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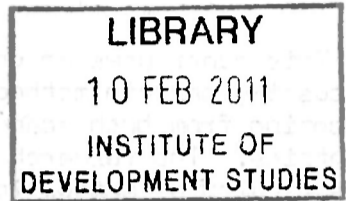
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METHODOLOGICAL ISSUES IN A STUDY OF RESOURCE
ALLOCATION DECISIONS AMONG EMBU
FARMERS

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ABSTRACT

This paper uses an ongoing field research project as a basis for discussing certain methodological issues the author believes merit further attention from both academics and government personnel working in developing countries. The research discussed here is an economic-anthropological study of agricultural production strategies among Embu farmers occupying two adjacent ecological zones. Its purpose is to examine determinants and consequences of resource allocation decisions of individual farm households in a subsistence oriented economy that is in the process of becoming monetized. The study examines how family allocative decisions are made in a context in which goals concerning production to meet subsistence needs often compete or conflict with goals concerning production for cash sale. The research analyzes the complex interplay among ecological, social/cultural, and economic constraints as influences on individual production decisions.

Methods used in this study are drawn from the fields of agricultural economics and anthropology. It is argued here that in the past, methods and approaches of the economist and anthropologist to similar problems have been unnecessarily divergent- to the detriment of both disciplines and to the detriment of better understanding of processes of economic development.

PREFACE

This paper addresses methodological issues which bear directly on data collection procedures commonly employed by agricultural economists and government ministries collecting data on the agricultural sector. Many of the types of data collected in this research project have been collected before by researchers in various disciplines in various localities. It is likely, however, that they have not before been collected by one researcher drawing heavily from the disciplines of both agricultural economics and anthropology. I argue in this paper that there can be both theoretical and practical payoffs from meshing the very practical concerns of the agricultural economist with what have often been seen as the less practical or even impractical concerns of the anthropologist.

Unfortunately, anthropologists have earned a reputation in the Third World as impractical eccentrics dedicated to preserving man in a pristine "primitive" state. How this impression of the discipline of anthropology evolved and why it persists today cannot be dealt with in this paper. What I want to demonstrate here is that some of the conceptual and methodological tools of the anthropologist are readily and necessarily applicable to both theoretical and practical problems addressed by economists.

In the past, approaches of the economist and anthropologist to development issues have been unnecessarily divergent and each alone weaker than a critical synthesis of the two can be. Continued adherence by each discipline to its own traditional lines of inquiry, methods and approaches is done to the detriment of both disciplines and to the detriment of better understanding of the bases of economic development.

PROJECT PURPOSE

This doctoral research (the field portion of which has at this writing been underway for about seven months) is an analysis of agricultural production strategies in a partially monetized rural economy. Its purpose is to analyze determinants and consequences of family resource allocation decisions in a context in which family goals concerning production to meet subsistence or consumption needs may compete or conflict with goals concerning production for cash sale. Family production decisions examined include choice of crop mix, labor allocation decisions (among farm activities, nonfarm activities, wage employment, and other production options such as pastoralism), decisions concerning allocation of capital resources, and decisions concerning use of land and other natural resources.

Existing anthropological and sociological studies on this subject have tended to focus on marketing rather than production, and on either 1) social structural, institutional or system properties or 2) the characteristics and motivations of individuals--entrepreneurs, innovators or decision makers within a particular society or culture. Existing agricultural economics and other studies in this area have rather recently begun to examine farming systems and technological and institutional relations in a shift away from concentration on marketing and diffusion of innovation among individuals (see Saint and Coward 1977). However, this developing approach tends to focus on the environmental context of farming systems, with little attention given to the social/cultural components which interact with the environmental component of any agricultural system. In nearly all of this research there has been an unnecessary separation between focus on 1) individuals and their motivations and 2) the larger patterns of a system of economic, ecological or social relationships.

The theoretical focus of this research is on the necessary connection between two levels of analysis: 1) strategies of the individual farmer and 2) the ecological, economic and social/cultural system in which he conducts his economic activities and makes his production decisions. The study will examine the relationship between the distribution of individual allocative decisions and system¹ level patterns over time.

PRACTICAL NEED FOR THIS TYPE OF RESEARCH

While it is now generally recognized that development of the agricultural as well as industrial sector is essential to sustained economic growth, agricultural development has usually been seen as the more difficult problem. The problem of agricultural development is of acute practical concern to developing nations, where the overall growth rate of an economy is often depressed by a low growth rate in a still predominant agricultural sector. In most developing countries the agricultural sector comprises the largest share of both the labor force and of GDP (see Adelman and Morris 1967, Kuznets 1966, 1971); the strength of this sector thus determines the per capita incomes of the major proportion of the population and also significantly affects success or failure on the industrial sector expansion essential to balanced economic growth.

Successful policies to encourage growth in agriculture are difficult

1. "System" here refers to the economic, ecological and social/cultural context in which economic activities of individuals within a given geographic area occur.

to define because the conditions of agricultural production are extremely variable and are not as easily controllable as those of industry. Agricultural development strategies often must involve attempts to stimulate changes among hundreds of thousands of individual farmers working under an enormous variety of economic, ecological, political and cultural conditions.

In short, while the importance to the national economy of developing the agricultural sector is recognized, the microeconomic bases of the actual transformation processes of this sector are considerably less well understood. How can they be better understood? This paper suggests that improvements and innovations in methods of collecting data and ⁱⁿ types of data collected on this sector are certainly part of the answer. Specifically, combining anthropological and economic methods is suggested here as one means of improving data from the agricultural sector.

It can be said in one sense that much of the research done in developing countries is a grossly inaffordable luxury. If all of the resources poured so liberally into research were instead invested in roads, piped water, schools, and medical facilities, the needs of the rural population would be infinitely better served than they are by investing these resources in numerous unconnected research undertakings. These basic needs--adequate roads, water, health, and education--are both obvious and essential foundations for real development. Nevertheless, academic research and international aid and short-term consulting contracts and advisory visits by foreign "experts" are by now a well-established business. Given this reality, perhaps all that can be hoped for at this stage is some reorientation in research methods.

The methods most often used by evaluation teams and visiting experts are usually quick--too quick, too easy, too expensive, and often ineffective in addressing the needs purportedly justifying the aid missions or studies. What is usually missing in these projects is any degree of immersion in the society or culture being studied. That is, the "experts" themselves could profitably live for some weeks or months in rural areas in order to obtain first-hand knowledge of problems and constraints in developing or improving welfare of people in rural areas. This need not increase survey costs significantly; living in the area can simply be done for as long or short a period as the survey itself requires.

Such immersion in a society being studied is the hallmark of the anthropological or participant-observation method. While anthropologists do not often direct their attention to pressing development issues, their research methods are readily applicable to such issues. Participant-observation provides an essential means of verifying and amplifying data collected from local government officials or from a survey. When one lives with farmers one hears their side of problems government officials or agricultural officers are often eager to downplay. When one acquires their trust and speaks to them as friend rather than stranger, the complex network of factors influencing economic development becomes clearer as the data become richer and answers to the researcher's questions more candid. For example, a transaction an economist collecting survey data might record as a loan could actually be one of a complex series of exchanges whose repayment patterns and other characteristics are defined by a number of contextually variable factors such as individual standing in the community, kinship or family ties, prior and future economic exchanges between the two parties, and other culturally prescribed patterns of borrowing and lending which lie outside the range of data economists tend to incorporate in their surveys. The complexity of the transaction might not even be hinted at in replies to standardized survey questions, unless the surveyor or researcher had an insider's knowledge of the culture or society being studied. The best way to obtain this type of knowledge is through participant observation methods characteristic of anthropology. Without participant-observation, one simply cannot be sure that survey questions penetrate the underlying reality or contextual characteristics of economic transactions. Yet such characteristics are of crucial importance in understanding economies undergoing a transition from a subsistence to a cash orientation.

The policy applicability of the project discussed in this paper is thus in part methodological. It is intended to demonstrate the payoffs of applying an eclectic theoretical and methodological approach to problems of development, particularly agricultural development. Specifically, it illustrates the benefits of combining survey methods characteristic of economics with participant-observation methods characteristic of anthropology. Anthropological methods are too often shunned as needlessly expensive and time-consuming. Neither alleged fault is a necessary counterpart of the method; participant-observation may be a short-term part of any evaluation project, and is likely to cost much less than the living accommodations and frequent rural-urban transport usually provided visiting experts studying rural areas.

In short, what is suggested is that methods of collecting data from the rural sector can profitably involve living in a rural area.

The policy utility of this research is empirical as well as methodological. The project provides case study data on an area that plays a significant role as an earner of foreign exchange in Kenya's agricultural sector. As a case study it is intended to demonstrate interactions and interrelationships among a range of factors affecting agricultural productivity. This type of study can help to highlight present policy inadequacies, suggest possible alternatives, and provide data necessary to evaluate the probable success or failure of specific policy proposals put forth by the government.

METHODOLOGICAL APPROACH: WHY ANTHROPOLOGISTS AND ECONOMISTS NEED EACH OTHER

This research involves a combination of economic survey methods and anthropological participant-observation methods. The approaches of these two disciplines are here combined in order to avoid both the disadvantages of the economist's and agricultural economist's frequently exclusive reliance on survey data in formal or statistical modelling of economic activities, and also to avoid the shortcomings of heavy reliance on participant-observation techniques practiced by many economic anthropologists studying similar problems.

The prevalent analytical paradigm of agricultural economists studying such problems (see Untor 1973, Collinson 1972, Heady and Dillon 1961) generally involves definition of models of economic choice or decision making which weigh calculated costs and benefits of alternative choices and define "rational" decision making strategies as those which minimize costs (which may include risk and forgone leisure or food, as well as money) and maximize benefits, satisfaction or utility. Costs and benefits are compared on the basis of quantified relationships between specified levels and types of land, labor, capital and management inputs on the one hand, and outputs associated with each combination of inputs on the other. Quantitative data on input-output relationships collected by means of surveys are then used in analytical techniques such as linear programming or estimation of production functions and derivation of least-cost resource or input combinations. However, such survey data and their customary use by economists in linear programming and production function analysis are often far from sufficient for the analytical and policy purposes for which they may be used in developing countries. Indeed,

taken alone, they may produce seriously misleading data on the partially monetized economies of the Third World.

There is not space here to discuss fully the various difficulties in existing economic models of adequately accommodating many factors which play a large role in peasant economic activities and decisions--risk, social and village level constraints on choice, noncommensurable multiple objectives of peasant farmers, the variety of responses to crisis open to them (e.g., clientage, relying on relatives, migration)-- and the violation of such linear programming assumptions as technological homogeneity which occurs in the use of averages obtained from surveys despite well-known differences among peasant farmers in technology, resource constraints and net returns. The point is that there are certain kinds of data which are either excluded from or badly distorted by frequently used economic models based solely on survey data. This is not to say that the necessary data cannot be collected using survey methods; they can. However, they usually are not collected in economists' surveys and they cannot be collected without first using participant-observation to penetrate relationships and patterns of economic activities which lie beneath the surface of the empirical information which is at present able to be incorporated in economic models.

Thus there are important types of data which are often not collected in economists' surveys but which must be incorporated in analyses of peasant economic decisions if the analyses are to be empirically realistic. The necessary information can only be collected if methods are modified to build on the strengths of both participant-observation and survey techniques. These two approaches complement each other well when applied to developing economies.

Studies by agricultural economists have often tended to ignore the manner in which nonmarket relations control access to resources such as land, labor, fertilizers, etc. It is here that anthropological methods of participant-observation are useful in understanding the economic as well as other aspects of nonmarket or partially monetized agricultural systems. In such economies, village level social relations, whether reflected consciously in verbal agreements, in informal arrangements backed by sanctions or through kinship ideology, significantly affect input-output patterns analyzed by economists. Excluding such structural relationships from

the data collection process, therefore, can result in collection and use of incomplete, misrepresentative or badly distorted input-output data. Understanding intra-village relations (e.g., economic obligations and rights related to political status, leadership, age, sex, family position, etc.) is crucial to understanding characteristics of the economic system such as wealth or income distribution, production decisions, and level and composition of agricultural output. In western market economies such characteristics are less "embedded" in complex systems of social relations and "multiplex" role obligations and expectations and are thus more immediately amenable to formal economic analysis.

In short, a synthesis of anthropological and economic approaches to the problem under study offers several advantages. Participant-observation not only provides one with essential knowledge of how best to acquire and interpret quantitative survey data, but it also leads one to recognize the importance of acquiring additional kinds of data whose importance cannot necessarily be determined before going to the field. Similarly, systematic collection of quantitative data through use of economic survey techniques can highlight relationships and patterns whose full understanding cannot be acquired through participant-observation techniques alone.

THEORETICAL FRAMEWORK

Farm households in a developing economy represent simultaneously both production and consumption units. In contrast to the customary mode of analysis of microeconomics, their production activities as "firms" and consumption activities as "households" cannot be separated as easily as in fully monetized western developed economies. While microeconomic theory analyzes households as maximizers of utility (satisfaction, preferences) and firms as maximizers of profit, analysis of the economic activities of households in partially monetized rural economies is more complicated.

The analytical problems posed by such economies form the familiar basis for the formalist-substantivist debate in economic anthropology (see Cook 1966, Fifth 1967, LeClair and Schneider 1968, Salisbury 1973). Disagreement over the applicability of the tools of formal economic theory has resulted, however, in an even more fundamental opposition concerning appropriate levels of analysis of economic systems. In this regard, economic anthropology has been characterized by two central and usually discrete theoretical foci: 1)

descriptive functional analysis of economic organization and structure in nonwestern societies with relatively simple technologies (e.g., Bohannan 1955, Malinowski 1921, Richards 1939) and 2) analysis of the decision-making principles underlying or determining the economic activities of individuals in such societies (e.g., Ortiz 1967, Barlett 1977). However, the relation between observable system patterns on the one hand, and principles governing the decisions and behavior of individuals within the system on the other, remains problematic (see Salisbury 1973, Barth 1967, Rutz 1977).

Analysis of economic change affords a particularly good opportunity to approach this theoretical problem. By focusing on how individuals within a system respond to new economic opportunities and adjust to the particular constraints of their system, one can begin to understand the properties of the system in terms of processes of "selection" operating on its component individuals. Changing conditions and new economic opportunities will often favor individuals practicing a different set or variety of economic activities from that favored by earlier conditions.

With respect to the two modes of analysis characteristic of economic anthropology, Rutz (1977) argues that it is both logically and empirically unsound to separate structured patterns of production and exchange at the system level from principles governing the decisions of individual actors. However, Rutz (1977: 157) too notes that

How to relate the unintended consequences of decisions based on the specific ends of competing management units to the patterned outcome and some goals posited for a whole system remains an ill-defined but crucial problem in ecological and economic anthropology.

Both substantivist economic anthropology and ecological anthropology have tended to concern themselves with system teleology and holistic explanation while ignoring the existence and bases of variation within a system¹ (cf. Salisbury 1973, Vayda and McGay 1975). Formal economic anthropology on the other hand tends not to consider the unintended systemic consequences of the decision-making processes of individuals. Neither approach alone is sufficient to account for processes of systemic change.

In his analysis of Fiji land use patterns, Rutz (1977) briefly considers the effects of new economic opportunities on land use decisions, emphasizing the effects of actual household responses on total land use patterns and on the system's ecological balance. He does not, however, explore the bases and

1. Substantivist economic anthropology usually focuses on a social system and its attendant structural characteristics, while ecological anthropologists focus on the manner in which social structural characteristics perpetuate and are perpetuated by an ecological system.

determinants of differential response by individual households and it is these which must be examined if one is to understand processes and determinants of change. Whether or not one considers it useful or valid to view individual peasants as "maximizers" of profit or utility (cf. formalist-substantivist debate), it is important to recognize that economic activities and decisions involve not utility or profit maximization alone, but rather maximization of profit or utility under constraints (cf. Cohen 1977).

Microeconomic theory often defines constraints as constants and focuses on the manner in which market forces of supply and demand alone determine equilibrium points. However, and this is crucial, an understanding of change in agricultural production strategies and goals, and of the transition from one equilibrium point to another, must be approached by viewing the economist's usual constants (e.g., population size, institutions, technology, environmental factors) as variables rather than constants.

Both the nature of constraints and the degree of choice are likely to change in the face of new economic opportunities. New opportunities may modify or remove prior production constraints and may stimulate explicit choice where none previously existed (see Joy 1967). Thus when there is a basic change in the organization of economic activities (e.g., institutional change such as change in land tenure rules or practices) choice may become explicit and individuals will be motivated to reconsider their original or customary production decisions. In this view, it is thus changes in the structure of the context of the decision-making situation that determine changes in production or output.

In this research, analysis of the context of individual production decisions will provide a means of 1) understanding preceding production strategies, 2) explaining contemporary variance in production strategies, and 3) determining factors affecting shifts in production strategies over time. Thus the relationship between the distribution of individual allocative decisions and system patterns can be analyzed so as to determine principles governing

the operation of the production system and to project system patterns over time.

Three types of constraints¹ can be seen to constitute the context of agricultural decision-making and to define the nature and degree of choice facing individual decision-makers. These are economic, ecological, and social/cultural constraints. Analysis of the effects of these three types of constraints on individual agricultural production decisions and on system patterns provides a means of understanding and explaining shifts in production strategies at both the individual and system level.

Economic Constraints

By economic constraints we mean the effects of the quantity and quality of available factors of production (land, labor, capital)--- that is, of economic resources, or those resources whose supply is in every society limited and which therefore command a "price" or relative valuation in terms of other scarce resources.

Although it is now recognized that farmers in partially monetized economies do respond to economic incentives, and that their economic activities are not wholly circumscribed by culturally prescribed attitudes and behaviors, we are still very far from understanding how economic incentives and constraints interact with social and cultural influences to determine behavior.

Social/Cultural Constraints

By social/cultural constraints we refer to those social institutions and preferences that impinge directly on the organization and execution of labor in production processes, on the definition of production goals and strategies, and on the definition of rights to economic resources as factors of production.

It is the existing social and cultural context which shapes response to new economic opportunities, and it is the presence of new opportunities and

1. Use of the term "constraint" here is made in the economic sense of limitations on production possibilities and not in the more extreme sense of inhibitors or preventors of change in production strategies or as a cause of inefficient use of existing resources. (They may as well be facilitators or stimuli to change.)

and responses which gradually produces change in social structure itself. Here we examine the role of culture as, in Bennett's (1976) usage, "the qualitative and quantitative precedents for decision, or opportunities for and constraints on free choice."

Ecological Constraints

By ecological constraints we refer to effects on production of such characteristics of the natural environment as soils, climate, and the character, distribution and availability of natural resources. Ecological constraints help determine the range of production possibilities in a given area, and in connection with economic and social/cultural constraints influence the range of production options actually practiced.

In short, this research will examine the effects of three categories of constraints--economic, social/cultural, and ecological--on agricultural production decisions. It will examine both 1) the context (ecological, economic, and social/cultural) of individual production decisions and 2) the nature and bases of the decisions themselves. This will be done in order to 1) establish connections between contextual factors and patterns of decision making, 2) determine whether and how contextual factors differ among farmers who pursue alternative production strategies such as maximization of subsistence or food security as opposed to cash cropping, and 3) model system level effects and patterns of change on the basis of established correlations between contextual factors and individual decision making.

propositions

Some of the propositions to be tested in this research are listed below.

- 1) Size and quality of land holding are inversely related to utilization of production strategies designed to maximize subsistence security:
 - a) Size and quality of family land holding are inversely related to degree of investment in the growing of: traditional staple food crops, nonstaple food crops, and food crops whose yields are most reliable from one season to the next.
 - b) Size and quality of family land holding are directly related to degree of investment in the growing of nonfood cash crops and higher risk crops in general (i.e., those with greater seasonal variation in yield).

location.¹ Thus the decision to include at least two ecological zones in order to obtain the necessary degree of variation in economic strategies meant the ideal field site would be two adjacent sublocations (smallest administrative unit) which cross ecological zones but which are in the same location.

Before selecting a specific field site within Embu District I acquired information on a number of alternatives by visiting possible sites, consulting local government and nongovernment individuals, and by consulting local secondary source materials. Within Embu District, only Embu Division contains within it the requisite degree and type of ecological contrast (and thus variation in economic strategies). Within Embu Division, both coffee and cotton zones are found in three of the division's four administrative locations. Of the three locations containing both coffee and cotton zones, one was ruled out because it contains only one sublocation growing cotton and I did not wish to be left with only one possible choice of sublocation within a location. The two remaining locations (Kyeni and Kageari) each contain several sublocations with coffee and several with cotton. After travelling through both of these locations, meeting chiefs and other local people, and after consulting local secondary sources, I selected Kageari Location as the research site because it is much more typical of the rest of the division in terms of relative wealth, education, and overall level of development than is Kyeni Location, which is considerably above the mean in these characteristics.²

Within Kageari Location I then selected for intensive study two adjacent sublocations. Selection criteria here included maximum social/cultural similarity and minimum ecological similarity between the two sublocations. Again after visiting several possible sites, I selected two contiguous sublocations which comprise a marked ecological gradient within a very small

1. Administrative units in Kenya in order of decreasing inclusiveness are: province, district, division, location, sublocation.

2. For example, Kyeni is the only location in the division which has piped water traversing its entire length, it has a relatively higher proportion of English-speaking and literate residents, and its per capita coffee income is above the mean for coffee growing areas of Embu District.

area and which have many social/cultural and economic ties. In the upper zone, the mean land parcel size is 4.53 acres (median = 4.00 acres), while in the lower area mean parcel size is 10.08 acres (median= 7.00).¹ Land scarcity in the upper (coffee) areas is forcing many sons of fathers with land in the upper zone to move into the lower zone of poorer quality land. There are thus family ties between the two sublocations as sons in search of their own land move from their parents' farms in the upper area to their own farms in the lower area. There are also strong economic ties between the two sublocations, and an ungraded road connecting two important regional markets (Runyenje's and Siakago) runs along the western periphery of the two sublocations. The setting is one with an important degree of internal variation in economic possibilities and strategies, and it affords an excellent setting for studying determinants and consequences of differential economic strategies pursued by individual farmers.

SAMPLE SELECTION

The method of sample selection used in this study aimed at drama and public participation as a means of enlisting popular support for the research. However, before describing how the selection was accomplished, I will first outline the sampling technique used.

Using the district land registry, a complete list of land holdings in the research area was compiled and used as a sampling frame.² From this group

1. Calculated from individual parcel registration records in district land registry (N=600).

2. All land in this area was consolidated, demarcated and registered in the early 1960's. Registry records are now updated every two weeks to record subdivisions and transfers. (All such changes must be approved by divisional land control boards; the board in Embu Division of Embu District meets every two weeks to decide cases and to approve or reject transfer and subdivision requests.) From the registry, data were collected on approximately 1200 parcels (600 in the study area and 600 in the surrounding area of the same ecological zones) these data included parcel size, ownership, subdivisions, transfers, and amount and source of loans for which titles served as security. This information on these 1200 parcels provides a means of assessing the typicality of the sample of 80 used in the study. On the basis of this information, holding size in the two sublocations has been found to be comparable to that of the wider area.

was drawn a random sample of 80 holdings (approximately 13% of those listed in the frame), stratified according to holding size, with 40 holdings in each of the two ecological zones and eight holdings in each of five strata in each of the two zones.

The actual sample was drawn lottery style at a baraza (meeting) called by the two assistant chiefs of the two sublocations included in the study. The baraza (whose sole purpose was to explain my research to area residents and to draw the sample of 80 survey participants) occurred after I had been living in the area for about three months. It was well attended and turned out to be a very jolly and lively affair. After the purposes of the research were explained to the people, the two assistant chiefs and many individuals attending the baraza took turns drawing names of individuals until we had the requisite number for the sample. As each name was drawn, it was read aloud to the crowd, often evoking cheers, laughter and jokes.

There are several advantages to this kind of public sampling technique. By using barazas, a researcher in Kenya can make use of one of the most effective established local mechanisms for communicating with a largely illiterate rural population. Publicly drawing a sample is an effective way of demonstrating the impartiality of the selection procedure and helps to reduce suspicion and ill feelings which otherwise tend to be aroused when an outsider moves in to do research on certain members of a community. The reasons for selecting certain individuals and not others otherwise may be interpreted by local people as favoritism or as covert government investigation.

Using a baraza to explain my study and to draw the sample has had and continues to have beneficial effects. Those not chosen in the sample at the baraza invite me to visit them when I am visiting a neighbor in the sample. Individuals I do not know who see me walking in the field understand why I am there and are usually very friendly and helpful. Most of those drawn in the sample are quite happy about their "luck" and cooperate willingly, probably in large part because of the enthusiasm the assistant chiefs generated for the project at the baraza.

In short, the consequences of publicly selecting a sample using a local institution such as the baraza provide an example of the decisive benefits of conducting research as a visible member of a local community instead of

anonymously sending a team of enumerators to administer a survey without the researcher himself sharing in the flavor of life in the village.

DATA COLLECTION PROCEDURES

Formal survey work among the sample of 80 was preceded by a period of rapport building and familiarization with local people and government officials, with local agricultural practices, the crop calendar, local names of all crops grown and their customary uses, settlement patterns, family structure and organization, and area marketing and trade patterns. All of this provided contextual data essential for designing and administering survey questionnaires and later for interpreting and evaluating the validity of responses to survey questions. Moreover, it gave people time to become acquainted with me as a friend and to acquire some understanding of and trust in my character and my work before I began weekly interviews. Because the frequency and repetitiveness of such interviewing can be tedious for interviewer and respondent alike, advance work on rapport and building a network of friends in the community has advantages later in maintaining morale during a long survey.

Even (or sometimes especially) after a survey begins, continued participation in life in the study community has beneficial effects for the researcher. If the researcher is a visible participant in community life, he is likely to maintain a higher degree of cooperation during a survey, as well as himself acquiring a better understanding of the area and of the issues addressed in the survey. For example, in my own research, such activities as helping farmers to pick coffee and joining others in communal work carrying water from a river to refill a cattle dip have enhanced my credibility in the eyes of local people (and of course amused them because most have never seen a European do such work).

Formal interviews among the stratified random sample of 80 described earlier which are being conducted in the field include the following.

- 1) Crop and parcel inventory: complete listing of all crops and varieties now in the ground and approximate date of planting of each, on every piece of land owned or used by individuals in the sample. Names of all crops are listed on the questionnaire in both English and Kĩmbu. Many varieties of crops such as beans and bananas have no English names, but do have

local names which are known by most farmers in the area. There are important differences among varieties which would be difficult to get at without an understanding of local classifications and variety names. Thus another advantage of a period of familiarization with an area prior to a survey is that it provides information on local categories of knowledge which is essential to constructing questionnaires which pose questions in a manner which is meaningful to interview respondents.

2) Life histories and genealogies: a single interview of approximately two hours duration which uses open-ended questions to obtain information concerning the important events of an individual's life, extending back into childhood and covering such areas as education and employment history, marriage, method of acquiring present land, changes of residence, and economic enterprises undertaken. This provides important information on the economic and personal ups and downs of an individual and often of a family, and constitutes good contextual data for understanding the present economic position of a family. Local custom generally proscribes having young unmarried people ask their elders questions concerning these matters, particularly if the interviewer and respondent are of opposite sexes. Therefore, I use as interpreters in these interviews mature men and women with families of their own (I use female interpreters to interview women and male interpreters to interview men), with whom those being interviewed can comfortably discuss events in their lives.

The life history interviews are yielding interesting information on the type and degree of disruption of the local economy and of family and social ties caused by the coercive movement of people into temporary villages during the Emergency. For some the Emergency meant virtual extinction of all that had been invested in developing a farm prior to the 1950's while for others it provided employment and a stepping stone to greater administrative responsibility. In this area land consolidation and demarcation (in the early 1960's) further disrupted previous social and economic patterns. Nevertheless, there is still some continuity and clan ties are still important in such matters as marriage and deciding land disputes. When, for example, there is a dispute between brothers over title to land the clan gave them at the time of demarcation, members of the clan meet to resolve the dispute. Higher authorities such as the subchief, chief or land control board are called in if the clan itself is not able to resolve the matter satisfactorily.

In addition to providing background information on how past historical events have affected present economic and social life, the life history interviews yield interesting personal information about varying individual responses to experiences with colonial brutality and coercion. They also provide a preliminary means of assessing such things as the influence on current farming practices of experiences working on settler farms. For example, one farmer in the sample who consistently produces very high quality coffee and who often produces the largest quantity in the sublocation spent many years working on large scale coffee farms before settling on his own small farm.

All of these data provide contextual information which helps in understanding the present economic situation of each family and the bases for present resource allocation decisions. Resource allocation decisions are examined by means of high frequency interviewing as discussed below.

3) Production and consumption data: weekly interviews are conducted with each family in the sample to obtain the following data.

a) Crop output: any removal of crops from the ground, however small the quantity—date any crop is picked or harvested, who picked or harvested, time spent by each person doing so, total quantity picked or harvested, and its actual or expected disposition (consumption, sale, storage, gift). If it is a gift, the recipient and his/her residence are identified, as well as the kin relationship, if any, to the giver. If it is sold, the selling point is identified (includes illegal sales to traders of crops legally required to be sold through marketing boards, and the kin relationship, if any, to the person to whom it is sold.

b) Food consumption: includes following details regarding sources of all food consumed each day.

1) food from own shamba—specify whether from field or granary; if from field, when picked, who picked and quantity used that day.

2) purchased food—when purchased, who purchased, where purchased, total price, total quantity purchased, quantity used that day.

3) gift or "borrowed" food--name and residence of giver, kin relationship, if any, of giver and recipient, when received, total quantity received and quantity used that day.

c) Time allocation: daily sequential record of all work and other activities of each adult living or staying on the shamba; amount of time spent on each activity, period of day (morning, afternoon, evening), and identification and residence of others visiting or participating from another home.

These production and consumption data¹ are being collected by female interviewers interviewing female heads of household or an adult resident female who stays at home and can provide the required information. Where there is more than one kitchen, the woman responsible for each is interviewed. Since it is women who perform much of the farm labor and who prepare the food and pick the food crops which are harvested continuously throughout the growing season, women are the most reliable source of information about these matters. Although men take responsibility for cash crops, the women share in harvesting, weeding and other work for cash crops as well as food crops.² It is they who can most accurately report data concerning crop output, labor and food consumption. I would estimate that up to 45% of total output of such staple food crops as beans and maize are picked day by day or week by week over a long period of time before final harvesting or clearing of the field. Men will often know the quantity removed in the final harvest, but in order to obtain accurate data on total crop output, frequent interviewing of women is essential.

Thus, matching age and sex of interviewer and respondent in accordance with expected behavior patterns and taboos in the research area can significantly reduce measurement error in a survey. Customary reliance in input-output surveys on male interviewers and male household heads as respondents is likely to produce highly inaccurate data in many societies. In this case, as in others, agricultural economists have tended to import methodology and assumptions

1. Questions on non food expenditure and on amounts and sources of income are now being added to the weekly interviews.

2. In any case, data on sale of cash crops can (at least in Kenya) often be obtained from the records of local farmers societies; these records provide a means of checking the validity of interview responses.

fitting a western market economy, applying them inappropriately to the entirely different social and economic context of nonmarket or partially monetized developing economies.

Nonsampling or measurement errors in the input-output survey are controlled through periodic direct observation techniques used to check time allocation data reported in interviews. In order to reduce the bias introduced by the presence of an observer, only people from the actual sublocation under study are used as observers. Since they are known and familiar to those they are observing, observer effects are likely to diminish in a shorter period of time than they would if an outsider were observing. Observers are posted to homes to time and directly record the amount of time used by different households to perform routine daily or weekly tasks such as fetching water or firewood, taking cattle to/dipped, preparing meals, etc. They are also used to time irregular agricultural work, visiting and other activities which occur while the observer is present.

Both purposive and random methods are used to select observation times and families. Observers may be posted during key weeks in the agricultural cycle such as planting or harvesting, thus purposively selecting the times of observation but randomly selecting the homes to which the observer is to go. At other times both observation times and families are randomly selected, using Johnson's (1975, 1978) random visiting technique.

Other types of data collected by means of less frequent and in some cases one-shot interviewing in this study include the following.

1) Nonlabor production inputs such as seed, fertilizers, pesticides, machines for land preparation, tools, and other aids to production, their value, source and whether loaned, owned, or hired.

2) Rationale for crop mix planted--trade--offs between expected economic returns, subsistence security, etc.

3) Household assets (buildings, agricultural tools, machines, clothing, furniture, vehicles, etc.--number, when acquired, where or from whom acquired, purchase price, average or expected life, present value).

4) Land transfers and acquisitions (location; size of plots; when and relationship, if any, of person from whom acquired from whom acquired to household member(s); cash or kind payment; rights of use and access)

5) Agricultural extension visits (number, purpose, who received agent, etc.)

6) Household census data--name, lineage, clan, ethnic identity, religion, first language, approximate age, sex, education, employment, marriage history, previous residences, other contemporary residences occupied during part of year and approximate dates and length of time at each current and previous residence, indigenous terms of reference and classification of kin relationships of all household members, history of changes in household composition.

SUMMARY AND CONCLUSIONS

This paper has addressed methodological issues in an ongoing research project to highlight the effective complementarity of participant-observation and economic survey techniques. It is argued here that these issues have wider applicability in areas of policy as well as academic research. There is a standard set of agricultural input-output data (land, labor, capital and management inputs to production and their associated outputs) often collected by government ministries and agricultural economists in developing countries.¹

These data are most often collected by means of frequent (e.g., weekly, biweekly or monthly) interviews of male household heads conducted by male enumerators. The surveys are often designed before even reaching the country in which they are to be conducted, or are designed uniformly to be applied to widely varying regions.

It is suggested here that there are serious weaknesses in this widely used methodology. One of its major failings is that it increases measurement errors by failing to adequately adapt survey personnel and questionnaire content to local conditions--that is, to the agricultural system existing in the region of the survey, as well as to indigenous types and categories of knowledge, and to accepted social patterns and expectations in the survey area. Among the Embu, for example, cultural norms are such that it is considered demeaning for men to answer questions about food crops or food consumption. Moreover men are ill-informed about these matters and cannot provide accurate

1. In Kenya, examples of such surveys conducted by the government include the Integrated Rural Survey conducted by the Central Bureau of Statistics and the I.A.D.P. monitoring and evaluation by the Ministry of Agriculture.

responses to questions about them, though they are likely to provide some response if asked. Reliance on male enumerators and male household heads as respondents in such cases increases survey measurement error. There are other age-sex proscriptions against various types of discussion between certain categories of individuals, as discussed earlier. Because such proscriptions affect data validity and reliability, they should be taken into account in designing and administering surveys. Yet the degree to which factors such as sex of interviewer and respondent do affect data validity and reliability is a largely hidden aspect of the methodology of most surveys. Work done thus far on this project indicates that the effects are large and that use of the wrong interviewer or respondent sex produces substantial error in input-output data.

A second failing, and one compounded by the first, is that exclusive reliance on questionnaire data excludes a crucial range of contextual data concerning intertwining social, political, and economic obligations. Exclusion of these contextual data means both that questions are framed in a manner which distorts the empirical reality of the economy being surveyed and that there is an inadequate basis for analyzing and interpreting data so obtained. Even in studies in which economic survey design is preceded by a brief period of area familiarization (cf. Matlon 1977, Collinson 1978), it is rarely the case that the surveyor continues to acquire and to use information about local political and social patterns and relationships during the course of the survey.

Economic transactions such as loans (discussed earlier) and gifts, for example, are often particularly complex in nonmarket economies. Adequately recording such flows and assessing the significance among households in transitional economies requires understanding patterns of behavior and expectations associated with certain categories of relatives. These patterns vary from culture to culture; among the Embu and related groups, for example, a wife's parents have the right to demand from their son-in-law a sometimes never ending series of cash and kind payments which are initially associated with bridewealth, but which can continue long after a marriage occurs. The strength of the demands so placed on a son-in-law is dependent on a subtle and complex web of factors associated with the economic position of both parties to the marriage and on their social and political status. Transactions recorded as gifts might be obligatory payments which strain the resources of the giver. They may play a very important role in the disposition of his resources, but constitute a socially

complex sphere of exchange whose intricacies are not even hinted at in stock input-output questionnaires.

There are many other aspects of the social context of economic transactions which are crucial to understanding such transactions but which also lie far beyond the realm of data obtainable through the usual input-output questionnaires. For example, social occasions which entail much visiting and feasting inflate expenditure and food consumption levels. Here again the pattern and level of demands so placed on a household's resources vary according to factors such as political and social status. Participant-observation provides the best means of penetrating the patterns of such relationships in order to determine the ways in which they affect economic transactions. This is necessary in order to specify additional types of information to be recorded on questionnaires, but there are essential benefits to be derived from continuous participant-observation throughout a survey in order to record essential contextual data and to pick up unexpected effects which are not predictable in advance. Disputes within a family over land or marital separation in which a temporary change of residence by one spouse creates a sudden and unexpected labor shortage are examples of the kinds of social vicissitudes which occur frequently and seriously affect economic decisions. They cannot be built into economic questionnaires in advance and can only be adequately monitored through participant-observation.

Although the emphasis of this paper has been on the importance of incorporating participant-observation in an economic survey, it should at least be noted (though it is not to be discussed here) that incorporation of survey techniques in economic anthropology studies based on participant-observation is equally important. This paper has focused on the former because it is felt that attention needs to be drawn to the inadequacies of the customary type of input-output monitoring used by agricultural economists and government ministries. Their agricultural surveys are based on a paradigm designed for western market economies (economies in which all inputs to production are purchased) which is inappropriately applied to economies in which many factors of production may not be purchased and which are thus not interchangeable on the basis of least cost principles. The latter type of economy requires a different analytical and methodological approach from that designed for completely monetized economies.

Reasons for the need for innovations in methods and types of economic data collected in input-output surveys have been discussed in this paper. Such innovations are essential for both theoretical and practical reasons. Specifically, it has been argued that combining participant-observation and survey techniques is essential to understanding nonmarket economies. Use of participant-observation offers several advantages. It allows one to 1) design a better survey instrument which contains terms, concepts and response categories which are comprehensible and meaningful to the survey population; 2) improve reliability and validity of data collected during a survey; and 3) provide a necessary basis for analyzing and interpreting survey data once it is collected. Without using participant-observation, one cannot penetrate contextual factors which underly and determine formalizable economic transactions.

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and borrowing from abroad is out of the question, it may be the only way out. Where licensing is purely regulatory in function (as in the case of Schedule D imports) it can prevent speculative stock piling and help avert foreign exchange crises. This is a valid reason only when reserves are low since speculative imports are desirable when they result from importers hedging against overseas price increases and currency revaluations¹.

The certainty that imports will not exceed a given value or volume may generate confidence among local manufacturers to invest more in a way that a tariff will not so that direct restrictions may have a "psychological superiority" over tariffs. When manufacturers know that the home market is safe than they can concentrate more on developing export markets². Quotas are also a means of preventing dumping which may otherwise disrupt local production.

There is a special reason for Kenya to prefer licensing to tariffs. As a member of the East African Community she is obliged to maintain an external tariff in common with that of her partners. She is not free to adjust tariff rates at will and so may have to resort to direct restrictions as the only alternative.

Licensing may go some way in correcting the bias towards final goods production which is inherent in a system of ~~escalating~~ tariffs. In the "classic" situation

-
1. The increase in stocks of Mercedes Benz cars of a year ago was a foreign exchange saving for Kenya.
 2. Alternatively they may prefer to opt for the quiet life and languish behind absolute licence protection without venturing into foreign markets at all.

in order to stimulate import substitution a country raises tariffs on those goods for which the domestic market is wide enough to "justify" the establishment of a locally based, import substituting, industry. These are typically consumer goods industries. Intermediate imports which are inputs into those industries are allowed in duty free so that domestic production of these goods is not encouraged. In fact it is discouraged since factor prices are raised as the terms of trade are moved in favour of the protected industrial sectors. This pattern of tariff protection can be observed in Kenya but this does not mean that intermediate goods' production is less protected since where local production exists imports will be restricted as in the case of consumption goods.

Conclusion.

Over the last decade an extensive system of import controls has evolved in Kenya. Today the system is such that wherever there is domestic production of a good its importation is almost invariably banned or severely restricted so that the local producer gets as much of the domestic market as possible.

Kenya's manufacturing sector is in its infancy; few intermediate goods are produced locally and inter-industry linkages are relatively unimportant. For this reason the licensing system is confined mainly to consumption goods and some of the potentially damaging side effects of quantitative restrictions are reduced. None the less there are cases of production being disrupted and costs raised as a result of licensing restrictions.

It is difficult to assess the ^{costs} of the licensing system on the economy as a whole because they are spread over a wide area. Typically, the intermediate goods which are restricted account for only a small portion of total input costs, but because they are necessary ingredients affecting many industries the effects on production costs could be quite significant in total.

Since licensing is the major form of protection afforded domestic manufacturers, nominal tariff rates are far from adequate in explaining the price incentives to domestic production which industries face. More needs to be known about the effects of licensing in practice on prices and import volumes and the way importers and producers behave in this situation if we are to appreciate the full implications of the system.

Notes to Appendix A.

- i. The tables list the six digit S.I.T.C. codings for each item according to the year in which it was first brought under the system as recorded in the Legal Notices.
- ii. By being brought under the system means being included on Schedule 2 of the 1962 Act, Schedule 1 following its revision in 1964, and either Schedule A, B or C from Exchange Control Circular. EC 1/72.
- iii. Ditto marks (") read horizontally for every year that the item is included in the system.
- iv. The tables include all items where a significant portion (usually more than one third) of the total imports included under a six digit S.I.T.C. grouping were estimated to have been involved. In most cases all of the grouping is involved anyway.

Notes to Appendix B.

- i. If an item comes under licence during the course of the year the net home consumption of the item is treated as if imports of the item had required a licence from the start of the year.
- ii. Net home consumption is the value total of commercial goods entered at the time of importation for consumption or commercial goods ex-warehoused for consumption in Kenya to which have been added or from which have been deducted, imported commercial goods transferred between Partner States. It excludes goods re-exported under drawback.
- iii. Licenced items are those appearing on Schedule 2 of the 1962 Act and Schedule 1 from 1964.
- iv. Column "a" (value N.H.C. definitely licenced) is the value total of all licenced items where all the six digit S.I.T.C. grouping i.e., listed as being affected by law, expressed as a percentage of total net home consumption of the relevant section.

- v. Column "S" (estimated total value N.H.C. licenced) adds the percentage of net home consumption which is estimated to have been affected in those items where only a part of the six digit S.I.T.C. grouping is affected by licensing to the column "a" totals.
- vi. Column "C" (duty paid) gives estimates of the percentage of total duty collected which is attributed to the estimated total net home consumption of all licenced items (column "b"). When the figures in column "C" are higher than those in column "b" it means that licenced items are carrying rates of duty above the average for the section.
- vii. Net home consumption figures were used because these give a comparable series over the whole period. Prior to 1964 imports were compiled in the Annual Trade Reports on a Kenya, Uganda and Tanzania before the incorporation of the inter-territorial transfer statistics of imported goods. From 1964 a separate commodity total reflecting the position after such transfer adjustment was compiled termed net imports. There is weakness in using net home consumption rather than net imports. Where levels of stocks in docks warehouses fluctuate, net imports (from which have been deducted goods re-exported) is the appropriate variable affected by licensing. Net home consumption figures for a particular year include goods brought out of warehouse from the previous year and those imports may not have been subject to license. After net imports have been adjusted to allow for re-exports they are not drastically different from N.H.C. The results would only be seriously affected if the warehousing policies of importers markedly changed over the years and this is not thought to have happened.

SECTION 6 Manufactured goods classified chiefly by material. Licensed Items.

| 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | |
|--------|-----------|-----------|--------|---------|--------|--------|------|--------|--|
| | | | | | 629101 | " | " | C | |
| 629102 | " | " | " | " | " | " | " | B/C | |
| | | | | | 629104 | " | " | C | |
| | | | | | 629105 | " | " | C | |
| 629105 | " | " | " | " | " | " | " | B/C | |
| | | | | | 629108 | " | " | C | |
| | | | | 633000 | " | " | " | C | |
| | | | | | | 641100 | " | A | |
| | | | | | | 641210 | " | A | |
| | | | 641300 | " | " | " | " | A | |
| | | | | | | 641500 | " | A | |
| | | | | | | 641910 | " | A | |
| | | | | | | 641920 | " | A | |
| | | | | | | 641930 | " | A | |
| | | | | | | 641940 | " | A | |
| | | | | 641950 | " | " | " | C | |
| | | | | 642110 | " | " | " | B | |
| | | | | | | 642201 | " | C | |
| | | | | | | 642209 | " | C | |
| | | | | | | 642120 | " | A | |
| | 642300 | " | " | " | " | " | " | C | |
| | | | | | | 642930 | " | C | |
| | | | | | | 642990 | " | C | |
| | | | | 651200 | " | " | " | B | |
| | | | | 651600 | " | " | " | B | |
| | 652100+ | 652201 | to | 652207 | + | 652209 | " | C | |
| | | | | | | 653400 | " | C | |
| | 653501 to | 653505 | | +653509 | | " | " | C | |
| | | 653601 to | 653605 | + | 653609 | " | " | C | |
| | | 653800 | " | " | " | " | " | C | |
| | | | 653700 | " | " | " | " | C | |
| | | | 655101 | " | " | " | " | C | |
| | | | | | | | | 655521 | |
| | | | | | | | | B | |
| | | | | | 656101 | " | " | B | |
| | | | | | 656102 | " | " | B | |

| 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 |
|--------|------|------|------|--------|--------|--------|------|--------|
| | | | | | | 695102 | " | B |
| | | | | | | 695109 | " | B |
| | | | | | | | | 696001 |
| | | | | | | | | A |
| | | | | 697210 | " | " | " | C |
| | | | | | | 698110 | " | C |
| | | | | 696120 | " | " | " | A |
| | | | | | 698851 | " | " | B |
| 698911 | " | " | " | " | " | " | " | B |

SECTION 7 Machinery and Transport equipment Licensed Items

| 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 |
|------|------|-------|------|--------|--------|------|--------|--------|
| | | | | | 712100 | " | " | A |
| | | | | 719210 | " | " | " | C |
| | | | | | 719220 | " | " | C |
| | | | | 719310 | " | " | " | C |
| | | | | 719320 | " | " | " | C |
| | | | | | | | | 719640 |
| | | | | | | | | C |
| | | | | 724200 | " | " | " | C |
| | | | | 729121 | " | " | " | C |
| | | 72911 | | " | " | " | " | C |
| | | | | | | | | 729201 |
| | | | | | | | | C |
| | | | | | | | 732200 | |
| | | | | | | | 732400 | |
| | | | | 733110 | " | " | " | A |
| | | | | 733120 | " | " | " | A |
| | | | | 733320 | " | " | " | B |

SECTION 8 Miscellaneous Manufactured Articles Licensed Items.

| 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 |
|------|------|------|------|--------|------|------|------|--------|
| | | | | | | | | 812421 |
| | | | | | | | | C |
| | | | | | | | | 812422 |
| | | | | | | | | A |
| | | | | | | | | 812429 |
| | | | | | | | | C |
| | | | | 812430 | " | " | " | C |
| | | | | 821010 | " | " | " | B |

Section 8 (cont'd).

| 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 |
|--------|------|------|--------|--------|------|------|------|-------------|
| | | | | 831002 | " | " | " | C |
| | | | | 841110 | " | " | " | C |
| | | | | 841121 | " | " | " | A |
| | | | | 841122 | " | " | " | B |
| | | | | 841131 | " | " | " | B |
| | | | | 841139 | " | " | " | C |
| | | | | 841140 | " | " | " | C |
| | | | 841420 | " | " | " | " | B |
| | | | | | | | | 841429 C |
| | | | | 841431 | " | " | " | C |
| | | | | 841439 | " | " | " | |
| | | | | 841441 | " | " | " | B |
| 851010 | " | " | " | " | " | " | " | C |
| 851091 | " | " | " | " | " | " | " | C |
| 851092 | " | " | " | " | " | " | " | B |
| 851099 | " | " | " | " | " | " | " | B |
| | | | 863000 | " | " | " | " | A |
| | | | | | | | | 891090 B |
| | | | | | | | | 893000 B |
| | | | | 893006 | " | " | " | B |
| | | | | | | | | 893003 C |
| | | | | | | | | 893004 C |
| | | | | 894242 | " | " | " | B |
| | | | | 895120 | " | " | " | |
| 897100 | " | " | " | " | " | " | " | C |
| 899230 | " | " | " | " | " | " | " | |
| 899241 | " | " | " | " | " | " | " | B |
| | | | | 899242 | " | " | " | B |
| | | | | 899249 | " | " | " | B |
| 899321 | " | " | " | " | " | " | " | B |
| 899322 | " | " | " | " | " | " | " | |
| | | | | | | | | 899520 A |
| | | | | 899530 | " | " | " | A |

APPENDIX B.

Percentage of net home consumption affected by import licensing.

| ALL SECTIONS | | | | SECTION 1 Beverages and tobacco. | | | |
|--------------|--|--|-------------------|-------------------------------------|--|---|--------------------|
| Year | a Vol. N.H.C. definitely licensed | b Estimated total value N.H.C. licensed | c Duty Paid | Year | a Vol. N.H.C. definitely licensed | b Estimated total value N.H.C. licensed | c Duty Paid. |
| 62 | 5.34 | 5.39 | 5.13 | 62 | 0 | 0 | 0 |
| 63 | 2.97 | 3.61 | 5.65 | 63 | 0 | 0 | 0 |
| 64 | 15.52 | 15.96 | 33.76 | 64 | 0 | 0 | 0 |
| 65 | 21.15 | 21.44 | 50.99 | 65 | 0 | 0 | 0 |
| 66 | 21.34 | 21.6 | 51.69 | 66 | 0 | 0 | 0 |
| 67 | 21.94 | 22.24 | 48.34 | 67 | 0 | 0 | 0 |
| 68 | 35.3 | 37.72 | 53.92 | 68 | 81.75 | 81.75 | 84.64 |
| 69 | 25.73 | 27.9 | 54.05 | 69 | 83.37 | 83.37 | 83.77 |
| 70 | 26.85 | 29.53 | 52.41 | 70 | 84.63 | 84.63 | 83.39 |
| 71 | 16.32 | 18.73 | 53.55 | 71 | 84.08 | 84.08 | 83.14 |

| SECTION 2. | | | |
|---------------------------------------|--------------------------------------|--|--------------|
| Crude inedible materials except fuels | | | |
| | a | b | c |
| Year | Val.N.H.C. definitely licensed | Estimated total value N.H.C.licensed | Duty Paid |
| 62 | 8.46 | 8.46 | 5.8 |
| 63 | 8.98 | 8.98 | 4.07 |
| 64 | 9.61 | 9.61 | 2.4 |
| 65 | 3.64 | 3.89 | 1.15 |
| 66 | 3.23 | 3.43 | 0.72 |
| 67 | 5.27 | 6.27 | 0.54 |
| 68 | 7.3 | 10.04 | 47.32 |
| 69 | 8.44 | 9.97 | 50.18 |
| 70 | 10.17 | 11.27 | 57.11 |
| 71 | 7.24 | 8.94 | 46.53 |

Year
62
63
64
65
66
67
68
69
70
71

SECTION 3.

Fuels and Lubricants

| a Val. N.H.C. definitely licensed | b Estimated total value N.H.C. licensed | c Duty Paid |
|--|--|-------------------|
| 0 | 0 | 0 |
| 0 | 0 | 0 |
| 84.73 | 85.49 | 97.12 |
| 81.25 | 82.00 | 97.13 |
| 83.08 | 83.39 | 96.95 |
| 80.4 | 86.4 | 91.8 |
| 88.38 | 90.16 | 97.49 |
| 88.99 | 91.41 | 97.72 |
| 89.0 | 90.17 | 98.00 |
| 88.69 | 89.56 | 97.67 |

APPENDIX B (Cont'd).

| SECTION 4 | | | |
|---------------------------|--|---|-------------------|
| Animal and Vegetable oils | | | |
| Year | a Value NHC definitely licensed | b Estimated total value NHC licensed | c Duty Paid |
| 62 | 89.11 | 89.11 | 91.85 |
| 63 | 75.73 | 76.55 | 8.39 |
| 64 | 53.2 | 53.2 | 0.07 |
| 65 | 38.36 | 38.36 | 0.03 |
| 66 | 29.14 | 29.14 | 0.26 |
| 67 | 26.35 | 26.35 | 0.15 |
| 68 | 28.35 | 28.35 | 5.45 |
| 69 | 29.36 | 29.36 | 0.64 |
| 70 | 36.57 | 36.57 | 51.34 |
| 71 | 32 | 32 | 2.65 |

| SECTION 5 | | | |
|-----------|--|---|-------------------|
| Chemicals | | | |
| Year | a Value NHC definitely licensed | b Estimated total value NHC licensed | c Duty Paid |
| 62 | 0 | 0 | 0 |
| 63 | 0.01 | 0.61 | 1.69 |
| 64 | 1.1 | 1.1 | 4.25 |
| 65 | 1.3 | 1.3 | 6.14 |
| 66 | 1.71 | 1.71 | 7.69 |
| 67 | 1.67 | 2.83 | 9.45 |
| 68 | 9.79 | 11.81 | 11.63 |
| 69 | 5.92 | 8.06 | 10.69 |
| 70 | 7.14 | 9.55 | 7.73 |
| 71 | 4.76 | 7.44 | 7.88 |

APPENDIX B (Cont'd).

| SECTION 0 Food & Live animals | | | |
|----------------------------------|---|---|-------------------|
| Year | a Val. NHC definitely Licensed | b Estimated total value NHC Lic- ensed | c Duty Paid |
| 62 | 33.39 | 33.40 | 51.34 |
| 63 | 16.87 | 25.40 | 60.08 |
| 64 | 56.07 | 56.37 | 64.41 |
| 65 | 42.03 | 42.35 | 73.25 |
| 66 | 38.37 | 38.77 | 83.79 |
| 67 | 35.89 | 35.88 | 49.99 |
| 68 | 32.81 | 33.09 | 65.11 |
| 69 | 29.72 | 31.54 | 35.94 |
| 70 | 38.01 | 39.96 | 46.03 |
| 71 | 57.42 | 58.47 | 66.39 |

APPENDIX C Extent of Exchange Control Circular 1/72

The estimates apply the five schedules to the net home consumption figures for 1971.

| I Schedule | % Total Value Net Home Consumption | | | | | | | | | | |
|---------------|------------------------------------|-------|-------|-------|-------|-------|-------|------|-------|------|-------|
| | S I T C SECTION | | | | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Total |
| A | 0 | 0 | 0 | 95.98 | 0 | 3.92 | 12.99 | 0.74 | 3.82 | 0 | 13.93 |
| B | 15.58 | 0 | 0 | 0 | 0 | 0 | 3.29 | 0 | 4.79 | 0.01 | 2.3 |
| C | 41.85 | 92.67 | 8.19 | 0 | 32 | 10.78 | 13.00 | 1.33 | 13.15 | 8.14 | 10.52 |
| D | 3.86 | 5.8 | 3.12 | 0 | 0.86 | 2.85 | 3.01 | 5.36 | 23.27 | 0 | 5.37 |
| E | 5.41 | 0 | 0.58 | 0.33 | 0 | 0 | 0.25 | 0 | 2.22 | 0 | 0.72 |
| A to E | 67.7 | 98.47 | 11.89 | 96.31 | 32.86 | 17.56 | 32.54 | 7.43 | 47.25 | 8.15 | 32.64 |

| II Schedule | Estimated Total Value of Net Home Consumption % | | | | | | | | | | |
|----------------|---|-------|-------|-------|-------|-------|-------|------|-------|------|-------|
| | S.I.T.C. SECTION | | | | | | | | | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Total |
| A | 0.59 | 0 | 5.91 | 95.98 | 0 | 4.77 | 18.63 | 1.00 | 4.1 | 0 | 15.86 |
| B | 16.65 | 0 | 0 | 0.05 | 0 | 3 | 7.65 | 0.05 | 6.53 | 0.01 | 4.08 |
| C | 41.85 | 92.67 | 8.19 | 0 | 32 | 10.79 | 16.93 | 2.75 | 15.37 | 8.14 | 12.22 |
| D | 3.85 | 5.8 | 3.19 | 0 | 0.86 | 2.86 | 3.01 | 5.36 | 23.27 | 0 | 5.37 |
| E | 6.41 | 0 | 0.58 | 0.33 | 0 | 0 | 0.25 | 0 | 2.22 | 0 | 0.72 |
| A to E | 69.36 | 98.47 | 17.87 | 19.36 | 32.86 | 21.42 | 46.47 | 9.16 | 51.49 | 8.15 | 38.25 |

Table I contains derived percentages for totals of net home consumption affected by section including only those items where all the six digit S.I.T.C. grouping is under the Schedule. Table II includes the section totals of table I plus estimates of the proportions of six digit groups affected for those groupings where only a part of the total is brought under a schedule. The tables are subject to all the weaknesses of the Appendix B estimates.