self-help resources than less travelled Chiefs.

AGRI: This variable measures each Chief's knowledge of modern agricultural techniques. Each Chief was asked to enumerate the necessary inputs into agriculture which the locations needed in order to increase crop production. The attempt was designed to test the respondent's knowledge of

the use of fertilizer, spraying, and use of available machinery such as tractors for ploughing. The Chief who enumerated systematically the farm inputs which are necessary for increasing crop production was ranked as 1 and the Chief who had scanty knowledge of modern farm inputs was ranked last, (10). The hypothesis underlying the inclusion of this variable may be stated as follows:

- H₅ Chiefs with knowledge of modern farming techniques succeed in generating and allocating more self-help resources than Chiefs who depend on traditional knowledge of farming.

ORGANTEC: Individuals who have little in the form of organization cannot be expected to compete successfully with individuals who band themselves into a group with the aim of working towards certain objectives. We shall discuss this phenomenon in detail when we analyze the importance of coordination in resource allocation. This variable was operationalized by asking each respondent to enumerate the committees and marketing co-operatives which he had helped organize over a three year period (January 1967 -- December 1969). The Chiefs who had organized the most fund raising committees and marketing co-operatives were ranked 1.5 and the Chief who had participated least in organizing fund raising committees and co-operatives was ranked as 10. The relationship between organizational ability and initiation

of self-help projects may be restated in the following hypothesis:

H₆ Chiefs with high organizational ability succeed in generating and allocating more self-help resources than Chiefs with low organizational ability.

PLAN: Our seventh variable attempted to tap the ability of the Chiefs to plan. In other words, how were the priorities of self-help projects determined? If a Chief had a mini planning committee he was ranked higher than one who depended on the decisions of the specialized staff. Some Chiefs merely responded when approached by a group of villagers who were interested in building a self-help project, otherwise they (Chiefs) had no priorities of their own. The general trend was that a Chief who was young and less traditional tended to have a plan. This group of Chiefs formed village development committees, convened leaders' conferences, and established strong coordination among Specialized Departments.

We should like to point out that Locational Development Committees are ad hoc committees and are not recognized by the central government bureaucracy. Most of them consist of the Sub-chiefs, members of the Specialized Departments who work at the location level, e.g. extension staff in agriculture, community development, water resources. Other

members included are village elders, area member of District (County) Council and occasionally prominent high school teachers.

The importance of setting up such a committee cannot be over-emphasized. Centrally controlled bureaucracies such as Provincial Administration in Kenya are removed from the ordinary peasant. Contact is reduced to meetings at Barazas where the officials encourage the latter to increase their achievements in agriculture, education, etc. But the existence of a Locational Development Committee with wide and heterogenous participation opens up possibilities for better communication between the peasantry and the decision makers in the location. It provides a channel through which information reaches the decision makers. At the same time, representatives of the peasants can participate in decisions which are intended for them. In fact, this is one of the approaches for removing suspicion between peasants and change agents, including Chiefs. Discussion of problems and priorities of the village with representatives of the ordinary peasantry builds up confidence among the masses. In many instances where establishment of priorities is the work of a single individual, the peasantry views the priorities with skepticism, usually associating them with what they consider to be hidden intentions of the Chief. But in organizing locational committees of the nature we have des-

cribed above, the Chiefs seek to come up with priorities that would be acceptable to the villagers. Besides, the villagers would be more willing to found projects which their representatives, and above all, people they trusted, had drawn up. We therefore hypothesize:

- H₇ Chiefs who have organized planning committees succeed in generating and allocating more self-help resources than Chiefs who do not have planning committees.

DUTY: In order to operationalize this variable, each Chief was asked to estimate the number of days he spent each year supervising, giving advice and raising revenue for modernization projects, e.g. building of schools. The Chief who had spent the greatest number of days (130) was ranked 1, whereas one who had spent the least number of days (50) was ranked 10. We thus hypothesize:

- H₈ Chiefs who allot a substantial share of their working days to modernization problems generate and allocate more self-help resources than Chiefs who do not.

ED: Our ninth independent variable measures each Chief's educational achievement, i.e. the number of years of formal schooling each one of them received. The Chief that is ranked 1 is the one who had the most years of formal schooling, and one who was ranked last (10) had the least years of

formal schooling. Education plays an important role in administrative performance of each civil servant. There is a tendency among the general public to equate high educational achievement with high administrative performance. This, of course, reflects the increasing importance of technology in the world. For administrators to be effective in their assignments, they have to possess a fair understanding of the technological innovations that relate to their day-to-day duties. For Chiefs, such knowledge includes advances in new agricultural machinery. We therefore hypothesize:

- H₉ Chiefs with high levels of education (formal schooling) are likely to generate and allocate more self-help resources than Chiefs with low levels of education.

TRAIN: Our tenth variable measures the amount of training received by each Chief. A Chief who has attended seminars organized by the Institute of Administration was ranked higher than a Chief who attended no seminars, etc. The argument here is that Chiefs who have had more training are generally expected to have a higher level of administrative performance than those who were not exposed to training. This hypothesis may be restated as follows:

- H₁₀ Chiefs who have undergone long periods of training generate and allocate more self-help resources than Chiefs who have not.

POLITICO: This is our last independent variable. Chiefs who had been members of the Kenya African Union (KAU), had been detained during Mau Mau, and on release from detention had enrolled in one of the existing political parties were ranked higher than Chiefs who were either members of only KANU or had not held membership in a political party. Membership in a political party exposes an individual to political activity which may prove useful in later years should that individual become an administrator. For instance, an administrator with political experience is likely to avoid defining administrative objectives narrowly. Furthermore, an administrator who has actively participated in politics is likely to draw upon past experiences when faced with problems in his new capacity as a civil servant. Finally, long, active participation in politics places an individual in an environment where he is likely to make contacts with elite that wield political and administrative power at the center, i.e. the capital. We may therefore hypothesize:

- H₁₁ Chiefs with a long history of involvement in politics are likely to succeed in generating and allocating more self-help resources than Chiefs who have not actively participated in politics.

Table XXXIII presents the Spearman correlation coefficients where SELFHELP, the dependent variable, is associat-

ed with each of the eleven independent variables. Before we discuss the above hypotheses, let us examine some of the bivariate correlations. There are a total of sixteen associations that are significant at less than 5%. Of these sixteen, only two involve the dependent variable SELFHELP. This means that the remaining fourteen associations are between our independent variables. In a way these fourteen associations violate the independent status of the eleven explanatory variables. However, when we examine the associations closely, we notice that they are logical. For example, the association between TRAD and AGE means that young Chiefs are less traditional, and the associations between TRAD and SAFARI means that less traditional Chiefs are better travelled than older Chiefs. The same logic applies to the association between TRAD and ED -- which indicates that less traditional Chiefs are better educated than traditional Chiefs. In summary then, Chiefs who are less traditional are better travelled, educated and trained.

Turning to AGE, we notice that it is associated with SAFARI, PLAN and ED. Again, this means that young Chiefs have travelled more widely in other districts, plan self-help priorities, and are better educated. We do not need to go over each association since the significant relationships are self-explanatory. In most cases, they index different aspects of the same phenomena, e.g. formal education

TABLE XXXIII
SPEARMAN RANK-ORDER CORRELATION COEFFICIENTS

	2	3	4	5	6	7	8	9	10	11	12
1. SELFHELP	.33	.14	.59	.18	.90*	.34	.31	.79**	.30	.50	.16
2. TRAD		.82**	.12	.93*	.61	.53	.75	.70	.86*	.83**	-.17
3. AGE			-.07	.86*	.46	.22	.79**	.51	.83**	.66	.18
4. WEALTH				.12	.59	.32	.07	.60	.29	.53	-.14
5. SAFARI					.53	.56	.74	.68	.86*	.82**	-.20
6. AGRI						.55	.67	.96*	.66	.78**	.03
7. ORGANTEC							.54	.72	.47	.61	-.58
8. PLAN								.67	.86*	.71	-.03
9. DUTY									.70	.86*	-.14
10. ED										.92*	-.10
11. TRAIN											-.26

* Coefficients significant at less than 1% ** Coefficients significant at less than 5%

Calculated on a computer at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to two decimal places.

received (ED) and period spent in inservice training (TRAIN). We may now move on to the discussion of the hypotheses we listed above.

Hypotheses One, Two, Three, Four, Six, Seven, Nine, Ten, and Eleven are not supported by the findings in Table XXXIII. Only two associations involving the dependent variable (SELFHELP) are significant and they relate to Hypotheses Five and Eight. Let us briefly discuss each of these hypotheses. First, the resources raised and allocated go mainly towards agricultural projects, e.g. cattle dips. Now in order for a Chief to succeed in raising funds for these projects, he has to have some knowledge of what the projects are supposed to accomplish. Chiefs with such knowledge are able to convincingly put their case across to the villagers. Furthermore, a Chief's knowledge of agricultural techniques is likely to convince the prospective participant in self-help projects that the economic return is worth the resources that are demanded of him (villager).

Hypothesis Eight shows that one of the critical determinants of a Chief's ability to extract and allocate resources for the construction of self-help projects is the amount of time he is willing to invest. Chiefs who devote most of their time to law and order are obviously not going to raise and allocate enough money to aid in self-help projects. Of the ten locations covered, four in Vihiga Division

registered the least number of days spent in raising resources for expenditure on self-help projects. The four Chiefs in this Division (Vihiga) rated maintenance of law and order above raising funds for self-help projects, i.e. they spent more time on the former than on the latter. Maintenance of law and order still takes precedence in Vihiga for these reasons: First, it used to be the principal assignment (other than collection of taxes) during the colonial days and as such, this group of Chiefs was merely adhering to precedent set by their predecessors. Secondly, there is only one police post in the division, which has a population of over 296,240 people. This means that Chiefs have to perform police functions. It is only in instances of serious crimes that the police are called in. Otherwise the civil servant Chiefs are the sole custodians of maintenance of order in most villages in Vihiga Division (except for South Maragoli in which the single police station is located). In Tetu where the Nyeri Police Station is more than twice as large as the Vihiga Police Station, Chiefs are relieved of the responsibility of maintenance of law and order. Third, the attraction of maintenance of law and order to most of the Chiefs in Vihiga Division is related to the fines they impose on the offenders. Usually the fines are paid in cash to the Chiefs and their elders. This money is never reported in Chiefs' records, for most of them

claim to settle disputes without demanding payments in return, but in practice payments are made.

Finally, our sample being small, limits are placed on the conclusions that may be drawn from the findings. Nevertheless, our findings do give us some indication of what Chiefs' characteristics are likely to be associated with success in generating and allocating resources for self-help projects.

Chiefs, Rural Elite and Self-help Projects

At the beginning of this study we defined elites as those individuals who have and control more values in the society. At the location level in Kenya such individuals consist of high school teachers, extension staff of Provincial Administration, traders who own their own shops, church leaders and village notables (elders). Chiefs also qualify as members of this rural elite. The question we ask in this section is: What other explanatory variables are associated with success in generating and allocating resources for self-help projects? An adequate analysis of this problem demands that we investigate the process by which resources are generated and allocated for self-help projects. Obviously it is not just the role of one individual, the Chief, however important his leadership role is, that accounts for success in generating and allocating

resources. Through participant observation this author found out that there were individuals in each location, usually organized in several small groups, that had a significant input into the self-help movement. These were the rural elite.

The idea to start a self-help project may originate with a Sub-chief, a group of primary school teachers or with the Chief himself. Let us discuss briefly two examples -- one in Vihiga Division and the other in Tetu Division. The self-help project in Vihiga Division is a secondary school whereas that in Tetu consists of several water projects.

In Vihiga the idea of building a secondary school originated with a group of teachers, church leaders, village elders and an ex-Chief who wanted to build a secondary school in their area. The first thing was to approach the location Chief and ask for a permit to hold a fund raising meeting. This first step is important in that there is no freedom of assembly without a permit. No clear-cut rules are laid down for refusing to grant a meeting permit to individuals -- the Chief merely uses his discretion. In this case he granted a meeting permit. The people who desired to build a secondary school sensed that they would need the cooperation of the Chief if their project was to succeed, hence they co-opted him into the committee once he had approved the project. Co-optation into the committee was immediately

followed by unanimously electing the Chief to the chairmanship of the fund raising committee. This particular committee consisted of a Sub-chief for the area, two religious leaders, an assistant education officer for the division (a central government employee), three headmasters of primary schools, and two village notables (elders).

The major task of the committee besides raising revenue was to agree on the physical location of the secondary school. Location of any self-help project is always a delicate political question. People resent contributing to a project that is going to be located far away from their own clan. One must remember that most of the contributors are parochially oriented and identify more with their own family and clan than they do with other clans, let alone other ethnic groups. Thus it is the task of the Chief to balance off interests of the clans. If a secondary school is located in Clan X's area, a health center must be located in Clan Y's area.

The best example of competition that this author came across was in Thegenge Location. Clanism, which is important in Vihiga, was absent in Thegenge, but there was intense competition involving small water projects. Three small water projects were completed, but had the three villages pooled their resources, they would have constructed a better and more powerful water project. The reader may

wonder why we cite expenditure on water projects as an aspect of policy outcomes. There are few people who would dispute the importance of water in the process of socio-economic development. In the case of Thegenge, piped water will lead to improvement in dairy farming; farmers will be able to keep large herds of dairy cattle and hence produce more dairy products. The quality of these products is likely to be improved since water will mean cleaner feeding habits. Besides the aspect of livestock cleanliness, the dairy herds are likely to be free of disease. Without piped water the herd drinks water that is untreated from running streams and sometimes has to depend on water in stagnant ponds. Secondly, piped water in Thegenge, and indeed in the rest of Kenya, is likely to lead to less dependence on rainy seasons as the only periods when vegetables and other crops can be grown. In other words, if piped water projects are completed, farmers are able to overcome dependence on nature. Thirdly, without piped water, housewives have to walk to streams to fetch water, thereby spending a good deal of their workday on this task. With piped water, labor would be released which may be used for other tasks. Fourthly, piped water promotes healthy conditions for rural families; it cuts down incidences of certain diseases. On the whole then, large self-help projects promote balanced modernization, free of complete dependence on nature.

Thus when rural elite withhold cooperation from a Chief as they did in Thegenge, it means that fewer people are served by the small water projects. Part of the refusal of the rural elite to cooperate with the Chief stemmed from the fact that the location is one of the highly modernized ones in Kenya, and as such, contribution towards self-help is not so much of a problem as in other parts of Kenya. But even with abundant resources, non-cooperation between a Chief and the rural elite in planning self-help projects may turn out to be self-limiting (i.e. retarding modernization) as it was in Thegenge.

Linkage Between Variation in Levels of Modernization
and Individual Characteristics

We are now in a position to ask the question: Do modern areal units (e.g. villages) have administrators (Chiefs) who are more modern than those in areal units that are less modern? In discussing this question we are, in effect, highlighting relations between the location (an areal unit) and the individual.

The locations which rank highest on all three components of modernization are Tetu and Muhoyas. Aguthi ranks high on two components and Thegenge and Nyang'ori rank high on the most important component, Modern Agriculture. What about Chiefs? Which Chiefs rank high on the two variables (AGRI and DUTY) that are positively and significantly

associated with an area of policy outcomes (allocation of resources to self-help)? Appendix XIX shows that on variable six (AGRI), Chiefs of Thegenge, Tetu, Muhoyas and Nyangori rank highest. Three of these Chiefs, i.e. those of Thegenge, Tetu and Muhoyas are from Tetu Division. Notice that the two locations which had significant factor scores on all three components have Chiefs that rank high on this variable. Now for Vihiga, we find that NYangori Location, which was the only village in that division to have a positive factor score on the Modern Agriculture component, has a Chief who ranks high on this variable. Only Aguthi, of the locations that ranked high on two components of factors scores, is rated somewhat low.

Turning to variable nine (DUTY) in Appendix XIX, we notice that Chiefs of Thegenge, Muhoyas and Tetu rank very high. Again, it is Tetu and Muhoyas Locations that had the highest factor scores on all the components of modernization. The South Maragoli Chief, who is ranked second on this variable, comes from a location that at least ranks high on one component of modernization -- Instruction Mode. We may therefore conclude that locations with high levels of modernization have more modern administrators (Chiefs). But what can we infer from these findings? We notice, for instance, that locations which rank very high on only one component of modernization have Chiefs who do not rank very high on

the two variables that are associated with ability to generate and allocate resources towards self-help projects. A location such as West Bunyore, which ranks low on two components in Table XXX, has a Chief who ranks last on variables six (AGRI) and nine (DUTY) which are positively and significantly associated with ability to generate and allocate resources. This is not a matter of chance, it is a finding that lends validity to our hypothesis and goes a long way towards the illustration of the importance of the study of spatial diffusion of modernization process.

Relevance of the Above Analysis
to the Rest of the Inquiry

We now come to another question we posed at the beginning of this chapter, i.e. How does the analysis of modernization at the division, location, and individual levels tie in with the analysis of modernization at the district level? First, we have throughout adhered to analysing the spatial diffusion of modernization in areal units (districts, divisions and villages) and at the individual level in an attempt to show that the patterns at one level affect the patterns at another level. An example of this is the observed relation between levels of modernization at both village and individual levels. There can be no doubt that qualitative and quantitative level of modernization of one unit affects the level of modernization

of another unit. But in what direction is this relationship? Is it the larger units that affect the small units or vice versa? This is a question for future research. All we have done in this study is to take the position that units with high levels of modernization are likely to receive more resource allocations (policy outcomes) than units with a low level of modernization.

Finally, we have observed that elites play an important role in resource allocation, be it at the district or location level. But why is it that these individuals (elites) dominate the decision making process in these areal units? This is another question that may be taken up for research. However, in this chapter we may observe that the individual we have been dealing with is largely a peasant. He does not understand political or administrative process as most individuals in a modern polity do; thus the elite play a far greater role in policy outcomes in the new nations than it probably does in modern political systems.

CHAPTER VII

IMPLICATIONS OF THE FOREGOING INQUIRY

Research

Throughout the above analysis we have argued that variation in levels of modernization influences variation in resource allocation. We have also discussed the role of individuals in influencing policy outcomes. Our approach has been one of viewing public policy outcomes as one of the major outputs of any political system. Once this approach to the study of public policy is taken, then we begin to move away from the traditional approach of explaining variation in resource allocation solely in terms of the political activity that goes on within the political system. To us the political system, whether it is dominated by one political party or many parties, has limited resources to allocate to social services (health care, education, transportation, etc.). What is going to change the level of expenditure, we have argued, is the variation in levels of modernization. Thus a nation-state, a region or district within a state that has a higher level of modernization than other similar units is likely to spend more on services and other programs.

Working with cross-sectional data and using the district as the unit of analysis, we have identified three

components of modernization (scale, modern agriculture and linkage to the core). We wonder whether these components will hold out at the provincial level or whether different components may emerge. This certainly requires research. What, for example, is the configuration of the modernization components when we move from smaller units, e.g. villages to larger units, e.g. regions or nation-states? We may also speculate that systematic research which would map types and patterns of modernization across different levels of analysis, as we have attempted, may yield important knowledge of the crucial variables that index modernization at each level. For example, early literature on the process of modernization treated rural areas as traditional and did not attempt to investigate what socio-economic changes were taking place there. We know that there are changes taking place in rural areas of the Third World and that these changes are characterized by a movement away from the traditional ways of doing things to modern ways. There is a desire to acquire modern goods. Thus we find abandonment of traditional agriculture in favor of modern agriculture (mainly cash crop farming. e.g. coffee, tea, etc.). We need

¹A. Przeworski and H. Teune, The Logic of Comparative Social Inquiry (New York: John Wiley and Sons, 1970), pp. 31-34.

more research that will look into the effects of modernization on social organization, especially the extended family structure. Is it going to disintegrate as it has in the West?

Systematic studies that analyze the process of modernization at multiple levels, then, should pave the way for abandonment of simplistic typologies, e.g. traditional -- modern types. For the purpose of the study of public policy outcomes we need to establish the crucial components of modernization that influence policy outcomes. In the above investigation, for example, linkage to the core area did turn out to be a very poor predictor of variation in agricultural, educational and commercial resource allocation. What other components of modernization extracted at provincial or nation-state level are poor predictors of variation in resource allocation? Which ones are the best predictors? Again, in the above analysis we found scale and modern agriculture to be fairly good predictors of variation in resource allocation. Can these same components predict variation in highway, housing, or health allocations? -

If our objective in studies of this nature is to describe and explain, then we see a need for taking seriously the units of analysis in the study of public policy outcomes. For besides facilitating systematic collection of data, we need to have some understanding as to why unit X provides better services than unit Y.

We suggest more work be done on the linkage between modernization and other political system variables. For instance, what is the relationship between modernization and political party competition in the new nations? In other words, is it possible to discern a relationship between modernization and one party political systems that abound today in the new nations? Increased knowledge of the linkage between modernization and the variables we have treated as intervening in the above study should lead to better understanding of policy outcomes. There are other questions we need to ask. For example, does modernization influence the type of local government in the new nations? If there is a relationship, what interaction takes place between the two with regard to certain policy areas like allocations to primary education? Can we expect the central government to transfer some of its powers to the local governments as the process of modernization proceeds? One of the assumptions we infer here is that modernization would lead to more sophisticated and experienced leadership within local governments. This hypothesis can only be validated by empirical research.

If our objective is description and explanation in empirical studies, it also follows that we are interested in prediction. Logically, systematic description and explanation should lead to credible prediction. But is evidence from

cross-sectional data sufficient for prediction? Obviously, it may or may not be, depending on the type and scope of the study. But it appears that if we have to improve the predictive power of a theory of policy outcomes, then we need to collect and analyze longitudinal data as well. We need longitudinal data in order to trace trends in resource allocation. There is an additional reason why we need longitudinal data -- we need to have an understanding of trends and patterns in allocation of resources in order to be able to prescribe. An analysis of longitudinal data may, for example, yield certain factors that might not be tapped by cross-sectional data (the type we have used in this study).

The policy outcomes we have attempted to analyze in our investigation are distributive. Yet we know that distributive policy outcomes are but one type of policy outcome. We need to investigate the relationships that exist between modernization and other policy outcomes, e.g. regulative or extractive policy outcomes.

In the case of extractive policy outcomes, we are likely to find a close relationship. Our analysis of the Chiefs and self-help projects provides evidence to back up our hypothesis, i.e. the higher the level of extractive policy outcomes, the higher the level of distributive policy outcomes. But above all, a systematic analysis re-

lating modernization to various types of policy outcomes should lead to isolating policy outcomes which have most of their variance accounted for by the former explanatory variable (modernization). Next we need to ask: Is there a policy outcome whose main variance is not accounted for by variation in modernization? An example of a policy outcome whose main variance appears to be accounted for by non-modernization explanatory variables is commercial allocation. How many other policy outcomes are there whose main variance is not explained by variation in levels of modernization?

We urge more research designs of the type used in this study, i.e. macro-micro design. In our case, we started out by using aggregate data and ended up by using micro level data, such as individual characteristics, to analyze public policy outcomes. Another micro level concept that has proved useful and promises to lead to further understanding of influences of individuals in policy outcomes is role. This micro-level concept, if used, leads a researcher to look for behavior of an individual that he suspects influences policy outcomes.

One of the explanatory variables that we used in attempting to predict variation in policy outcomes was voter turnout. Our statistical analysis yields no significant relationship involving voter turnout. However, our ex-

amination of the feedback process, i.e. using policy outcomes as independent variables, suggests that voter turnout may be expected to co-vary with resource allocation. This is a hypothesis that needs testing for improving the existing theoretical knowledge of public policy. If the feedback process in our model is investigated, it might turn out that the pattern and strength of support of certain groups within a political system is dependent on level of allocations. However, we might hypothesize that since it is the more modernized regions or districts which receive most of the allocations, any cutback of allocations to these units (more modernized) is likely to lead to political instability. The same political instability may be generated by allocating token resources to less modernized areas, hence the areas would likewise withhold their support from the regime in power. It therefore means that a dispenser of resources must balance off demands of the more modernized areas against those of less modernized areas. This is an important observation that has emerged from our analysis.

An example of this phenomena appears to be in order. Let us use the Nigerian case as an example. In order for Gowon or any other Nigerian head of state to ensure political stability, he has to balance off the interests of the more modernized South against those of the less modernized

North. If he diverts huge resources from the South to the North, the South is likely to withhold its support of his regime; likewise, if he neglects the North or takes it for granted, the North is likely to withhold its support of the regime. He must strike a balance between Northern interests and Southern interests. What this means is that whereas the more modernized areas of such countries as Nigeria, Kenya, etc. will continue to receive high resource allocations, the resources allocated to the less modernized regions must continue to increase. This phenomena may be investigated best by use of longitudinal data. Using longitudinal data, a researcher may examine trends in support a regime has enjoyed over a period of time from various ethnic groups. Once he has established such trends, he can compare the findings at hand with those of variation in resource allocation over a similar period, e.g. periods characterized by economic depression (recession).

We have many other questions that need answers. For example, what is the nature and pattern of interaction between individuals in modernized and less modernized districts? What is the influence of their interaction or non-interaction with respect to policy outcomes? What does the hypothesized variation in health policy outcomes mean for the mental well-being of individuals? To what extent does deprivation of sizable resource allocations lead to concerted

action against a regime by the disadvantaged ethnic groups? Does the loyalty of the elite to its respective ethnic group erode as modernization increases? If the loyalty is found to erode or weaken, what implication does it have for policy outcomes? These are problems that can only be resolved by more research.

Theory

This study aims at explaining observed relationships. But our explanation must be founded upon plausible theory. The question we must constantly ask is: What is the theoretical basis for settling upon one explanation and not another? This is not a place for discussing elements of a theory. However, one important element that we believe to be relevant to the present inquiry is concept formation. It is concepts that specify phenomena by demarcating one from the other.¹ Besides, by "pinning labels" on phenomena, concepts provide consistency and coherence, thus leading to classification of phenomena, and, of course, it is after classification or categorization of phenomena that we are able to observe the relationships that exist among various classes or categories.

¹A. Kaplan, The Conduct of Inquiry, op. cit.

For students of public policy, the importance of concept formation and refinement is just starting. The importance of concepts becomes even more urgent for those social scientists who aim at theory building in the area of public policy. Without clear concepts there can hardly be progress in developing a theory of public policy. Today a political science student interested in studying public policy encounters concepts such as policy outcomes, policy outputs, policy process, policy contents, or simply public policy. Surely each of these concepts does not carry the same meaning. But there is still disagreement among policy oriented scholars as to what each of them means and especially the differences of one from the other.

One concept we found useful is policy outcomes. We have used this concept in reference to actual resource allocations to a unit. But we have not stopped just there (i.e. using policy outcomes to refer to actual resource allocations); we have gone on to discuss consequences that variation in policy outcomes means for each unit. To us, then, policy outcomes is a useful concept that focuses on actual allocation of resources. What is the importance of this concept to the study of public policy in the new nations? The first thing a student of public policy in the new nations learns is the gap that exists between official plan documents, and the actual outcomes of a given program.

Thus, if he is to be rigorously empirical, he has to seek out the actual activities or happenings. This is why we believe the concept of policy outcomes is appropriate for the empirical study of public policy. It differs, for instance, from policy output in that it denotes the actual allocations of a regime, bureaucracy, etc. Once concepts are generally agreed upon by public policy analysts, then we should be able to test the internal validity of a theory of public policy outcomes.

We now turn to the hypotheses in the study. What are the implications for theory of the seventeen hypotheses that we discussed? In formulating, discussing, and testing the hypotheses, we sought to relate phenomena as observed in the empirical world to theoretical predictions. Our interest in this concluding section of the inquiry is in hypotheses that were supported by our findings. There are five of these hypotheses: Hypotheses One and Two in Chapter IV, Hypothesis One in Chapter V, and Hypotheses Five and Eight in Chapter VI. Hypotheses Five and Eight will be examined when we discuss implications of the study for public policy. Hypothesis One in Chapter IV shows that SCALE is an important factor for resource allocation at the district level. However, it appears that SCALE is an important factor that has to be in-

vestigated when studying both modernization and resource allocation. But far more important is the implication of this hypothesis for certain mini-states. Because the level of organization is likely to remain low in the mini-states, level of resources generated (extracted) is likely to remain small. Modernization in such mini-states is likely to lag behind that of states with the large populations which are crucial to complex organization (one of the important characteristics of modern society).

Hypothesis two in Chapter IV suggests that modern agriculture represents a transitional period in the modernization process. It characterizes dependence of the new nations on income derived from cash crops. For a new nation to acquire the status of a modern nation, it has to diversify its economy so that it ceases to be dependent on export of agricultural products. However, for the purpose of this study, adoption of modern agriculture represents a form of change. Individuals who take up this activity (modern agriculture) enter the market and whatever happens in the market affects their lives. And since the market mechanism is accepted as representing the modern medium of economic transaction, farmers engaged in selling and buying cash crops are more modern than a peasant folk. Since this study relates variation in modernization to public policy outcomes, modern agriculture has implications for a theory of moderni-

zation. Our findings suggest that we conceptualize modern agriculture as qualitatively superior to traditional agriculture, hence more modern.

Hypothesis one in Chapter V suggests that a theory of public policy outcomes in the new nations will have to take into account elite roles. Our findings suggest that elites are influential in policy outcomes in the new nations. We think there is need to specify the generation of demand that influences policy outcomes. Are these demands the work of ordinary peasants, or are they generated by the rural elite? Our findings suggest that the rural elite generate most of the demands.

Moving to the relation of administrators' characteristics with policy outcomes, we find that administrators have wide latitude in interpretation of broad policy decisions that are handed down to them from the center. This is what the analysis of the influence of Chiefs on policy outcomes reveals. The Chiefs, as we observed above, also formulate policy decisions. Usually there are areas in the general policy decisions where the Chiefs (administrators) have to use their own imagination in deciding how to respond to a given problem. The relevance of whether Chiefs (administrators) make policy is seen in the distinction which is often made between policy and administration. Our findings show that the division is superficial if taken as reflecting the

true state of things. But if taken as representing ideal types, then there is some validity to the argument. In that case we may think of policy and administration as two ideal types at the opposite ends of a continuum and as one moves from one end of the continuum to the other, he encounters more and more of the phenomena in the direction of his movement.

Public Policy

There is hardly a new nation in the world today that does not have a development plan. Going through a few of these plans one is impressed with the goals or objectives that are set. Those who write these plans are in most cases well-trained and competent economists. They use the data at hand to make projections into the future state of a given economy. This is not an easy "game". The data the planners rely on is usually based on sectors, e.g. agriculture, education, etc. There is, of course, need for data collected on sectors of the economy, but at the same time we need data collected on the administrative units of the country -- villages, districts, regions. This data will provide a planner with added knowledge of how villages or districts compare, say, in terms of agricultural modernization. It is here that our study makes a contribution. We have in fact argued for analysis of variation in modern-

ization using areal units for analysis. Once the analysis is made, we can use the comparative indices in making our decisions regarding allocation of development resources. At the moment we base our allocations on the sectors.¹ This should, in fact, be the first step, i.e. deciding which sector should receive higher development allocations and which should receive less. Once this has been done, we need to know what areal unit is likely to use the scarce resources in such a way as to maximize the return in services and programs. This does not mean that we ignore the areas that are less modernized. What it does mean is that we arrive at our decisions rationally. For example, the difference in levels of modernization between Murang'a and Nyeri Districts is not easy to make on a priori grounds. Yet we know, as we have shown above, that there is a significant difference between the two adjacent districts in levels of modernization.

There is, of course, no doubt that planners who write development plans know that the people the plan is aimed at are predominantly rural, but for them (planners) to assume that all rural areas are identical in terms of modernization, is in our opinion, to commit a serious error. And, of course, the error is not removed by resorting to the use of the dichotomous ideal types, e.g. Agraria - Industria.

¹Kenya Government, Development Plan, 1970-74, op. cit.

One other area where the spatial approach to planning may be applied is on pilot projects. Most of what we have said about development plans applies to pilot projects, too. Our inquiry has direct implications for pilot projects since the districts analyzed here were participants in a pilot project program designed to tackle problems of modernization by integrating inputs into modernizing agriculture.¹ Although the selection of the cases in this pilot program was scientific, very little was known about the cases, i.e. how they compared in terms of modernization. The planners of the program did not answer the question: Which of the fourteen districts was highly modernized and which was least modernized? If this question were put to the group of individuals who were responsible for drawing up priorities for the districts, it could have elicited different answers. But with our approach we have definite patterns of modernization in the districts. We know how the districts compare on different components of modernization.

Taking the case of the fourteen Kenya districts as an example, districts which had negative factor scores on scale component (e.g. Kwale, Taita, Baringo) in our analysis,

¹J. Heyer, D. Ireri, J. Morris, Rural Development in Kenya, op. cit.

would be deemed as having small population sizes insufficient to ensure increased economic growth. A policy-maker may decide to amalgamate these small units into large units for purposes of development plan or pilot project implementation. On the other hand, districts like Murang'a, which had high factor scores on the main modernization component (RUMIGRO) and negative factor scores on LINKGRAT may require more resources for construction of a road network. The same analysis may be applied to locations as we demonstrated in Chapter VI. This approach presents a policy-maker with hard data on which to base his decisions. He does not have to muddle through the policy making process.

APPENDIX I

MODERNIZATION VARIABLE DATA BEFORE TRANSFORMATION

	1	2	3	4	5
KWALE	14	46	25	205,602	470
TAITA	17	90	6	110,742	729
EMBU	19	94	62	178,912	1,861
MACHAKOS	57	214	50	707,214	4,412
MERU	27	79	63	596,506	3,274
MURANGA	33	168	176	445,310	4,977
NYERI	47	163	108	360,845	5,826
BARINGO	12	40	15	161,741	488
NANDI	29	102	75	209,068	950
W. POKOT	15	47	16	82,458	217
KISII	60	113	305	675,041	3,988
S. NYANZA	51	174	114	663,173	3,681
BUSIA	18	56	119	200,486	1,398
KAKAMEGA	46	198	220	782,586	6,575

For sources and for description of variables, see Table I.

APPENDIX I -- Continued

6	7	8	9	10	11	12	13
11,096	87	331	11,670*	30	1	7	690
17,386	82	89	21,976*	128	1	10	435
28,748	277	835	651,851	310	1	48	339
125,226	376	856	303,246	493	1	68	804
76,259	393	2,190	1,461,105	305	2	80	982
85,890	666	2,483	1,212,338	241	1	38	510
77,035	906	2,665	1,137,262	1,025	4	252	1,129
11,359	19	243	8,513	40	1	15*	90
21,293	38	338	12,850	180	2	48	346
2,880	11	42	3,175	30	1	10*	73
73,041	474	1,900	25,515	600	2	64	670
45,637	303	1,518	3,091	208	2	12	408
20,286	168	402	4,500*	105	1	8	78
93,519	666	268	38,683	1,476	2	69	812

*Estimated values

APPENDIX II
TRANSFORMED MODERNIZATION VARIABLES

	POPDENSE	COINCOME	POBOXES	BANKING	PHONES
KWALE	5.00	108.03	5.48	1.00	2.65
TAITA	2.45	148.24	11.31	1.00	3.16
EMBU	7.87	807.37	17.61	1.00	6.93
MACHAKOS	7.07	550.68	22.20	1.00	8.25
MERU	7.94	1066.42	17.46	1.41	8.94
MURANGA	13.27	1101.06	15.52	1.00	6.16
NYERI	10.05	1066.42	32.02	2.00	15.87
BARINGO	3.87	92.27	6.32	1.00	3.87
NANDI	8.66	113.36	13.45	1.41	6.93
W. POKOT	4.00	56.35	5.48	1.00	3.16
KISII	17.46	148.24	24.49	1.41	8.00
S. NYANZA	10.68	55.60	14.42	1.41	3.46
BUSIA	10.91	67.08	10.25	1.00	2.83
KAKAMEGA	14.83	196.68	38.42	1.41	8.31

Source: Appendix I

APPENDIX III
CORRELATION COEFFICIENTS MATRIX

	1	2	3	4	5	6	7	8	9	10	11	12
PRIMED												
REGISOC	80											
STOCKEXP	58	53										
POBOXES	76	74	42									
EXTENSTA	84	83	42	76								
BANKS	35	56	58	66	39							
PHONES	65	56	65	79	53	79						
ASIANS	72	58	61	71	56	64	77					
INCOME	54	17	76	38	34	30	67	58				
SECED	89	80	65	89	87	58	71	71	51			
CERTPASS	77	61	78	77	72	55	73	64	69	92		
POPSIZE	85	86	47	70	76	39	41	61	21	82	59	
POPDENSE	56	69	52	66	53	44	39	32	16	72	67	68

Calculated at the Syracuse University Computing Center using Biomedical Computer Programs, X-Series Supplement, op. cit. The above variables reflect the order in which the raw data was processed by the computer. Later the variables were reordered as shown in Table I.

APPENDIX IV

DISTRIBUTION OF SECONDARY SCHOOLS AND NUMBER OF TEACHERS

	Number of Secondary Schools	Number of Teachers
KWALE	4	24
TAITA	6	36
EMBU	15	95
MACHAKOS	42	263
MERU	32	173
MURANG'A	42	234
NYERI	42	299
BARINGO	5	25
NANDI	11	49
W. POKOT	2	10
KISII	46	221
S. NYANZA	40	220
BUSIA	11	68
KAKAMEGA	58	321

Source: Kenya Ministry of Education Annual Report, 1969
(Nairobi: Government Printer, 1970), pp. 60-61.

APPENDIX V

DISTRIBUTION OF POPULATION, PRIMARY AND
SECONDARY SCHOOL ENROLMENT IN KENYA

Provinces and Nairobi District	Population size	5-14 yr. age grp.	Primary school enrolment
CENTRAL	1,675,647	487,102	311,970
COAST	944,082	243,125	76,805
EASTERN	1,907,301	564,684	269,652
NORTH-EASTERN	245,757	76,818	3,301
NYANZA	2,122,045	656,355	206,462
RIFT VALLEY	2,210,289	640,820	183,263
WESTERN	1,328,298	420,427	169,930
NAIROBI	509,286	99,152	60,944
Total	10,942,705	3,188,483	1,282,327
Mean	1,367,836	398,560	160,291
Standard Deviation	740,813	232,498	106,372

Mean primary school enrolment of all the provinces, including Nairobi:	38.5%
Mean Primary school enrolment of all the provinces, excluding Nairobi	35.6%
Mean secondary school enrolment of all the provinces, including Nairobi:	13.0%
Mean secondary school enrolment of all the provinces, excluding Nairobi:	8.3%

APPENDIX V -- Continued

15-19 yr. age grp.	Secondary school enrolment	Enrol. % of 5-14 age grp. in prim. school	Enrol. % of 15-19 age grp. in sec. school
152,976	26,911	64	18
93,653	10,508	32	11
192,634	13,782	47	7
30,344	143	4	1
221,489	15,548	31	7
225,048	13,710	29	6
139,012	11,725	40	8
49,843	22,919	61	46
104,999	115,246		
138,125	14,406	38.5	13
74,724	8,079	19	14

Sources: Kenya Population Census, 1969, Vol. I (Nairobi: Government Printer, 1970), p. 1; Kenya Ministry of Education Annual Report, 1969 (Nairobi: Government Printer, 1970), p. 56.

Means, standard deviations and percentages have been rounded off.

APPENDIX VI
DEPENDENT VARIABLES AFTER CONTROLLING
FOR POPULATION SIZE
(RESOURCE ALLOCATION PER CAPITA)

DISTRICT	AGREDIT	COREDIT	EDEXP (sh)
KWALE	0.74	11.32	07
TAITA	1.38	17.06	20
EMBU	0.93	10.84	21
MACHAKOS	2.10	2.81	17
MERU	.82	9.63	15
MURANG'A	3.19	1.66	24
NYERI	4.21	4.50	26
BARINGO	.44	3.14	9
NANDI	2.77	2.91	13
W. POKOT	1.85	3.72	17
KISII	.27	4.00	12
S. NYANZA	2.00	3.40	11
BUSIA	.24	7.68	16
KAKAMEGA	1.14	6.14	16

Source: Calculated from Table VII.

Coefficients have been rounded off to two decimal places.

APPENDIX VII
STANDARDIZED REGRESSION COEFFICIENTS

<u>Dependent Variables</u>	<u>Independent Variables</u>					
	SCALE	RUMIGRO	LINKGRAT	R ²	F-RATIO	P
AGREDIT	.62	.46	.12	78	5.05	<.05
COREDIT	.39	.17	.23	49	1.04	>.05
EDEXP	.84	.48	.16	98	86.96	<.01

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. The standardized regression coefficients were rounded off to two decimal places.

APPENDIX VIII
STANDARDIZED REGRESSION COEFFICIENTS

Dependent Variables	<u>Independent Variables</u>					
	SCALE	RUMIGRO	LINKGRAT	R ²	F-RATIO	P
RESOURCE	0.76	0.45	0.17	90	14.71	<.01

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. The standardized regression coefficients were rounded off to two decimal places.

APPENDIX IX

STANDARDIZED REGRESSION COEFFICIENTS OF POLICY OUTCOMES IN KENYA --
CONTROLLING FOR POPULATION SIZE FACTOR

<u>Dependent Variables</u>	<u>Independent Variables</u>					
	SCALE	RUMIGRO	LINKGRAT	R ²	F-RATIO	P
AGREDIT	0.07	0.41	0.03	43	0.73	>.05
COREDIT	-0.24	0.09	-0.53	63	2.22	>.05
EDEXP	0.05	0.66	0.12	67	2.78	>.05

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. The standardized regression coefficients were rounded off to two decimal places.

APPENDIX X
POLITICAL VARIABLES
DATA USED IN THE REGRESSIONS

District	ELITE	MINISTER	POLPARTY*	VOTETURN
KWALE	4	1	1	55
TAITA	13	0	1	85
EMBU	10	3	0	90
MACHAKOS	31	1	1	82
MERU	22	1	0	88
MURANGA	28	3	0	94
NYERI	47	2	0	99
BARINGO	6	2	1	86
NANDI	8	0	1	81
W. POKOT	3	0	1	79
KISII	19	2	0	89
S. NYANZA	26	3	0	77
BUSIA	13	1	1	80
KAKAMEGA	92	3	1	85

Sources: See Table XVIII.

* For coding of POLPARTY see page

APPENDIX XI

BIVARIATE CORRELATION MATRIX OF ALL INDEPENDENT VARIABLES
PLUS COMMERCIAL ALLOCATIONS (COREDIT)

	1	2	3	4	5	6	7
1. COREDIT							
2. ELITE	.54						
3. MINISTER	.22	.50					
4. POLPARTY	-.26	-.09	-.59				
5. VOTETURN	.03	.33	.34	-.52			
6. SCALE	.37	.69	.49	-.16	.18		
7. RUMIGRO	.17	.14	.29	-.61	.53	-.04	
8. LINKGRAT	.23	.35	.00	-.25	.29	-.03	-.00

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to two decimal places.

APPENDIX XII

MULTIPLE REGRESSION ANALYSIS OF POLICY OUTCOMES IN KENYA
USING POLITICAL VARIABLES AS PREDICTORS*

<u>Dependent Variable</u>	<u>Independent Variables</u>						
	ELITE	MINISTER	POLPARTY	VOTETURN	R ²	F-RATIO	P
AGREDIT	0.003 (0.015)	0.130 (0.139)	-0.093 (0.392)	-0.044 (0.109)	36	0.34	>.05
COREDIT	-0.069 (0.042)	-0.833 (0.394)	-0.977 (1.109)	-0.019 (0.307)	70	2.25	>.05
EDEXP	-0.201 (0.299)	-1.935 (2.803)	6.552 (7.893)	2.773 (2.185)	49	0.70	>.05

*The data of dependent variables has been normalized by computing per capita indices.

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to three decimal places.

APPENDIX XIII

STANDARDIZED MULTIPLE REGRESSION COEFFICIENTS
OF VARIABLES IN TABLE XXDependent Variable: Agricultural Allocations (AGREDIT)

N=14

Independent Variable	Standardized Regression Coefficients	R ²	F-Ratio	P
VOTETURN	0.014	33	0.00	>.05
ELITE	0.568	58	2.76	>.05
MINISTER	-0.085	59	0.05	>.05
POLPARTY	-0.301	62	0.58	>.05

Calculated at the Syracuse University Computing Center using
Statistical Package for the Social Sciences, op. cit. Co-
efficients have been rounded off to two decimal places.

APPENDIX XIV

STANDARDIZED MULTIPLE REGRESSION COEFFICIENTS
OF VARIABLES IN TABLE XXDependent Variable: Commercial Allocations (CREDIT)

N=14

Independent Variable	Standardized Regression Coefficients	R ²	F-Ratio	P
VOTETURN	-0.472	2	2.73	>.05
ELITE	0.879	57	8.92	<.01
MINISTER	-0.487	57	2.02	>.05
POLPARTY	-0.713	74	4.37	<.05

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to three decimal places.

APPENDIX XV

STANDARDIZED MULTIPLE REGRESSION COEFFICIENTS
OF VARIABLES IN TABLE XXDependent Variable: Educational Expenditures (EDEXP)

N=14

Independent Variable	Standardized Regression Coefficients	R ²	F-Ratio	P
VOTETURN	0.024	46	0.01	>.05
ELITE	0.823	82	14.45	<.01
MINISTER	-0.150	83	0.35	>.05
POLPARTY	-0.408	87	2.65	>.05

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to three decimal places.

APPENDIX XVI

STANDARDIZED REGRESSION COEFFICIENTS
OF EACH OF THE VARIABLES IN TABLE XXIVDependent Variable: Agricultural Allocations (AGREDIT)

N=14

Independent Variable	Standardized Regression Coefficients	R ²	F-Ratio	P
SCALE	0.532	77	3.59	<.05
RUMIGRO	0.458	46	4.98	<.05
ELITE	0.127	68	0.20	>.05

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to three decimal places.

APPENDIX XVII¹STANDARDIZED REGRESSION COEFFICIENTS
OF EACH OF THE VARIABLES IN TABLE XXIVDependent Variable: Commercial Allocations (COREDIT)

N=14

Independent Variable	Standardized Regression Coefficients	R ²	F-Ratio	P
RUMIGRO	0.105	17	0.15	>.05
ELITE	0.510	55	1.86	>.05
SCALE	0.025	55	0.01	>.05

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to three decimal places.

APPENDIX XVIII

STANDARDIZED REGRESSION COEFFICIENTS
OF EACH INDEPENDENT VARIABLE IN TABLE XXIV

Dependent Variable: Education Expenditure (EDEXP)

N=14

Independent Variable	Standardized Regression Coefficients	R ²	F-Ratio	P
SCALE	0.619	98	46.86	<.01
RUMIGRO	0.456	48	47.68	<.01
ELITE	0.303	88	11.06	<.01

Calculated at the Syracuse University Computing Center using Statistical Package for the Social Sciences, op. cit. Coefficients have been rounded off to three decimal places.

APPENDIX XIX

ORDINAL DATA USED IN COMPUTING SPEARMAN CORRELATION COEFFICIENTS

N=10

Location (village)	1	2	3	4	5	6	7	8	9	10	11	12
AGUTHI	3.5*	7.25	10	7	10	6.25	9.50	9.50	8.00	10.00	9.50	1.25
THEGENGE	1.0	1.25	5	1	4	1.00	1.50	1.25	1.00	3.00	2.50	5.25
TETU	3.5	5.50	2	6	5	2.25	7.50	1.25	4.00	4.50	5.50	1.25
MUHOYAS	2.0	5.50	6	2	6	2.25	3.25	5.25	3.00	4.50	2.50	5.25
E. BUNYORE	8.0	1.25	1	9	3	6.25	7.50	1.25	7.00	1.50	4.00	1.25
W. BUNYORE	9.5	7.25	9	10	9	10.00	3.25	5.25	9.50	9.00	9.50	9.50
N. MARAGOLI	6.5	1.25	3	8	2	6.25	3.25	5.25	5.00	6.00	5.50	5.25
S. MARAGOLI	5.0	1.25	4	4	1	2.25	1.50	1.25	2.00	1.50	1.00	9.50
TIRIKI	6.5	7.25	7	5	7	6.25	3.25	5.25	6.00	7.50	7.50	1.25
NYANGORI	9.5	7.25	8	3	8	2.25	9.50	9.50	9.50	7.50	7.50	5.25

* Where two or more respondents gave the same answer to the interviewer, we rank them equally, but skip the following whole number(s).

For source and description of the variables see Table XXXI. Since there is only one Chief in each Location, we have decided to use the name of the Location instead of the Chief's name.

APPENDIX XX
DISTRIBUTION OF POPULATION AND SELF-HELP PROJECTS

Location	Population	Self-help Projects
AGUTHI	28,794	11
THEGENGE	28,070	27
TETU	18,932	15
MUHOYAS	16,417	10
E. BUNYORE	42,465	4
W. BUNYORE	53,485	3
N. MARAGOLI	71,052	4
S. MARAGOLI	49,661	7
TIRIKI	56,416	4
NYANGORI	23,175	4

Sources: Kenya Population Census, 1969, op. cit. and
Field Questionnaire directed at Chiefs in Tetu
and Vihiga Divisions, Kenya, December 1969 -
August 1970.

APPENDIX XXI
VARIABLE CODING SYSTEM

A. Success in generating and allocating resources (based on actual funds raised and spent on self-help projects):

Under 6 projects completed	9.5
7 - 8 projects completed	8.0
9 - 10 projects completed	6.5
11 - 12 projects completed	5.0
13 - 14 projects completed	3.5
15 - 16 projects completed	2.0
17 and over projects completed	1.0

B. Degree of reliance on traditional practices:

Emulates past Chiefs and fatalistically oriented	7.25
Relies most on elders for advice	5.50
Relies most on specialized staff and committees for advice	1.25

C. Age:

58 years and over	10
55 - 57 years	9
52 - 54 years	8
49 - 51 years	7
46 - 48 years	6
43 - 45 years	5

C. Age (continued):

40 - 42 years	4
37 - 39 years	3
34 - 36 years	2
Under 33 years	1

D. Wealth (yearly non-salary income):

Under 200 shillings	10
201 - 300 shillings	9
301 - 400 shillings	8
401 - 500 shillings	7
501 - 600 shillings	6
601 - 700 shillings	5
701 - 800 shillings	4
801 - 900 shillings	3
901 -1000 shillings	2
1001 shillings and over	1

E. Travel outside own district:

Visited under 1 district in another province	10.0
Visited 2 districts in other provinces	9.0
Visited 3 districts in other provinces	8.0
Visited 4 districts in other provinces	7.0

E. Travel (continued):

Visited 5 districts in other provinces	5.5
Visited 6 districts in other provinces	4.0
Visited 7 districts in other provinces	3.0
Visited 8 districts in other provinces	2.0
Visited 9 districts and over in other provinces	1.0

F. Knowledge of the following farming techniques:

Would highly recommend use of compost manure	10.00
Would highly recommend use of tractors and fertilizer	6.25
Would highly recommend use of tractors, fertilizer and hybrid seed	2.25
Would highly recommend use of tractors, fertilizer, hybrid seed plus training of farmers	1.00

G. Organizational ability:

Organized no committees or other organizations	9.50
Organized staff committee	7.50
Organized development committee	3.25
Organized co-operatives	1.50

H. Ability to plan:

Self-help priorities established ad hoc	9.50
Self-help priorities established through committees	5.25
Self-help priorities established by leaders' conference	1.25

I. Days spent on self-help projects in a year:

Under 50 days	9.5
51 - 60 days	8.0
61 - 70 days	7.0
71 - 80 days	6.0
81 - 90 days	5.0
91 - 100 days	4.0
101 - 110 days	3.0
111 - 120 days	2.0
121 days and over	1.0

J. Years of formal education:

Under 4 years	10.0
5 years	9.0
6 years	7.5
7 years	6.0
8 years	4.5
9 years	3.0
10 years and over	1.5

K. Number of weeks spent in inservice training:

None	9.5
One week	7.5
Two weeks	5.5
Three weeks	4.0
Four weeks	2.5
Five weeks and over	1.0

L. History of active involvement in political party politics:

Never held membership in a political party	7.25
Member of KANU, KADU	3.25
Member of Kenya African Union	2.00
Member of Kenya African Union and ex-detainee	1.00

Source: Coded from interviews with Chiefs in Vihiga and Tetu Divisions, Kenya; December 1969 -- August 1970.

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