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REGIONAL ANALYSIS AND AGRICULTURAL MARKETING RESEARCH IN TROPICAL AFRICA: CONCEPTS AND EXPERIENCE*

It used to be said—and perhaps still is—of an individual who had done something interesting that he could dine out on it for a month. I am beginning to feel that I have dined out on the studies we did of staple food marketing in tropical Africa between 1965 and 1967 for a very much longer time than that. But I have never published a formal critique or evaluation of the way in which those studies were conceived and executed. The seriously interested student could extract and reconstruct all of this from the final report, although there I was not primarily interested in reviewing defects and deficiencies in our concepts or performance (10).

Our studies raise some conceptual and methodological problems that are of probable relevance for regional analysis. They relate to the interrelated matters of boundaries and integration, and they raise questions about the appropriateness of concepts of market hierarchies and the usefulness of the perfectly competitive model. In addition to these more important issues, the studies also provide further evidence about the insights to be gained and errors to be avoided by viewing economic activities through the eyes of the participants. This, I think, provides me with sufficient rationalization for dining out once again on these five studies.

AGRICULTURAL MARKETING AND REGIONAL DEVELOPMENT

For more than twenty years the Food Research Institute has devoted a major research effort to problems of agricultural development and food supplies in tropical Africa. In the early 1960s, we became increasingly concerned about the role of the marketing system in stimulating and facilitating agricultural development and in assuring the availability of foodstuffs to urban populations and to farm populations that specialized in production for sale. We also recognized the critical necessity for the new African states of developing integrated national

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I am indebted to my colleagues, particularly Omar L. Davis, Elon H. Gilbert, and Scott R. Pearson, for their careful and critical reviews of an earlier draft of this paper. I also express my appreciation to the Research Training Network of the Agricultural Development Council and, in particular, to Wayne A. Schutjer for the series of marketing workshops that helped me to develop the ideas expressed here.

marketing systems as part of the task of transforming "large political and administrative units created by the colonial powers, with their mixtures of African cultures, languages, and people, . . . into broadly based modern states ruled by consent of the governed and tied together by law, patriotism, and commerce." The task of the new nations was "to weld together in common cause tribes and people who had never worked together except under the compulsion of European rule or when united in an effort to remove that rule" (12, p. 47).

Although economic exchange between African communities was much more common in the precolonial period than was once thought, under the traditional economic order "the individual's sphere of economic action was limited almost entirely to the small community in which he lived. Production was carried on by thousands of small, unitary economies, each of which endeavored to satisfy [almost all of] its own needs by its produce. . . . These were island economies, in some ways more isolated from one another by warfare and by manners than by space. They were small and they were nearly closed" (8, p. 13). The task facing the new African states was to knit together these highly fragmented societies which formed their base, eventually to transform them into integrated national economies that could be expected to respond to the decisions and actions of policy-makers at the center.¹

An interest in regional science or regional economies which equates region with nation is sharply different from the subnational concept expressed in the recent United Nations publication on regional social-economic development (24), which identifies regional with subnational development analysis and planning. It is equally in conflict with the supranational concepts of regional development that are usually employed by the United States Agency for International Development (AID).² But it alone identifies "region" with a political decision unit; this seems sufficient justification for fostering it.

I certainly do not want to leave the impression, however, that concern over the development of nation states is the only, nor perhaps even the primary reason for interest in the spatial aspects of economic development. Any careful student of economies like the African ones must become keenly aware of the high cost of creating space utility and of the strong relationship between reduction of this cost and increased total output of economic goods and services.³ Concerns about space and location lie at the very heart of all economics and particularly of those branches that treat of development. Commerce—trade over distances—was at the center of the economics first propounded in *The Wealth of Nations*. It is the development of devices for generating space utility at lower cost that makes it profitable for a man "to apply himself to a particular occupation, and to cultivate and bring to perfection whatever talent or genius he may possess for that par-

¹ It is part of the problem of the new African states that the economic imperative of creating a highly articulated production and distribution system frequently comes into head-on collision with the political imperative of preserving the nation state.

² My concept of regions, of course, is also in total conflict with the old cultural area notions of anthropologists, although Herskovits's mapping of the cultural areas of Africa and, in particular, the things he said about the East African Cattle complex were an important stimulus to my own attempt to examine just how fragmented African economies actually were. Similarly, the stereotype of the uneconomic black man, "Marshall's savage," was a continuing prod to my search for economic behavior and economic response in the African societies (7).

³ The marketing economist is equally interested in utility of form and of time. From the standpoint of regional analysis, however, it is primarily space utility that matters (cf. 11).

ticular species of business" (20, p. 215). Many of the greatest increases in productivity in the past have come from the specialization in production made possible by trade, and, to a considerable extent, by interregional and international trade. These opportunities for increased productivity by better allocation of productive resources are far from exhausted. Expansion of the market generally makes it possible to move productive resources into higher uses.

No producer ever plans to have a surplus over and above the amount he can consume or exchange, although he may occasionally experience windfall surpluses. It is probably safe to say that *all* economies at *all* times experience shortages. To reduce these shortages farmers produce crops in excess of their own needs, hoping to exchange them for goods of which they are short.⁴ It is anomalous that efforts to increase output without concern for effective demand often impair the conditions of life rather than enhance them. Successful campaigns in parts of Sudanic Africa to overcome animal diseases of rinderpest and bovine pleuropneumonia, for example, have sometimes resulted in increased supplies of cattle that cannot easily find their way to market and that simply increase the demands on an already strained local feed supply.⁵

Marketable surpluses come into being because there is an expectation on the part of producers that commodities they may produce beyond their own requirements can be exchanged for commodities they lack. The great agricultural surpluses of the 1930s and the 1950s in the United States arose because the federal government provided such an assurance to farmers and, furthermore, undertook itself to employ this added production in filling grain elevators and in making relief and subsidized shipments to overseas consumers.

A dominant theme of the economic history of tropical Africa during the past century is the increase in exports resulting from the response of African suppliers to increasingly attractive overseas markets, first for products of the forest, later for products of the farm.⁶ This great increase in economic production depended upon the assembling of produce in lots of commercial size from thousands of widely dispersed producers that was "made more difficult, . . . by deficiencies in transport and roads, . . . even today many farmers must head-load their produce over foot paths for ten miles or more before they can reach a buyer" (10, pp. 25-26). Just as impressive as the physical achievement was the economic one of developing a complex marketing chain that enabled merchants to offer prices high enough to call forth the desired (surplus) produce, and to sell it at prices low enough to attract foreign buyers.⁷

It might have been expected that the expansion of effective consumer demand resulting from the flow of new purchasing power into tens of thousands of African

⁴ On the other hand, Margaret Hay reports in her study of the Luo that periods of shortage were a powerful stimulus to trade. She says, "Up until 1920, market places remained primarily famine-related phenomena, and the principal motives for engaging in trade were either to acquire grain through the sale of stock to compensate for a local food shortage or to profit from famine in other areas by exchanging surplus food for stock" (4, p. 175).

⁵ Those who wish to find analogies between this situation and human populations in some parts of the world may do so.

⁶ The attractiveness to African producers of markets for such commodities as rubber, palm oil, and cocoa was due in part to the greatly reduced attractiveness of the market for slaves.

⁷ A. G. Hopkins, in the opening pages of *An Economic History of West Africa*, predicts that "Research into production and exchange in the domestic economy will probably become the chief preoccupation of economic historians of Africa during the 1970s" (6, p. 3).

households would in turn have called forth increased African production of a wider variety of goods and resources, but this did not often prove to be so. To what extent defects in organization of the system for marketing agricultural products helped to retard the development of domestic manufacturing and economic services cannot be determined without further study.

Any student of the history of tropical Africa or any student of West African agriculture is familiar with the story of the development of the cocoa industry in Ghana as it has been reconstructed by Polly Hill (5). The growth of cocoa production makes vivid the impact that a rapidly expanding and very attractive new market can have on the total economic productivity of a society. Development of cocoa growing and marketing in Ghana is almost a model of how such an export crop industry should come into being, not only from the standpoint of efficiency but also from the standpoint of equity and maximum impact on the residents of the producing country. It is frequently cited as an example of how the opening of trade can generate forces leading to economic development. Unfortunately, the Ghana cocoa success story, as told by Polly Hill, turns out in fact to be only the prologue to a record of economic failure. The powerful developmental forces mobilized by a rapidly expanding cocoa industry did not spark similar developments in other sectors of the economy, so far as we have been able to determine.

The linkage or lack of linkage between the cocoa industry and other industries may be explained partly by the structure of markets in Ghana and their performance; it must also have been affected by the special role that space always plays in the primary agricultural industries.

It is possible to hold in our minds a picture of how economic activities are, might be, or should be organized over space so as to optimize their productivity under a given state of the arts.⁸ We can also have a mental picture of how such activities will, might, or should move to a new optimum when the state of the arts changes. One such picture I presented very crudely in an article in 1970 to suggest the interrelationships between the society's spatial organization, the nature of its response to changes in its spatial relationships with other societies, and the continuing interaction between initial stimulus and response (11). That model is closely related to our interest in the agricultural marketing systems of contemporary tropical Africa.

IDENTIFICATION OF THE PROBLEM

In most of our African research we had relied on others for primary information about the nature and magnitude of African economic activities, but thorough search over a decade had uncovered very little reliable quantitative information about marketing of the major African foodstuffs, and not much more about marketing of other farm products. Rather reluctantly, we decided that if such information was to be obtained, we should have to initiate the search for it ourselves. In 1964, we therefore agreed to undertake general supervision and direction of four field studies to be financed by AID (1, 16, 23, 25). A fifth parallel study was carried out by one of my graduate students as his dissertation research (2).

⁸ "State of the arts" seems to me to be a more satisfactory term than "technology," which has such heavy engineering and technocratic overtones.

We knew enough about tropical African societies to recognize differences in the development of their marketing systems and we resolved, at the outset, to try to sample marketing behavior in the major types of economies. We hoped to study one of the more highly developed western African marketing systems that are found from Abidjan to the Cameroon border; we also wanted a poorly developed marketing system on the west side, of which there are many; and we hoped to include a study in one of the countries of eastern Africa where the received wisdom insisted that economic and social conditions were quite different. As it turned out, we carried on one study in Kenya; one in Sierra Leone, which we thought representative of the less well-developed systems; and by a combination of circumstances, one study in each of the three regions of Nigeria. Most agricultural marketing in Kenya is closely regulated by official marketing boards, whereas the marketing of foodstuffs is relatively free in Sierra Leone and Nigeria.

The studies were undertaken to obtain, by direct observation and enquiry, an understanding of the extent to which existing market systems in tropical Africa afford an efficient and low-cost outlet for staple food products, to identify inefficiencies when they exist, and to determine their causes in the expectation that such knowledge would provide a firmer basis for policies to improve market performance.

Despite the general lack of detailed and objective information about the African food marketing systems, a number of allegations, similar to those to be found in the literature about the marketing systems of other parts of the underdeveloped world, were fairly widely accepted. They provide a set of propositions or hypotheses worthy of investigation. They are of five types, and concern the nature of African society, exploitative activities of middlemen, inadequate demand, inadequate physical and institutional infrastructure, and basic lack of organization resulting from all of these. They include the following specific malfunctions that were believed to characterize African marketing systems:

1. African men and women in general and African farmers in particular are inexperienced in commerce and are at a competitive disadvantage in buying and selling;

2. Obligations to kinsmen force the successful entrepreneur to share his profits so that the accumulation of funds with which to build a business of any size is impossible;

3. The great fragmentation of African society by language and custom, combined with the claims of kinsmen, results in a basic distrust of others that disturbs the operation of partnerships and corporative ventures, inhibits the accumulation of working capital, and hampers trade between areas of differing cultures;

4. Many participants in the market are not seeking economic gain and are in fact unproductively employed, with the consequence that there are too many petty or nominal traders for efficient market operation;

5. Excessive numbers of intermediaries in the market chain increase the cost of marketing and divert labor from more productive employment;

6. Seasonal fluctuations in market prices are excessive either because storage is inadequate and losses are high or because farmers must sell their crops immediately after harvest;

7. Merchants exploit farmers and consumers by monopolistic practices;

8. Arbitrage over space is imperfect due to inferior communications, lack of public market information, or high cost of transportation;
9. Access to markets is determined by noneconomic considerations;
10. Capital rationing to traders is a restraint on efficient marketing;
11. Price discovery is imperfect because of the lack of standardization of quality of the product and units of sale; and
12. Effective demand is inadequate to support an efficient and adaptive system.

These allegations about the nature of African marketing systems might have been taken as the set of hypotheses to be tested in our five African marketing studies. We thought, however, that it would be better to try to derive an exhaustive list of ways in which the market might malfunction. It was altogether possible that one or more of the principal imperfections of the markets might have been overlooked because of ignorance of their true character. In fact, this proved to be true.

CONCEPTUAL FRAMEWORK

We adopted the narrow rather than the broad definition of marketing, that is, we took marketing to be the complex network of economic exchange that makes it possible for productive activities performed by a variety of economic entities, however widely dispersed over time and space, to be integrated so as to sustain a national economy. We regarded marketing as the economic element in distribution as opposed to the more visible technical elements of transporting, storing, and processing. Most marketing economists regard the physical acts of transforming the commodities as a part of marketing. There is merit in this view, although it can detract attention from the heart of the problem which is the optimum allocation of goods and services over time, space, and form.

We had an additional reason for adopting the narrow definition in our African studies: the members of our teams had very little training and knowledge on the technical and engineering side of the question and we were not able to attach to the study food technologists or agricultural engineers who might have assisted us. The situation was complicated by another problem that showed up rather clearly in the training seminar in which all the field investigators participated before they went to Africa. It seemed to me that there was a pronounced tendency for these agricultural economists to get more excited about different ways of storing a commodity or different ways of transporting it than about questions which I regard as the heart of the problem. Perhaps this is just a universal tendency to assume greater assurance in dealing with matters about which one knows little than one would permit himself when considering matters about which he did have considerable information. In retrospect, I find myself wishing that we might have been able to collect more of this technical information than we were. I think the analysis would have benefited from it.

Efficiency

Efficiency of the marketing system was to be thought of in terms of how closely it approximated the perfectly competitive market. We hoped to measure

this both in terms of how well the conditions for such a market are met,⁹ and how closely the behavior of prices approximated that expected to result in a perfect market, where prices at any time reflect all information in the system about supplies and requirements. There are spatial dimensions both in the definition of conditions for a perfect market and in the measurement of its performance. They relate to the location of production and consumption—that is, to place utility of a commodity¹⁰—and to the location of stocks held off the market to enhance their time utility.

In order to achieve the inclusiveness that I felt to be desirable, we simply set out, in a series of discussions by the research teams, to list as many of the ways in which a market might fail to meet the requirements of the perfectly competitive one as we could derive from the definition. This list then served as a checklist that was used by the teams during their fourteen months in the field. (A copy of the final list appears in Sections III and V in the Appendix: Basic Research Outline.)

A second line of attack also derived from concepts of the behavior of prices in a perfectly competitive market. This was an investigation of price behavior for signs of departure from that ideal random-walk pattern to be expected if the market were perfect. Because of its nature, this analysis depended much less on the activities of the research teams in the field and was primarily based on collections of price information that we already had in the research files of the Food Research Institute.

Mapping

The perfect market concept in its purest form is without time and space. In examinations of agricultural marketing systems both dimensions enter *a fortiori*—time because crops are produced only at certain times of the year but their products may be consumed throughout the year, and space because production occurs over extended areas that are spatially distinct from the places of consumption. Consumption may or may not be similarly distributed over space; one of the consequences of market development is to achieve more concentrated production and more dispersed consumption.

The temporal dimension of an agricultural market implies storage; the spatial dimension implies transportation, and this, too, occurs over time. These physical aspects are of great interest in themselves and their technical solution affects the economic analysis. But the engineer concerned with storage and transport requires a different map of space, and probably of time, than does the investigator who is solely concerned with the economic problem as we have defined it above. The transportation engineer needs to know the location of production—of the field, pasture, or orchard. He will be concerned about how far it is from field to barn-

⁹ Essentially that each participant buy or sell only a "trifling fraction" of total transactions, that participants act independently, and that there be "complete knowledge of offers to buy and sell" (22, p. 181).

¹⁰ Not to be confused with the utility of a place to an individual. In marketing terminology "place utility" of a commodity is the utility or value that a commodity acquires because it is at a particular location, as opposed to utility of time and of form. Place utility as used in regional science is defined by Julian Wolpert as "the net composite of utilities which are derived from the individual's integration at some position in space" (26, p. 405).

yard to the first stage of processing, and the kind of surface and the means by which the crop is carried this distance. He will also want to know the location of other processing activities, of points where the nature of transport and road-bed changes, of the amounts and locations of storage, and of the location of consumers.

Some of the same features may occur on the economic map as it is defined here, but the principal features in which we are interested are not points where some physical act is performed on the commodity, but rather exchange points where rights of individuals over the commodity are transferred—where title changes—whether they be in the field, at the farmstead, along the roadside, or in a marketplace, a shop, a coffeehouse, or an organized commodity exchange (see Section II, Appendix). It was so that we conceived our marketing maps.

We expected to find exchange points linked in patterns like those G. W. Skinner found were formed by Chinese market towns (19). This is more or less what I have called a “redistributive system” (10, pp. 108–15); it bears some kinship to what specialists in produce marketing sometimes call a “Covent Garden system” in which all merchandise is traded through one central market at some time in its flow from grower to consumer. We conceived of “levels” of exchange at each of which merchants are first assembling produce into larger and larger lots (bulking) and then dividing it into smaller and smaller parcels (breaking bulk), with the understanding that goods could move between markets of the same level (order) only through the intermediation of markets of a higher order.¹¹ This concept, which we borrowed from central-place theory and specifically from Skinner, we accepted unquestioningly. When various members of the teams reported, after two or three months in the field, that they were not able to find the kind of market hierarchies postulated by central-place theory, we assumed that this was simply because they had not looked hard enough or had not been asking the right kind of questions. As it turned out, we were wrong.

Boundaries

Because we were operating in an area in which there had been almost no prior research, we felt it imperative to define our areas of study in a way that would permit us to be as exhaustive in our investigations as possible. We were investigating the internal food marketing systems of tropical Africa. We felt that these systems were sufficiently homogeneous to justify sampling them at various parts of the continent. The types we hoped to study I have already referred to as: (1) a highly developed indigenous system in which there was little state intervention, (2) a weakly developed indigenous system, and (3) a system in which there had been a great deal of state intervention and in which non-African intermediaries had played a prominent part. There seemed to be little merit in undertaking the study of national systems, primarily because it was clear that articulation of the national marketing economies was extremely imperfect. On the other hand, there appeared to be evidence (see below, p. 18) that many countries contained several spatially distributed smaller marketing systems, each surrounding a major city. We accordingly defined the geographical areas of study as the

¹¹ A. M. Hay and R. H. T. Smith base their model of “strands” of trade on a similar concept (3).

TABLE 1.—CITIES AND COMMODITIES

Nairobi	Freetown	Ibadan	Enugu	Kano
Maize	Rice	Maize	Maize	Sorghum
Potatoes	Manioc (fufu)	Rice	Rice	Rice
Bananas	Palm oil	Manioc (gari)	Manioc (gari)	Millet
Beans	Peanuts	Yams	Yams	
		Cowpeas	Cowpeas	Cowpeas

staple food supply hinterlands of five major African cities: Nairobi, Freetown, Ibadan, Enugu, and Kano (see Section I, Appendix).

It was also necessary to bound the commodity space, remembering that marketing tends to be commodity-specific, but keeping in mind the need to use our limited resources to contribute as much as possible to understanding of major marketing problems. At the outset it was agreed that the first measure of importance of a commodity should be in terms of its contribution to the total food energy of the country, and this dictated concentration on the starchy staples. When possible, we also attempted to include domestic foodstuffs of major economic importance, even though they did not qualify in terms of their contribution of calories to the diet. And finally we tried to include each commodity in more than one area study to enhance comparison of various systems. We were only partially successful in this (Table 1).

In the four studies financed by AID it was our intent to study all trade in these commodities within the study area regardless of whether they entered markets in the central city. In the Kano study, where our resources were considerably more limited, we studied only trade moving from the farm to or through the city.

The kinds of information to be collected by the teams were implied by the conceptual framework. An attempt was made to collect prices weekly in a principal market in a central city; prices were also to be collected in rural markets whenever members of the teams visited them. We tried to locate any local sources of price information over time, but very little was turned up that was not already known to us at the Institute. We also attempted to determine the methods used by local statistical groups in compiling price information.

The principal task of the teams in the field was first to gain a fairly clear knowledge of the marketing chains, placing emphasis on identifying all points where title to the goods was transferred. We expected that this would provide us with a basic map of the marketing system. We also attempted to estimate the volume of merchandise flowing through each one of the transfer points and the direction of flow. Once the marketing system had been mapped, major effort was devoted to collecting information that is implied by Sections III and V, Appendix.

Collection of Information

For various reasons it seemed important to us that each of the research teams should be headed by two professional economists, one to be an agricultural econo-

mist from the United States and the other to be an economist who was a national of the country in which the study was being undertaken. One of the reasons for this decision was that we expected the African economist to be able to bring to bear on the problem a great deal of local knowledge. It was expected that the American member of the team would have little knowledge of Africa, but that he would contribute to the study a greater degree of expertness in agricultural marketing.

During the six-weeks' training seminar held at the Institute before the teams left for Africa, they were asked to review all material available in our library on the marketing systems they were to study, and it was one of their first tasks, when they reached Africa, to search out archival material and other published material not available here. We also agreed that reliance in the studies would be placed first on direct observation, interviews in depth with informed persons, and sustained contact with the informants, that is, essentially on an ethnographic approach to field research.

Direct field research was to be initiated by observation of the operation of major markets in the central city and by interviews in depth with informed persons in government, banks, and commercial enterprise. The investigators were instructed to devote major effort to establishing friendly relationships with individuals who played an important role in the commodity trades to be studied. These first contacts in the central-city market were to serve as an introduction to the system, and the teams were asked to follow back down the marketing chain through all levels to the original source of supply, using the information they got at each level about suppliers and, when the opportunity presented itself, even to travel with merchants on their buying trips to the countryside. Only after the general character of the system was understood were administered questionnaires to be used, when the kind of information they might be expected to yield was apparent, and when the nature of response and general attitudes was well understood.

In this connection two specific topics received a great deal of attention at Stanford: the collection of retail price information and the collection of information about quantities of the staple foodstuffs moving through each market. The African members of the seminar urged the desirability of collecting prices by directly observing sales in the market, weighing some purchases to establish measures of the units. Advice of those who had attempted to collect information on the total volume of foodstuffs sold in the market, however, was that any attempt to make precise estimates would entail costs beyond the means of the project. It was agreed, therefore, that only rough estimates of quantities—with an emphasis on relative orders of magnitude—would be attempted, to be based on interviews, general observation, and indirect information.

Those characteristics of the trading system and of the traders in the system that were thought capable of fairly easy measurement were then to be made the subject of sample surveys. An attempt, not entirely successful, was made to have all of the teams use the same protocols.

We called for regular monthly reports from the teams on their activities and also formal summary and analytical reports at a period of about every four months. It is probably always desirable in such investigations that the informa-

tion be examined as it is collected so that techniques, questions, and questionnaires can be altered in response to new information. This seemed particularly important to us in our investigation because we were in what was essentially *terra incognita*. For various reasons, however, this continuing on-the-spot analysis of the findings was pursued less effectively than we had hoped for.

EFFECTIVENESS OF THE METHODOLOGIES

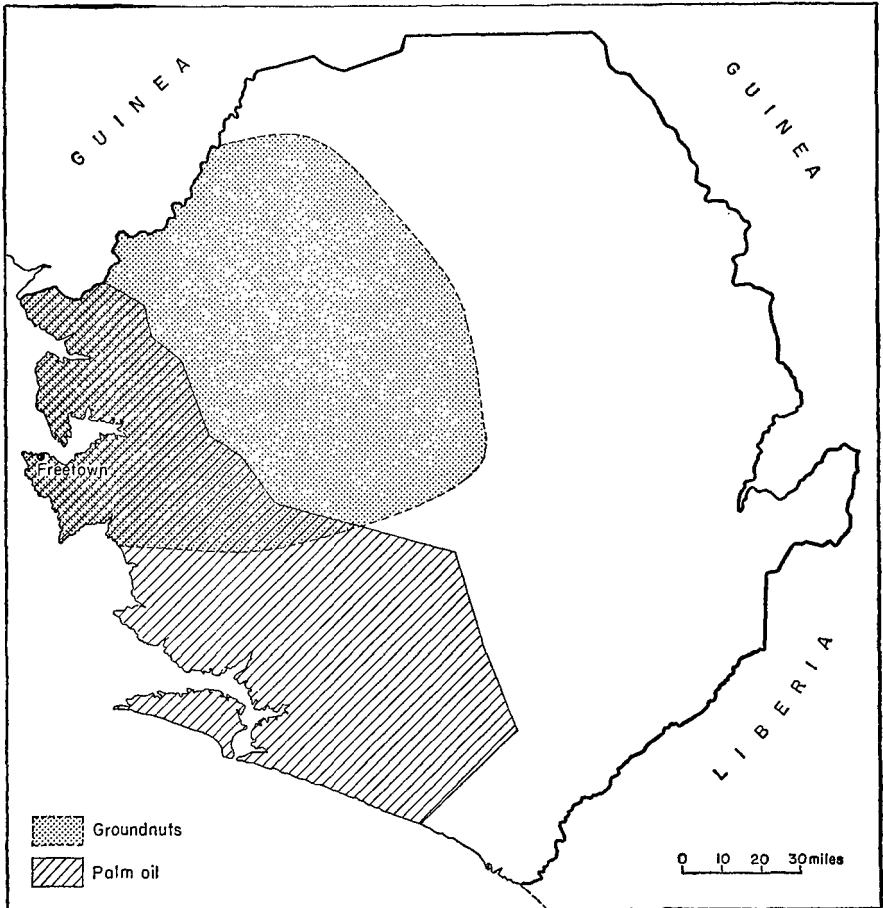
Because of the broad scope of the enquiry, our findings cover a wide range of characteristics of the markets. Those relating primarily to policy issues are reported in *Marketing Staple Food Crops in Tropical Africa* (10), and will not be listed here. Instead, we shall present some of the insights gained from the study that bear on conceptualizations underlying the methodologies that were employed. They have to do mostly with topics we have already discussed—boundaries, levels and hierarchies, and efficiency and integration—but two other matters also merit attention.

Areas of Study

It was, of course, obvious that if the spatial boundaries of the studies were described as the supply hinterlands for three or four distinct commodities, we should be likely to have several different areas for each study. Lack of correspondence is marked, for example, in the areas supplying palm oil and peanuts to Freetown (see Map 1). This was not a matter of great concern in our studies because they were focused on commodities; it could present serious problems if an attempt were made to describe a region using a similar approach. And it provides the first clue to a difficulty that was to recur throughout because we were trying to carry out commodity-specific investigations on the basis of concepts derived from studies of generalized markets in which a wide variety of goods and services are traded. (Some of the same incompatibilities are evident in Carol Smith's Guatemalan studies [21].)

Another problem, also deriving primarily from the commodity approach, was that the supply areas for certain products, specifically cowpeas (*Vigna sinensis* or *V. unguiculata*) in the Enugu and Ibadan studies, were so distant that they could not—by any stretch of the imagination—be thought of as forming part of the hinterlands of these cities (see Map 3). This is more troublesome than it seems at first. Cowpeas move mostly in a long-distance, redistributive trade, but not an international trade. At present, they move from one region to another, but if enough goods and enough transactions take place over these distances, the trade will cease to be interregional for the region will embrace all of Nigeria. S. O. Onakomaiya, in a study of Nigerian international trade in "delicacy food-stuffs" (kola, oranges, onions, and dried meat and fish) that was carried out in 1969, makes a comment that embodies the difficulty: "Local (intraregional) distributional channels for oranges tend to have an average of two exchanges [between grower and consumer], while longer-distance interregional channels have an average of between four and five exchanges" (18, pp. 63–64). Are we then to define a region as an area in which the market chain is short, and say that any chain that is long must be interregional? Perhaps, but it requires some reconsideration of previous ideas.

MAP 1.—FOOD SUPPLY AREA FOR FREETOWN, SIERRA LEONE*

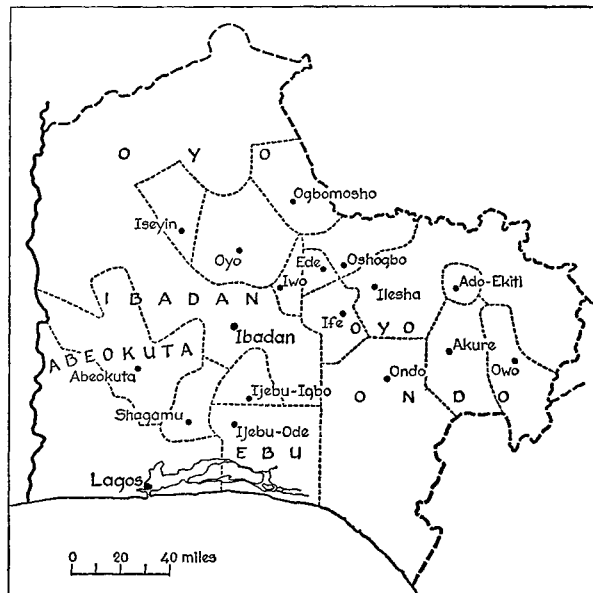


* Based on M. J. Mutti and D. N. Atere-Roberts, "Marketing Staple Food Crops in Sierra Leone." University of Illinois, University of Sierra Leone, and Njala University College, March 1968, p. 13.

A distinct surprise was the discovery in the Western Nigerian study that Ibadan's staple-supply hinterland wound around and leapt over the supply hinterland of neighboring cities (see Map 2A). There is a suggestion in the mapping that supply sheds for each of the Yoruba cities were once arranged like tiles across the landscape with each little city surrounded by its farmlands from which came its basic food supply (see Map 2B).¹² When the rapid growth of Ibadan created demands for foodstuffs its traditional hinterland could not meet, merchants were unable to obtain supplies from wholesalers located in Ibadan's sister cities and were forced to break out into new areas lying beyond their supply sheds. This phenomenon is related to the two-level marketing system discussed below.

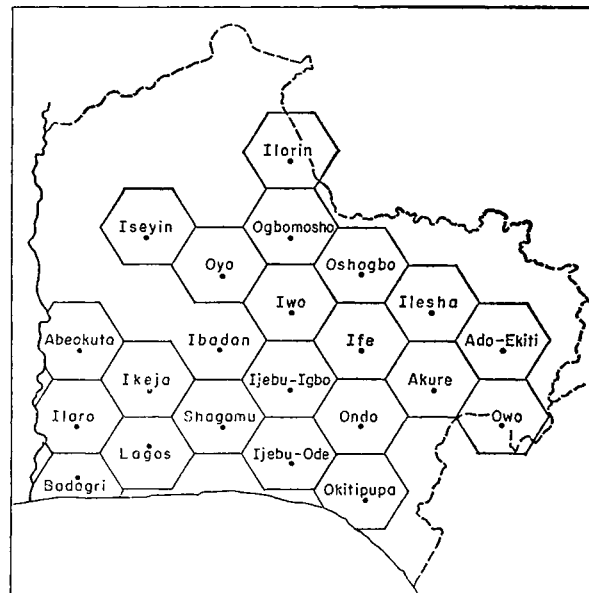
¹² The interested reader will find extremely informative Gloria Marshall's "Women, Trade, and the Yoruba Family" (15).

MAP 2A.—STAPLE FOOD SUPPLY SHEDS OF THE MAJOR URBAN CENTERS OF WESTERN NIGERIA*



* Based on A. R. Thodey, "Marketing of Staple Foods in Western Nigeria." 3 vols., draft report, Stanford Research Institute, Menlo Park, Calif., March 1968, p. VII-2.

MAP 2B.—SCHEMATIC REPRESENTATION OF URBAN STAPLE FOOD SUPPLY SHEDS, WESTERN NIGERIA*



* This diagram more or less ignores topography, roads, and canoe routes. Some cities shown on Map 2A do not appear and others have been added for tidiness. All cities shown actually exist. Empty areas in the eastern and southeastern parts of Western Nigeria are presumably tributary to cities in the Mid-West and Northern Regions.

Levels and Hierarchies

Perhaps the most important of all of our findings was that the received concept of market hierarchies was frequently inappropriate for mapping the flow of trade in a specific commodity. This could best be documented for the Nigerian studies where the indigenous marketing system is well developed and where we were able to obtain more collateral information than in Kenya and Sierra Leone. For a number of the starchy staples, conspicuously millet, sorghum, maize, yams, and manioc products, trade appeared to be organized almost entirely on the basis of a two-level system. Typically, the commodity moved from the producing center to the consuming center without any change of title between the two.¹⁸ The phenomenon also shows up very clearly for some of the commodity flows mapped by Carol Smith (21, pp. 216-23).

As long as we remained enamored of the hierarchical model it was difficult to see what was actually going on, but once our perspective changed, a great deal of information was uncovered that was consistent with the two-level model. Perhaps the most useful procedure we tried, however, was the simple discipline of asking each of the teams, after they had spent a year or more in the field, to construct a flow table of the sort shown in Table 2. So far as possible, of course, a vigorous effort should be made to fill in such a table with firm figures. It is unlikely that this will be possible. Nevertheless, if the investigator has studied the marketing system diligently and perceptively, he will be able to quantify his subjective guesses so as to construct a first approximation to the anatomy of the system. These tables, constructed mostly by guessing, led us to ask questions that would probably not have occurred to us so long as we were locked in our preconceived ideas of how a system should operate. It is very important to make clear, however, that much more field research will be needed before we can have proper confidence in the structure indicated by the tables.

Efficiency and Integration

The concept of the conditions for a perfectly competitive market is useful in determining how a market is inefficient, but it is not very helpful in determining how inefficient a market is. It provides no mechanism for estimating the cost of an imperfection; it gives no clue as to whether causes of the imperfection lie within the area of investigation or outside of it; and it provides no clue for identifying those imperfections which are in effect introduced by market participants in order to correct other imperfections that are beyond their control.

Certain imperfections that have received a great deal of attention in the literature seem in fact to provide slight obstacles to smooth functioning of the markets. In those we studied, public market information services were generally lacking, and crop forecasting was almost nonexistent. Nevertheless, wholesalers and assemblers seem to have no difficulty in learning about prices in the markets where they customarily trade, and they frequently also know what prices are in other markets. Similarly, there is a tremendous variation in units of volume, very little use of weighing-scales, and no standardized measures of quality. This situ-

¹⁸ Gari, which is the principal prepared product of manioc and is very similar in character to the *farinha da mandioca* of Brazil, may be an exception (cf. 9, p. 78 *et passim*).

TABLE 2.—ESTIMATED FLOW OF MARKETED MAIZE IN SUPPLY
HINTERLAND OF IBADAN, NIGERIA, 1960s*
(Percent of total marketed)

Seller	Buyer				Total
	Assembler	Wholesaler	Retailer	Consumer	
FARM, ROADSIDE, SILO, OR HOUSE IN VILLAGE					
Farmer	30	5	5		40
Assembler ^a			5		5
Retailer				5	5
RURAL MARKET					
Farmer	35	10	10		55
Assembler	25	10	15		50
Retailer				20	20
TOWN					
Farmer		5			5
Assembler		20			20
Wholesaler ^b			30	10	40
Retailer				40	40
CENTRAL CITY					
Assembler		15			15
Wholesaler			20	5	25
Retailer				20	20
TOTAL TRANSACTIONS, ALL LOCATIONS					
Farmer	65	20	15		100
Assembler	25	45	20		90
Wholesaler			50	15	65
Retailer				85	85
Total	90	65	85	100	340 ^c

* Based on A. R. Thodey, "Marketing of Staple Foods in Western Nigeria," draft report, Stanford Research Institute, Menlo Park, California, March 1968, vol. 2, pp. VII-16, 17, 23. Magnitudes estimated to be less than 5 percent are not shown.

^a Assemblers are merchants normally resident in the producing area who buy in small quantities, such as by the *olodo* (pan holding about 8 lbs. of maize) or basket, and sell in larger quantities. They are bulkers, do not sell from a stall, but may sell through an agent.

^b Wholesalers normally live in the town and have a permanent selling facility there. They deal in large quantities, bags of 2 cwt. or kerosene tins holding about 28 lbs., and sell mostly to other merchants. Some may in fact be agents for assemblers who do not themselves take title to the produce they sell.

^c $340 \div 100$ or 3.40 measures average number of transactions between producer and consumer.

ation creates serious problems for the statistician, but apparently very little difficulty for merchants and their clients.

In some ways the measurement of market performance as manifested by the behavior of prices was more satisfactory than that based on identifying imperfections. The problem, of course, is to obtain records of prices in enough places and over long enough periods of time to permit useful analysis. Like many investigations, our investigation of price behavior was considerably influenced by the more or less fortuitous acquisition of a rather unusual body of statistical data.

During my first visit to tropical Africa in 1953, I learned that just two years earlier the departments of agriculture in the three regions of Nigeria had begun

to issue monthly mimeographed reports on prices of selected staple foodstuffs in various major markets. Through the good offices of my hosts at Moor Plantation, the Federal Agricultural Research Station near Ibadan, I was able to have my name added to the very short circulation list for the reports from the three regions, and later I began to receive them at the Food Research Institute, including the copies published prior to my visit to Nigeria. By the early 1960s, I had acquired a sufficient collection of these price data, which were being reported for more towns each year, so that it looked as if it might be possible to begin to learn from it. I asked Elon Gilbert to join me in an attempt to test the usefulness of the price series with the idea that, if they stood up at all, we might learn something from them about the organization of staple food marketing. From this investigation—primarily because of Gilbert's diligence and imagination—we began to get some positive results.

I would like to stress that these data were not of high quality and that people who knew about the price series insisted that they were worthless. In fact, as far as I could determine, no one in Britain or in Nigeria had ever attempted to learn anything from the monthly price statistics, although various of those with whom I talked did know something about how the figures were collected and reported. It was they who discouraged me from trying to use the series.

Our first very simple test of the data was to plot a number of series and inspect them for evidence of regular seasonal price variation. We started with yams because we knew that the yam was costly to store and experienced high losses in storage, and we felt that the yam price series therefore should show a clear and strong rise in prices between postharvest and preharvest. Most of the yam price series did show this rise, with the peaks and troughs occurring when they should in terms of the seasonality of the crop. At the beginning, we did not calculate seasonal price indexes, although these indexes made up an important part of our later analysis. (I should add, too, that the seasonal behavior of prices of cowpeas proved to have an important explanatory role in our examination of spatial arbitrage in this crop.)

Gilbert next tried a very simple plotting of average prices in an attempt to get some notion of price gradients and some clues as to the direction of flow of commodities. He and I both thought that we might find price cones centered around major cities like Kano, Ibadan, Lagos, Port Harcourt, and Onitsha, with a very large part of the rest of the country lying in the hinterland of these major cities. Initially, we had some concept of a hierarchy of cities, related to the transportation network, that would be reflected in a hierarchy of prices climaxing at a few central cities. We did not find that. In fact, we did not find any regular pattern that we could expect another investigator to reproduce by standard methods.

Gilbert worked carefully, patiently, perhaps somewhat intuitively with the data to the point where he was willing to say that for about eight or ten market areas he could distinguish whether staple foodstuffs were moving in or out, being "imported" or "exported." He made such a classification purely on the price data, which by that time ran up to about 1963 for the Eastern and Northern Regions, but which stopped somewhat earlier in the Western Region. (We were able later to extend the series for the Western Region.) I suggested that he might like to

compare his classification with a study of staple food movements in Northern Nigeria that had been done by Kenneth Baldwin on the basis of the 1950-51 sample census of Nigerian agriculture (17). From this, Baldwin also had attempted to identify regions of food surplus and regions of food deficit. To our not inconsiderable satisfaction we found a rather good match-up between Baldwin's areas, based on estimates of production and population, and Gilbert's areas based on average reported prices.

These earlier investigations convinced us that the Nigerian price series could tell quite a bit about market behavior, and in the general study we used them to test the performance of arbitrage over time and space, and, in a very tentative way, to test for excessive price fluctuations.

On the whole, we found the seasonal rise in prices, as measured by indexes of seasonal variation, to be consistent with current rates of interest, which range around 36 percent a year, and with very low storage costs and losses for cereals, high costs for yams. As is to be expected in countries where food farmers rely on their own production for a major part of their own consumption at least in terms of calories, most starchy staples are stored in the countryside. The share of the farmers' stored supplies that will be sold during the course of the year and the time of sales depend on a complex of factors (see 2, pp. 218-19). They derive from the timing of taxes, school fees, holidays and other ceremonial occasions that lead to a demand for cash; they are also affected by the income from other crops; they are, of course, influenced by the size of the food crop in question; and finally, sales toward the end of the crop year are determined by the farmers' appraisal of prospects for the coming year.

As a consequence, although the average seasonal price rise tends to approximate the cost of storage, and farmers and consumers do not experience excessive seasonal price fluctuations from postharvest to preharvest over the years, the upward movement of prices during the season is not at all smooth and the seasonal pattern in any particular year may vary substantially from the average pattern. Furthermore, it is difficult for merchants to know with any accuracy just how big the crop was and where the largest potentially marketable stocks are to be found. Locations of storage, therefore, impairs arbitrage from year to year and place to place. Farm storage also contributes to the prevalence of a two-level system, further impairing the spatial allocation of stocks.

This pattern of behavior could not be told from the behavior of prices alone. It required a mixture of quantitative and qualitative farm studies, and further research will be needed if the costs of such storage behavior in terms of inefficiency are to be estimated and methods of correcting it devised. But seasonal price analysis provided important first clues.

Our principal attempt to determine quantitatively the effectiveness of arbitrage over space was by means of simple bivariate correlation of actual prices among pairs of markets. Coefficients of correlation among actual prices are, of course, likely to be much higher than among first differences, especially when strong secular, cyclical, or seasonal forces are present. Secular measurements are not apparent in the Nigerian series, although some episodic movements, apparently connected with political change or civil unrest, did cause at least two nationwide oscillations. Seasonal movements are apparent in most series, but in fact those

price series displaying the strongest seasonal patterns also showed the weakest intermarket correlations.

The correlation coefficients we obtained appeared low to us. Certainly they are when compared with the values Uma Lele obtained for cereal markets in India (14). But we had no real standard with which to compare them, and I am reluctant to say whether on the whole they show strong or weak spatial arbitrage; I am inclined to think the latter for most commodities for reasons set forth in *Staple Food Crops* (10) and in "Market Structure" (13). It is quite clear, however, that intermarket relationships for some commodities—cowpeas and gari specifically—are much higher than they are for others. Cowpeas figure prominently in long-distance trade, but so does rice. Gari production tends to be concentrated spatially, and a certain amount moves over long distances. At the other extreme, maize is widely grown, and probably only a relatively small share of the harvest is stored for more than a few months. Its markets probably come closest to approximating the "gold-point model" that I described in "Market Structure."¹⁴ Yams, sorghum, and millet move primarily through two-level systems.

When we first undertook to calculate the intermarket price correlations it was not entirely clear what we would do with them when we got them. We were curious about the absolute values and we expected to find variations among commodities. But perhaps the most useful product was the correlation maps that we prepared for each commodity at the highest value of the correlation coefficient that showed any significant pattern of interconnections.¹⁵ (An example of one of these maps, that for cowpeas in Northern and Western Nigeria, is shown as Map 3).

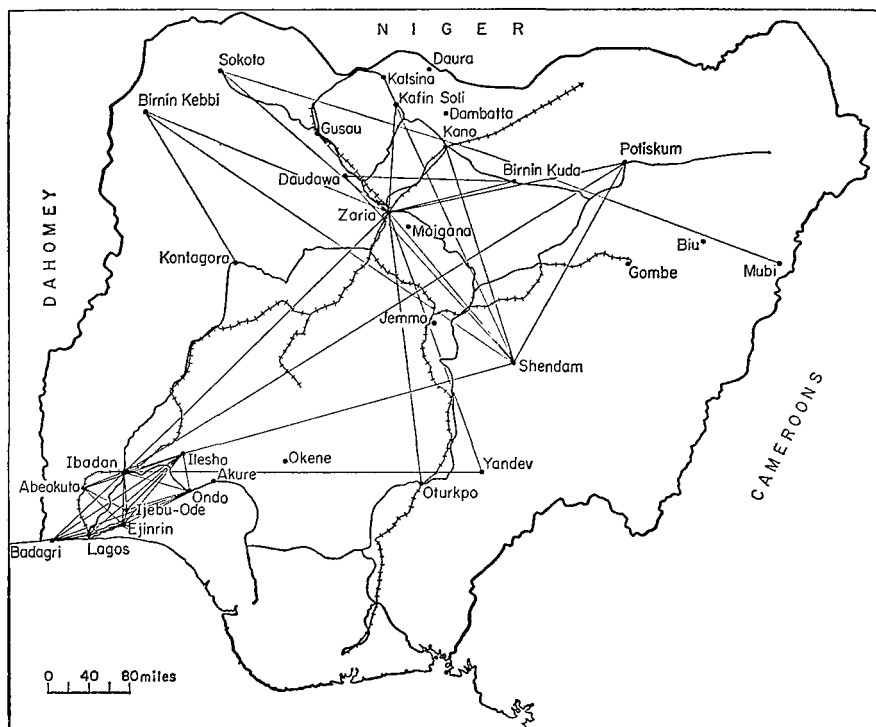
The most striking phenomenon these maps show is the integration of markets in the nine Yoruba cities of Western Nigeria for which we have price information. A fairly strong interconnectedness is also displayed in Northern Nigeria, with a link to the south through the city of Zaria. Zaria appears as the major northern link for cowpeas and sorghum, although it is not the major point of origin for shipments of either. Kano probably is, but it does not so appear on any of our maps. (Unfortunately, we do not have prices of all of the seven commodities for all of the regions.) The most reasonable explanation of this phenomenon, and I think the correct one, is that Zaria is a center of market information and that this information is reflected in prices quoted in the Zaria market, even though the

¹⁴ "Consider first markets A and B, each of which produces and consumes commodity Y. Assume that trade in Y is possible and customary between A and B, determined only by cost of transport and by prices in the two markets. Now clearly the price in A can be above or below the price in B by an amount equal to the cost of transport between them, i.e., it can vary by as much as *twice* the cost of transport without affecting the price in B. Can we find anything analogous to this in Nigeria? Perhaps we can. Maize is grown over a very wide area in the south, there is very little tendency toward specialized areas of production, and farmers customarily sell only part of their crop, holding the rest back for their own needs. Imagine that A and B draw from the same generalized producing area, which has its own generalized reservation demand. Consuming center A can expand its requirements considerably, drawn primarily from supplies otherwise destined for own consumption, before it impinges on supplies going to B. The converse also is possible. Under these circumstances an approximation of the gold-point situation might be reached, and prices in A could be relatively insensitive to prices in B over a rather wide range" (13, pp. 116–17).

Examination of prices of sorghum in Sokoto and Kano suggests that a situation something like this may have prevailed between these two cities in the 1950's and the 1960's.

¹⁵ Cowpeas and gari, for example, show clear patterns of relationships of prices among markets at $r = .80$; yams and maize show no clear pattern at $r > .65$.

MAP 3.—COWPEA PRICES IN NIGERIA*



* Based on W. O. Jones, *Marketing Staple Food Crops in Tropical Africa* (Ithaca, N.Y., 1972), p. 144. Lines indicate price correlation .80 or greater.

volume transacted there is rather small.¹⁶ Qualitative information tends to confirm this, as does a map of the major rail and road routes from north to south.

The third type of price analysis we undertook, an attempt to determine how smoothly prices responded to new information and whether price fluctuations were in some sense excessive, proved to be least successful. Nevertheless, its results were consistent with our general conclusion that articulation of Nigerian staple food markets could be much improved.

The simplest test we employed was to compare the actual magnitude of seasonal price fluctuations with the range of the seasonal indexes. The very nature of indexes (averages) suggested that their range should be exceeded in a number of individual years. This was confirmed, but in some markets—Onitsha, Nigeria, is an example—the departure was so great as to suggest serious malfunctioning of the market in response to short-term changes in market information.

The other test was applied to weekly rather than monthly data, and has the appearance, at least, of slightly greater sophistication. The procedure was to compare price changes over one week with price changes over two weeks. If changes

¹⁶ This is not a unique phenomenon in commodity markets. For years the New York auction market for eggs, which remained open for only thirty minutes each day and on which only a few hundred cases were traded, set the prices for all of the northeastern United States.

over one week had been greater, this would suggest excessive response to new information that was corrected the next week. If they were less, this would suggest sluggish response to new information, requiring at least two weeks for the market to take it into account. We found no significant difference in the magnitude whether measured over one week or two and interpreted this as due to "noise" in the system, i.e., the market was responding erratically and unpredictably to new information (10, pp. 151-57 and 186-90).¹⁷

Other Matters

I should like to refer briefly to two other propositions that our studies illustrate. The first has to do with the considerable differences in marketing patterns of specific commodities. This is in no way a new discovery. Commodity economists are well aware of the wide ranges of characteristics—biological, technical, social, cultural, and economic—that determine the marketing system for each commodity. I mention it in the present context because it implies that knowing a general system of markets and their hierarchies will not necessarily enable us to describe the marketing of any one commodity, and because the regions that may be built up by aggregating individual commodity studies can be quite different from those arrived at by methods of anthropologists and geographers.

The other matter arose in connection with our price-collecting activities in the Fisher Street market in Freetown. It illustrates in a small way how "formal methods" may distort and lead the observer farther away from reality rather than closer to it.

We set out with the notion that determination of daily prices in a particular market would prove to be difficult. Stimulated by vigorous arguments by several members of the team, we considered ways of making purchases through local people so that we might get a precise notion of prices, we devised ways for actually weighing the quantity purchased so that we could know exactly how much each commodity cost per unit of weight and not be deceived by uneven measures or uneven heaping of the commodity at the top of the measure, and we regularly took multiple samples each day prices were to be determined.

We should have known better. Prices in open markets of the kind that characterize all of the African countries are, of course, widely known to all participants in the market. When the commodity is a staple foodstuff that may be purchased several times a week by most households, the price is in fact well known to almost everyone. Nor are the prices of staple foodstuffs, contrary to fairly general belief, subject to much bargaining in the market on any one day. As a consequence, it is possible to have considerably more confidence in the officially published price statistics than is felt by most people who have considered them.

We also found in the analysis of price statistics collected in the Fisher Street

¹⁷ Elon Gilbert comments in a letter of March 12, 1974, from Lagos: "I would like to think we have gone a bit further, at least in terms of generating hypotheses, if not in developing rigorous means of testing these hypotheses. . . . Short-run price fluctuations may be a response to short-run changes in a local supply-demand situation [analogous to the "box car shortage" phenomenon in American grain markets when temporary local shortages cause inversion of spot and futures prices]. The moderating influence of the larger supply-demand situation is slower and more indirect than in the case of the U.S. grain markets because of a shortage of large trader-speculators who are able and willing to move quickly between marketing systems in response to opportunities for profit."

Chapters 9 and 10 in *Marketing Staple Food Crops* speak to this question (10, pp. 252-57, 263-67).

market that conversion from the customary units of sale—cents per cigarette cup or cents per unit—into prices per pound probably introduced an additional error into the figures. Comparisons over time and between markets based on these derived prices per pound showed much greater day-to-day fluctuations and variations among markets than probably occurred in the eyes of the participants in the markets.¹⁸ When the unit of sale is by bulk or by the piece, it is the price by bulk or by piece that is important both to buyer and seller, and the price at which the bargain will be struck satisfies both in terms of the customary unit of sale. It does seem likely, however, that the second stage in price discovery may in fact be impaired because it involves some sort of judgment on the part of both buyer and seller of just what the quantity is that is being priced.

Only when we were able to distinguish between apparent changes in the price per pound caused by random errors of measurement and those intentionally made by sellers were we able to get confirmation of the familiar proposition that a change in the quoted price per piece or per cup is likely to be preceded by a change in the quantity of the foodstuff that it contains. It was necessary to use formal methods to remove what formal methods had introduced before we arrived at the phenomenon we were seeking.

The foregoing account of problems and difficulties—and failures—in our African marketing studies illustrates how some of the concepts developed in regional science research and in marketing research may be useful, and also how they may mislead. If this had been a more formal presentation, it probably could be demonstrated that we got into trouble when we overlooked some of the assumptions underlying the models we were using. But in many instances more precise examination of the extent to which basic assumptions were satisfied would not have helped because theory frequently does not predict the consequences of lifting assumptions. When this is so, all that the investigator can do is plunge ahead and see what happens. It is extremely important, though, that he keep his wits about him and realize how far the situation he is examining departs from those postulated in the models.

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APPENDIX
BASIC RESEARCH OUTLINE
(*Condensed*)

- I. General Setting.^a
 - A. Limitations of study.
 - 1. What are the approximate boundaries of the area being studied and what is the principal market?
 - 2. What are the economically significant characteristics of the commodity being studied?^b
 - B. Agricultural production in the region of study.
 - C. Food consumption in the region of study.
 - 1. What are the characteristics of diets in the area studied?
 - 2. Are there significant variations in the diet pattern?
 - 3. Is there evidence of recent changes in food consumption habits?
 - D. Areas of food deficit or surplus.
 - E. What are the essential demographic characteristics of the region being studied?
- II. Organization of the Marketing System.
 - A. Product flow and exchange levels.
 - 1. What are the principal points where title to the commodities being studied is transferred? Where are they (e.g., farm, roadside, village, town)? When do they occur (e.g., before harvest, at harvest, weeks or months after harvest)? What is the form of the commodity when title is transferred? How are the terms of transfer established? What are they? What is the relative importance, in volume of produce, of each transfer point?
 - B. Personnel—agents.
 - 1. What are the intermediaries (defined as agents that own the product) at each stage in the market sequence?
 - 2. What are the distinguishing characteristics of each type of agent?
 - 3. Do marketing associations exist?
 - 4. Is there evidence of recent change in the above?
 - C. Facilities.
 - 1. Marketplaces.
 - 2. Shops dealing in staple commodities studied.
 - 3. Storage facilities.
 - 4. Processing facilities.
 - 5. Transport facilities.
 - 6. Credit institutions.
 - 7. Packaging supplies.
 - 8. Have there been recent changes in any of the above facilities?
 - D. Use of marketing facilities (questions to be asked with regard to each). Who may use? On what terms? How is the use of scarce facilities rationed? Who sets the conditions for use? Who are the principal users?

^a Information for this section will be obtained primarily from secondary sources.

^b To be answered for each commodity.

E. Behavior of marketing agents.

1. What are their sources of information about size of crop, commodity supplies, sales opportunities, and storage? How accurate and current is this information? How public is it? Is there information about the size and location of stocks?
2. How do agents decide on what inventories they should acquire and how long they should hold them?
3. How do they finance their operations?
4. What units of measurement and standards of quality are used?
5. What are the causes and incidence of risk?
6. What regulation of market activities is performed? Why? By whom? How enforced? How effective?
7. What is the nature of the sales (purchase) contract? What are the terms of payment (e.g., barter, cash, installment, term, on delivery)? What are the terms of delivery (e.g., time, place, amount, condition)? What are the penalties for nonperformance? Who enforces these penalties? How is agreement on price reached? Are terms of contracts widely known?
8. Are there customary rules governing the behavior of participants in a market?

III. Forces Affecting the Operation of the Marketing System.

- A. What are the incentives to enter the market?
 1. Do farmers sell because they need cash for specific and limited purposes or because they recognize money as an all-purpose good?
 2. To what extent do consumers rely on purchases in the market for their staple food supply?
 3. Do customs and traditions influence market participation directly?
 4. Do government agencies assist in the establishment and operation of market agents?
 5. Do nongovernmental agencies assist in the establishment and operation of market agents?
- B. What are the barriers to participation in the market at its various levels?
 1. Do customs and tradition inhibit market participation?
 2. Have government agencies set up barriers to market participation?
 3. Do nongovernmental agencies or local prejudice restrict entry to the market?
 4. Are there physical barriers to entry?
- C. How are prices set?
- D. How do market agents compete?
- E. What ethical or behavioral standards are observed by market participants?
- F. How profitable are the activities of market agents?
 1. Do earnings from trading compare favorably with those in alternative employment?
 2. Do earnings on capital compare favorably with potential return in other activities?
 3. To what extent are agents dependent on trading for their basic livelihood?

4. Is there evidence of monopoly profits arising from restrictions on entry? From buyer favoritism?
5. To what extent do trading profits derive from private information about size of new crop, stocks, prices in other markets, potential demand?
6. Are there economies of scale in trading activities?
- G. Is there evidence of recent change in forces affecting the operation of the marketing system?

IV. Governmental Policies in Other Sectors Which Have Major Impact on Market Organization and Performance.

V. Evaluation of Marketing Performance.

A. Performance in the eyes of the participants.

1. What are the principal complaints of farmers, traders, consumers?
2. Would participants in the market be willing to pay more (receive less) if some of the defect reported in A.1 could be corrected? How much?
3. What service now available do they consider to be overpriced? By how much?
4. To what extent do buyers and sellers believe they have adequate market information? What additional information would they like to have (e.g., crop prospect, supplies, stocks, quality, consumer demand, prices by grade and standardized measure of quantity)? To what extent do they believe themselves to be unable to discover representative prices being paid: within the market where they are trading, in other markets?
5. To what extent do buyers (sellers) believe they have no choice but to pay (take) the quoted prices?

B. How accurately do prices reflect all information about supply and demand that is in the system (or that might be)?

1. Does the difference in price over time, space, and form tend to approximate costs of storage, transport, and transformation?
2. Do prices react promptly when new information is received? Are sellers responsive to buyers' wants?
3. Is there evidence of price manipulation? By whom? How successful?
4. Are there upward or downward rigidities in the movement of prices (e.g., customary prices, price-defined units of sale, changes limited by smallest unit of currency, legal minimum or maximum prices)?
5. Are there buyers or sellers who can and will take advantage of changing price spreads?
6. Are most traders free agents?
7. Is there price discrimination on noneconomic grounds? Is capital rationed other than by interest rates and credit-worthiness?
8. To what extent is entry free?
9. To what extent can inventories of the staple being studied be used as collateral for loans?
10. Are forward sales permitted? Are they made?
11. Is there evidence of monopoly profit?

12. Do venturesome individuals enjoy the fruits of their successful ventures and assume the costs of their unsuccessful ones?
13. To what extent do traders distinguish their trading accounts from personal accounts?
14. Can contracts be enforced?
15. Can standards and grades be certified in a manner acceptable to buyers and sellers?
16. Is there rapid and reliable transmission of information, instructions, and goods throughout the marketing system?
17. To what extent is each of the commodities studied fungible?
18. Does exchange at any point tend to be dominated by very few agents?
19. Do marketing associations inhibit or assist free and informed action of agents? Do governmental agencies?
20. Are the terms, on which services of market facilities can be obtained, responsive to changing conditions of supply and demand?
21. Do agents command sufficient firms to enable them to survive occasional large losses? What is the age distribution of trading units (as traders)?
22. More? Growing out of previous sections?
23. Is there evidence of recent change in any of the foregoing?
- C. Could technical efficiency of the marketing system be improved significantly by reallocation of existing resources, including labor and ancillary facilities?
- D. Where would new investment in the marketing system contribute most to its effectiveness in allocating supplies and in stimulating increased productivity; at what cost?
- E. Are there extra-economic social goals that the marketing system must meet (e.g., providing minimum adequate diet at specified cost; serving isolated communities [producer, consumer] at a loss; stimulating or inhibiting certain kinds of production; increasing or decreasing the economic power of particular groups; and so on)?