

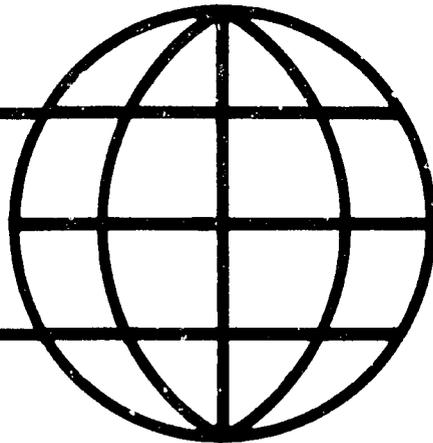
**COOPERATIVE AGREEMENT ON HUMAN SETTLEMENTS
AND NATURAL RESOURCE SYSTEMS ANALYSIS**

MARKET CENTER ANALYSIS IN THE URBAN FUNCTIONS IN
RURAL DEVELOPMENT APPROACH

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INTRODUCTION

To the extent that nucleated settlements are focal points for the economic, social, administrative and ceremonial activities of the surrounding smaller and more dispersed settlements, they are "central places" with "areas of influence." Such central places are indispensable elements in the functioning of the rural and regional economies, articulating the diverse specialized forms of production and consumption, and facilitating numerous forms of interaction and exchange. Their mere existence, however, is no guarantee of "equity" or "harmony," and in many parts of the world the existing central place systems stem, in large part, from pre-colonial and neo-colonial settlement systems based upon the extraction of surplus value from the rural economy through urban control of administration, law and order, taxation, land ownership, credit, supplies of agricultural inputs, and the terms of trade governing the exchange of rural products for urban and foreign goods. The implementation of Urban Functions in Rural Development (UFRD) policies, therefore, must respond to two major objectives: first, to ensure the optimum distribution of central facilities in regional central place systems, so as to minimize the expenditure of time, effort and money in the use of such facilities while enabling them to operate efficiently; and, second, to ensure that central places and their surrounding rural settlements relate to one another in an essentially symbiotic fashion, eliminating exploitative relationships and major urban-rural inequalities. By achieving these objectives governments will ensure efficient service provision, the functional articulation of the regional economy, and the harmonious integration of the urban and rural economies.

Of all the central functions associated with central places in Asian, African and Latin American countries, perhaps the best-known and most significant is that of marketplace trade. The presence of a market is a key indicator of centrality, and within nucleated settlements the marketplace is generally the focal point for other service activities. The location and level of activity of shops and warehouses, for example, is usually conditioned by the location and periodicity of market activity, with shops and warehouses grouped around the marketplace and doing most of their business on market days. Those central places which have marketplace trade can be described as "market centers," and the analysis of their levels of activity, functional relations, flows, linkages and areas of influence, can be described as "market center analysis."

THE DEFINITION OF MARKETS AND MARKET CENTERS

Periodic and daily markets

The term "market" is used here to refer to a public gathering of commodity buyers and sellers meeting at an appointed or customary location at regular intervals ranging from daily to monthly. Most markets meet at least once a week, though the length of the week varies between different cultural areas of the world from two to fourteen days (Webster 1916, 101-23; Nilsson 1920, 324-36). Nucleated settlements with one or more markets each week are described here as "market centers," or simply as "centers." Descriptions of the "size" or "importance" of market centers relate to their amounts of market activity, while statements about the size of the settlements itself, as opposed

to the size of its markets, are expressed in terms of "the population of the center."

It is conventional to differentiate between "daily markets" which meet on every day of the week, or at least on every day except for officially decreed rest days, and "periodic markets" which meet less frequently than daily. It should be realized, of course, that even daily meetings are in a sense "periodic" or "intermittent." Few markets have commercial activity continuously, day and night, every day of the week, and even if they do there are marked fluctuations in levels of activity depending on the time of the day or night. Daily markets are usually simply markets which operate daily between customary times, so that the marketplace is busy at those times, but is deserted or used for other purposes (e.g. sport) at other times. Hence, their periodicity is "daily" rather than "non-existent." It is still reasonable, however, to follow the conditional division between "daily" and "periodic" (i.e., less frequent than daily) markets, though in practice "daily" and "periodic" markets are often combined. Thus, particularly in the larger centers with substantial populations, "daily" market activity is supplemented on one to four days each week by "periodic" activity (Symanski 1973; Bromley 1974a, 1976). The number of periodic market days each week depends upon the length of the market week, the importance of the market center, the main types of products being traded, and a variety of local cultural and political factors relating to "customs," perceptions of societal norms, and competition from rival market centers (Bromley, Symanski and Good 1975). When there is more than one periodic market day each week, one is usually significantly more important than the other(s) and can be described as the "major market day" (Symanski 1973, 262), the other(s) being "secondary market day(s)."

Combinations of periodic and daily markets in the same center can be arranged along a continuum ranging from "totally periodic" to "stable daily" markets, using the coefficient of variation in levels of market activity from day to day over the week as a basis for assessing the relative importance of the "periodic" and "daily" components (Bromley 1974a, 57-8; 1976, 108). Alternatively, a range of classificatory categories can be used, such as "simple periodicity," "modified periodicity with weak daily components," "strong daily components with periodic bursts of activity," and "daily" (Sada, McNulty and Adalemo 1978, 158).

Marketplace, market center, and marketing system

Market gatherings are usually held on public or government-owned land, though a few are held on private land with a rent being paid to the owners by either participants or the local government. The sites of market gatherings are known as marketplaces, and a center may have one or more of these sites. Some marketplaces are enclosed by walls or fences, many have some semi-permanent private stalls, and a substantial number have been modified, either by the local authorities or by private enterprise, into permanent market buildings with stalls available for rental. Most frequently, however, a marketplace is either an open square, a wide street in the central part of a nucleated settlement, or a field on the edge of a settlement.

The day-to-day variations in trading activity of such nonmarket commercial establishments as shops, supermarkets, and wholesale warehouses usually

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resemble those for marketplace trade (Beals 1975, 114-33; Lockwood 1975, 184-89). There is normally a close relationship between levels of market centers and between market centers per se. Thus many transport services are oriented towards carrying people and goods to and from major periodic markets and itineraries are strongly influenced by market periodicity (Gould 1960, 135-58; Bromley 1983).

In a center with only one marketplace, a "market" is the gathering of buyers and sellers which occurs either daily or, in the case of periodic market activity, on a given day of the week. Most centers with more than one marketplace have broadly similar regimes of market activity in their different neighborhoods and marketplaces. Thus, the whole center has more-or-less the same periodicity and day-to-day variation of market activity, and hence it can be considered as a functional unit. In discussing such centers, a market is most easily considered to be the total market activity in a center on a given day so that a center with more than one marketplace, like a center with a single marketplace, has as many markets as there are days with market activity and each market may be "labelled" with the name of the day on which it occurs (e.g., the Friday market). In large cities, however, intra-urban, periodic market gatherings are sometimes found in different neighborhoods, each marketplace having a different periodicity. This is the case, for example, in Mexico City (Pyle 1978), London (Buzzacott 1972), Singapore (Young 1978), and Quito (Bromley 1974a). In these rather unusual cases (hereafter described as intra-urban periodic markets), it is best to consider each marketplace as a separate "subcenter" with its own markets within the overall context of the city, which can still be classified as a "center," and whose day-to-day variations in market activity are the aggregate of all the subcenters.

Even in a region of uniform, slow, pedestrian travel, market centers are unlikely to be all of the same size and importance (see Trigger 1972, 578-79). Major administrative centers normally have relatively high levels of demand, and frequently require unusual commodities. Certain goods with high minimum range (threshold) values (see Christaller 1966, 54) can only be offered at the largest market centers. Furthermore, central goods are likely to be cheaper in large centers because of scale economies in production and marketing. For these reasons, particularly at major administrative centers, a few very large markets are likely to develop. These markets not only serve their local market area's general needs and special requirements, but also provide for the special requirements of the market areas of neighboring smaller market centers. Eventually, a variety of different sized market centers will evolve.

G. William Skinner (1964-5), in a widely quoted series of articles on "Marketing and Social Structure in Rural China," has developed what is probably the best-known and most sophisticated model of a closely integrated hierarchy of periodic and daily markets. Taking his inspiration mainly from Yang (1944) and Christaller (1933; 1966 trans.), he showed how the markets of China, before the communist take over of 1949, could be understood in terms of nested hierarchies of centers with hexagonal trade areas. The three main layers of his hierarchies were, in ascending order of size, the "standard," "intermediate," and "central" market towns, each with their corresponding market areas. In different parts of China, the hierarchies variously corresponded to Christaller's K=4 or K=3 networks. Each standard market town was involved in two or three intermediate market areas; each intermediate market town was

involved in two or three central market areas. In some areas, two additional levels existed in the hierarchy: "minor" markets at the bottom of the scale and "regional" markets at the top. By using simple, but rather arbitrary techniques, of spatial transformation, Skinner demonstrated a close degree of fit between his theoretical model and the pre-1949 market systems of parts of Szechwan. In many parts of the world, however, Skinner's hexagonal trade areas are obviously not applicable, even after the most extensive spatial transformations. Isotropic plains probably never occur in the real world and Skinner perhaps gave too much emphasis to the formal geometrical aspects of Christaller's reasoning. Because of this, Skinner neglected the more basic and universally applicable concepts of the maximum and minimum ranges of a good. His classification of markets into five hierarchical groups, "minor," "standard," "intermediate," "central," and "regional," has been reproduced in Mexico by Durston (1970, 43-49) and in Ghana by McKim (1972, 335-39). Modified versions of their classification have been used by a wide variety of authors in various different countries and continents (see Smith 1972; Jackson 1971; Crissman 1973).

In discussing hierarchies of markets and of market centers, it should be remembered that all hierarchical classifications of central places can be considered arbitrary, subjective, inflexible, or narrowly defined for specific purpose (see Smith 1965; Johnston 1968; Harvey 1969, 326-27). Furthermore, it can be argued that central places normally correspond to a continuous rank-size distribution (see Stewart 1947, 462-67; Zipf 1949, 374-444) so that hierarchical divisions into discontinuous classes are neither logical nor justifiable (see Vining 1955, 164-69). Beckmann (1958, 245), and Berry, Barnum and Tennant (1962, 102-04) claim to have reconciled the rank-size and hierarchical views of central place size distributions by introducing a stochastic element which blurs discrete steps in the hierarchy into a continuous series. In addition, Berry, Barnum and Tennant (1962, 102) and Garner (1967, 324) have suggested that the apparent conflict between hierarchy and rank-size can be resolved by considering the scale of analysis so that, in Garner's words, "aggregate analysis inevitably emphasizes the importance of continuous arrangements, whereas elemental investigations usually identify a hierarchy." Even if we accept these highly debatable arguments that hierarchical classifications of markets can be reconciled with the rank-size rule, it is possible to see the hierarchies from two contrasting viewpoints. One treats the hierarchical classes as being simply static, formal classification tools dividing markets into different size range. The other view sees the hierarchies as dynamic functional arrangements of central places, that facilitate exchanges of goods and services by vertical flows between different levels of the hierarchy, allow the optimum provision of services to the population, and enable higher and lower order service institutions to reach their optimum scales of operation so as to ensure adequate levels of profitability.

Because market centers within a region vary in size and function, they can be viewed as a system. As central place systems, these market centers play a major role in regional marketing processes because they act as the nodes in regional marketing chains. A marketing chain can be defined as the sequence of transactions and commodity flows of a good or service between the initial producer and the ultimate consumer. As economies become more sophisticated, a number of associated changes usually occur: the ratio of exchange to subsistence production increases, the average distance which products are moved from

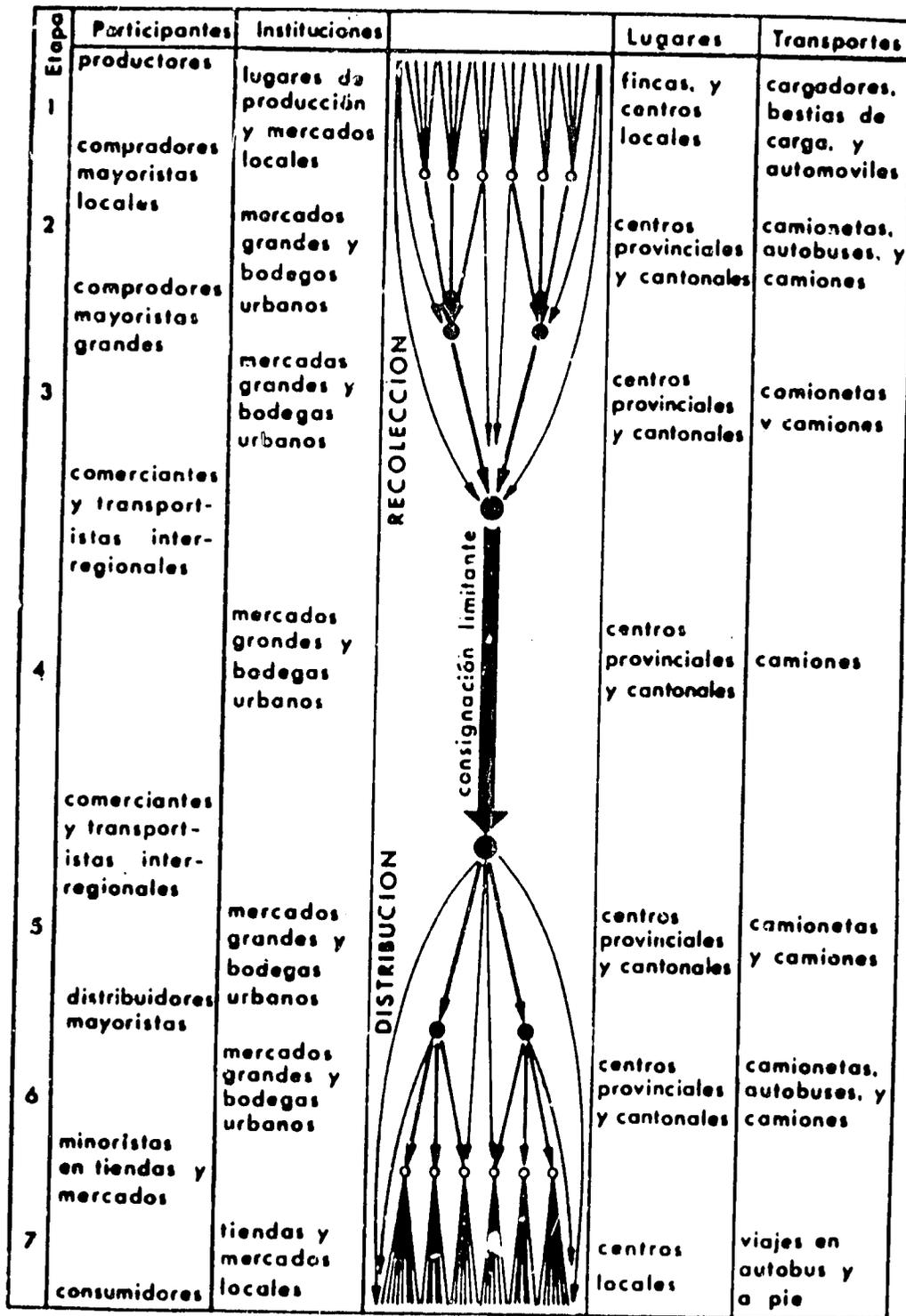
producer to consumer increases, producers become more specialized, the importance of direct producer to consumer transactions decreases, and hence, the importance of trading intermediaries increases. Trading intermediaries are usually divided into two basic groups, retailers and wholesalers, the former selling directly to the consumers, and the latter placed between producers and retailers in the marketing chain.

Trade can only occur between any two locations if there is "a potentially marketable surplus in one area and an effective demand in the other (Onakomaiya 1970, 7)." Hay and Smith (1970, 35-6; see also Smith 1970, 285-86), in discussing the inter-regional trade of Nigeria, identify five factors underlying the trading patterns: ecological differences and natural resources endowments; food deficit areas; strangers (migrants) and associated demand for exotic food delicacies; urbanization; and industrialization. In a further study (Smith and Hay 1969), they propose a valuable general theory of the spatial structure of the components of movement in internal trade. Three types of connections and terminals are specified: "inter-nodal flows" between urban centers or other forms of transport depots (e.g., from various period markets to a central warehouse); "inter-nodal links" between individual dispatching and receiving traders, each link being the total trade which passes between any two traders; and "trading strands," the individual transactions and consignments between traders, "which, when combined for all links over a given inter-nodal route, constitute the total trade flow." The marketing chain is divided into two parts; "bulking," or collecting, and "distributing." Bulking consists of the accumulation and transmission of successively larger parcels of a commodity until limiting consignment size is reached. Distributing is the reverse of bulking: the transmission of successively smaller parcels until finally, at their last transaction between retailer and consumer, they reach their minimum size. The wholesalers with most capital are likely to deal with the stages of marketing near the limiting consignment. In these stages, large loads are frequently transported long distances and economies of scale can be achieved by a high input of capital. In contrast, the stages at either end of the chain are characterized by high inputs of labor and low inputs of capital, major scale economies not usually being possible.

Figure 1 condenses the hypotheses of Jones (1968, 118), Smith and Hay (1969), and Onakomaiya (1970, 38) into a single diagrammatic model of internal trade in developing countries using terminology applicable to Latin American conditions. The model is best applied to the inter-regional trade of basic foodstuffs and artisan goods which have relatively large numbers of small-scale producers and many small-scale consumers. In local trade, when producers and consumers live in the same area, the hierarchical bulking and distribution processes are often replaced by direct producer-consumer transactions, or by marketing chains involving intermediaries but without bulking or distribution. In inter-regional trade, the existence of a single monopolist producer, for example, a major factory, would lead to marketing chains without any bulking process, but with a normal distribution pattern. Similarly, the existence of a single monopsonist consumer, for example, a food processing factory or an exporter, may lead to the elimination of the distribution process, to distribution of a transformed product, or to distribution in a foreign country. In the extreme case of inter-regional trade between a monopolist producer and a monopsonist consumer, there would be no hierarchical pattern of bulking and

FIGURE 1

A Graphical Model of the Stages of Interregional Trade in Products Which are Produced and Consumed in Rural Areas



SOURCE: Jones 1968, 118; Smith and Hay 1969; Onakomaiya 1970, 38.

distribution, but rather a simple transmission of limiting consignments in a one-stage marketing chain.

Compiling a listing of market centers and market days

In many parts of the world there are fairly comprehensive gazetteers or research studies listing the settlements with market activity and the days on which major periodic markets take place (World's Fair Ltd. 1974; Mid- West State of Nigeria 1969; Mitra 1953; Bromley 1975b). Where such listings exist, it is sufficient to check their coverage and bring them fully up-to-date. In areas where no significant listings can be found, however, a more laborious task must be undertaken combining interviews with direct field observation. For the region under study, key informants should be found who have a detailed knowledge of the distribution of commercial activity. They can provide an initial list of the principal market centers and market days. On visits to these centers, local informants can then be used to provide information on the smaller market centers and their market days. As many informants as possible given limited resources should be consulted independently so that opinions can be cross-checked. Field visits should be used to verify the information on a selection of centers and to check cases where informants disagree. If desired, further information can be collected using this combined interview and field visit approach, for example, on market specializations, on the relative size of market centers, and on approximate dates of market foundations.

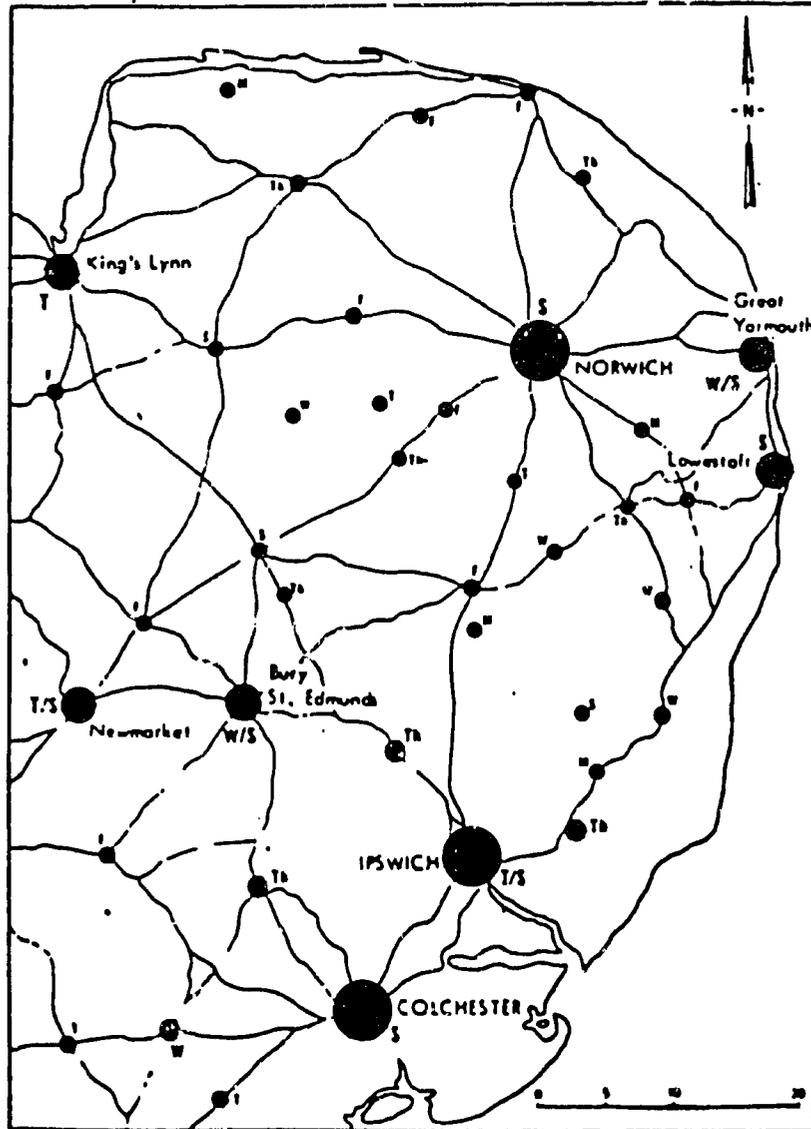
Having compiled a listing of market centers and market days, the information gathered can be condensed into a regional map marking and naming the centers, classifying them according to approximate size (e.g., "large," "medium" or "small"), and coding their market day(s). An example of such a map is presented in Figure 2. Such data can be complemented with information derived from interviews and/or observations regarding the product specializations of markets. If sufficient data are available, scalograms can be prepared showing the presence or absence of a variety of services in the different market centers.

If listings of market centers are to achieve comprehensive and systematic coverage, it is vital to establish a working definition of the "minimum size of market," allowing a location to be considered as a "market center." Such definitions are usually based on the number of stalls, "stall" referring to all independent retailing, wholesaling and service establishments on public land, whether fixed or mobile in location. The person in charge of a stall may be called the stallholder or trader, and he/she may work alone or may have one or more assistants at the same spot. The stallholder may display his/her merchandise on the ground, on his/her person, on benches or tables, in a booth or stand, or even in a motor vehicle or push-cart. To qualify as a "market," a place must have at least ten stalls open at least one day a week. Centers with as few as ten traders on their peak day of trading activity, however are of at least minimal significance.

A more realistic basis for defining market centers is to consider them as those settlements with more than 100 stall-days per week; that is, the number of stalls working on each day of the week, when added together produce a total of over 100. Such a definition takes into account the diverse mixtures of

FIGURE 2

Market Days in East Anglia



SOURCE: Berry 1967, 113.

periodic and daily market activity found in different centers, combining all activity into an aggregate number of stall-days per week. Thus, assuming a seven-day week, a weekly periodic market with 140 stalls working on one day each week is equivalent to a daily market with 20 stalls working on every day of the week, and their respective market centers are equivalent in size, each having 140 stall-days per week.

THE ROLE OF PERIODIC AND DAILY MARKETS IN THE UFRD APPROACH

Urban and rural service provision

The importance of marketplace services vis-a-vis other services, such as shops, warehouses, medical and educational facilities offered in the same central place, varies greatly between market centers in the same region, and even more so between different regions, countries, or historical periods. In some parts of the world, most notably West Africa, parts of Middle and Andean America, and parts of South and Southeast Asia, markets are the principal commercial institutions accounting for anything from a third to over two-thirds of local trading activity. In other areas, for example North America, Western Europe and Australia, markets have declined in significance relative to other forms of commercial activity, usually accounting for well under five percent of local trade. Such declines in markets activity are usually accompanied by increases in the importance of daily markets relative to periodic markets, increases in the proportion of market activity taking place in covered buildings, greater separation of retailing from wholesaling, and the growing specialization of market activity.

In general, marketplace trade is of greatest significance relative to other forms of commercial activity in areas where both production and consumption are fairly small-scale and labor-intensive, and particularly in relatively densely populated peasant farming areas with a substantial number of villages and towns. Trading activity tends to increase rapidly as such areas are more fully incorporated into networks of inter-regional and international commerce. Thriving local and regional market centers are to some extent both "cause" and "effect" of increasing levels of economic activity.

In the context of the implementation of UFRD policies, periodic and daily markets located in key central places can play a vital role in providing services to the rural population. To justify a commitment to strengthening such service provision, one can do no better than to quote Johnson (1970, 418):

Every rural producer should be within convenient travel time of some adequately competitive selling place for his produce, some equally competitive source of consumers' and producers' goods, and some adequately diversified service center. But these market centers are only the basic building blocks of a much more complex hierarchy of central places, capable of knitting the entire spatial economic structure together in a functional sense. For unless there is a graduated, interlinked, and functionally integrated market system which covers all of a nation's space, three serious handicaps inevitably result. There will be only fractional consumption; and even more unfortunately, there

can be only fractional social and intellectual development of a nation's human resources.

UFRD policies are oriented towards overcoming the isolation and poverty of much of the world's rural population by strengthening the whole hierarchy of service centers, and particularly by extending the hierarchy at the lower levels through consolidating some of the smaller service centers and by establishing new centers in areas without adequate service provision. At the same time as service provision is improved and brought nearer to the average rural dweller's home, there is an emphasis on feeder road construction and the improvement of rural-urban transport links, so as to overcome the more severe problems of "mobility deprivation" (see Moseley 1979) affecting rural areas. In some cases the emphasis may be placed on the "outreach" of services, establishing new service centers and mobile services in areas which previously had little or no service provision. In others cases, emphasis may be placed on the reorganization of rural settlement and the promotion of migration to local villages and towns, facilitating the "nucleation" of previously-dispersed settlement and the concentration of service provision in existing service centers.

Government intervention in marketplace trade as part of a UFRD approach

National, regional and local authorities may intervene in seven major policy areas directly related to marketplace trade so as to achieve some of the objectives of the UFRD approach.

First, they may establish new market centers in areas with inadequate service provision by designating market sites and market days and publicizing the foundation of the new markets. If such measures are to succeed, administrators must take account of accessibility, centrality and transport facilities, the availability of suitable sites for markets, the distances from competing market centers, and the preferences of the local population and outside traders.

Second, they may attempt to synchronize market days so as to increase the overall level of commercial activity. An integrated system of periodic markets has a wide spread of market days over the week and a tendency for neighboring market centers to have well separated market days so as to minimize competition between market centers and to facilitate the movement of mobile traders between markets (Smith 1971; Bromley 1976). Local authorities should attempt to convenience potential market participants by selecting market days for new markets which do not clash with those of neighboring marketing centers. Similarly, regional authorities may attempt to arbitrate between neighboring market centers that share the same market days so as to encourage greater integration in the spatio-temporal pattern of periodic markets (see Bromley and Bromley 1975).

Third, they can be more effective in using market regulation to improve the conditions and terms of trade for rural participants in commercial activities. In most parts of the world, local authorities are responsible for the maintenance of law and order in the marketplace and for taxing and licensing market traders. In addition, they may attempt to impose controls on prices, product quality and weights and measures, and they may intervene in the bulk-ing, distribution and processing of goods handled in the marketplace (see

Salzman 1928; Harriss 1977). Some degree of market regulation is essential to preserve law and order, and to prevent the development of exploitative monopolies and monopsonies in the workplace. In many cases, however, markets are over-regulated in the sense that market regulations actually inhibit free competition and lead to increased prices to the consumer and reduced prices to the producer. In general, market regulation has developed in a rather haphazard fashion, and little thought has been given to the objectives and implementation of particular by-laws. In order to facilitate effective rural development, market trader licensing policies should be modified or abolished so as to permit the free entry of rural producers as sellers. Controls on monopsonies may have to be enforced to improve the prices paid to rural producers for the products being bulked for shipment to other areas, and government may even have to intervene in markets as a competing buyer of local produce. Government investment, credits or subsidies may be necessary to ensure the installation of appropriate storage and processing facilities around the marketplace. In rainy areas, a roof may be required to shelter market traders and their goods. Although some of the costs of these facilities can be recouped by market and transport taxation, much of the expenditure may have to come from central government funds. High local market taxation is likely to deter potential participants from attending the market and to make prices more unfavorable for the rural dweller.

Fourth, in order to reinforce the potential of successful market sites as rural growth centers, governmental authorities can install complementary services around these sites. The location of such facilities as schools, clinics, community centers and silos next to established markets will not only guarantee a clientele from among the population who attend the market, but will also attract new people to the market and its associated facilities. Such locational strategies convenience the dispersed rural populations who can then make multi-purpose journeys to local service centers. Such strategies may also encourage the growth of substantial nucleated settlements providing a broad range of basic services to their populations and those of the surrounding rural areas. Particular effort is needed to coordinate the locational strategies of the different government departments concerned with providing services in rural areas in order to ensure that service facilities are agglomerated to provide a range of different services at the same site. Attention should also be given to the political and administrative status of successful market centers, upgrading those centers with growth potential and hence, facilitating their growth.

Fifth, mobile government services can be strengthened and oriented towards the sites of periodic markets on their main market days. Just as mobile traders visit different periodic markets on different days of the week so that they may reach a wider variety of customers, many government services can be provided on a mobile and periodic basis. Such modes of operation adapt well to an overall scarcity of government resources, a low density of demand, and a high concentration of local demand at periodic markets. Thus, markets may be used by vaccination teams (Imperato 1969), staff of mobile clinics, staff of mobile movie theaters, agricultural extension workers, home economics demonstration teams, and other government employees anxious to contact the rural population. Such workers are usually too few in number to be able to visit much of the rural population in their homes and resistance is often encountered to such invasions of domestic privacy. Hence, it is easier and more practical

to contact most of the rural population in the public marketplace. In order to work effectively, mobile teams visiting periodic markets must have a regular and well-publicized itinerary, and they should visit the markets during the hours of peak market activity. In general, only the more basic services, which do not require very sophisticated equipment or facilities, can be provided by mobile teams visiting periodic markets. It is useful for mobile teams visiting different centers to have a permanent base in one of the larger central places in their work area, enabling them to offer a wider range of services at the permanent base and to refer, or even transport, cases to the base.

Sixth, government authorities can play a vital role in market publicity, providing better information for traders and tourists about the location and periodicity of markets, and about local specializations and quantities of goods available.

Seventh, and finally, government authorities can ensure that all public services located in market centers are open on market days and during peak periods of market activity. This may seem obvious, yet in many parts of the world, public offices operate on weekdays and markets operate on weekends. For all types of services required by the rural population (for example agricultural credit, banking facilities and agricultural extension), the separation of weekday operations from weekend markets puts the rural dweller in an awkward dilemma; he must either spend two working days each week visiting the market center or forego either market trading or the use of public services. The adaptation of public services and commercial banks to market periodicity, in such cases, is the only way to maximize the use of such facilities and to ensure the efficiency of rural production.

MEASURING MARKET ACTIVITIES

Indirect measures: taxes, licenses, marketplaces and market buildings

There are many indirect methods of measuring levels of market activity in market centers. Market activity may be measured, for example, by comparing the levels of market taxes collected or the number of trading licences issued by the local authorities in each market center. In most countries, however, the local authorities achieve only a partial coverage in taxation and licensing, and there are often notable differences between centers in levels of taxation and in the coverage of tax collection and licensing. A simpler and more useful measure of the importance of centers is the number of marketplaces and/or the number of market buildings. Such information is particularly useful if it is known on how many days of the week each marketplace and market building operates. Though there is a broad correlation between the number of marketplaces and market buildings, and the levels of commercial activity in the markets of different centers, however, there are numerous exceptions. Both marketplaces and market buildings vary enormously in size, and a center with one very large marketplace operating to capacity on several days each week may well have more market activity than a center with four or five small marketplaces operating on only one day per week.

Direct measures: estimates of turnover and counts of traders

There are a few unusual areas in the world, most notably in Oceania (see Brookfield 1969; Epstein 1961 and 1969), where products entering the marketplace are checked and registered by the local authorities, permitting fairly accurate estimates of market turnover. This makes it possible for data on the volumes of goods handled can be linked with observations of average retail prices and counts of traders so that the volume and variety of market activity can be very closely documented. In most parts of the world, however, no such information is available and the researcher must start from scratch. Turnover can be estimated from counts of traders and from estimates of the average volume of transactions per trader. However, such work is laborious and results are highly questionable if there are large numbers of traders, if there is a considerable variety of merchandise, or if there are high levels of congestion in the marketplace. In these cases the researcher may be well advised to concentrate on counting traders, an activity which can be conducted rapidly and which does not require prolonged observation, interviewing, or linguistic comprehension of all market participants.

Counts of market traders should be conducted during hours of peak activity on main market days and if possible on secondary market days and ordinary days without periodic market activity as well. In general, such counts cover all stalls in the marketplaces and neighboring streets. They are conducted by one or more persons walking systematically along every street and row of traders, marking each stall as a line in a notebook or on forms attached to a clipboard. Traders can be classified by sex, type of merchandise, apparent age, ethnic, or regional origin. It is crucial, however, that the person(s) doing the count does not stop very often to interview traders or to respond to questions. Delays can lead to non-completion of the count during the two-to-three hours of peak market activity, producing either underestimation of the numbers of traders because of late completion or the need to count uncompleted sectors on the next equivalent market day.

During periods of peak activity, marketplaces are congested and bustling areas with considerable mobility of traders and customers. All counts conducted under such circumstances are subject to a degree of error, but most errors are likely to be minimized because some mobile traders will be missed as their patterns of movements happen to avoid those of the person(s) doing the count, while others will be counted two or three times as their paths cross those of the person(s) doing the count more than once. In order to avoid major errors it is best to make sure that the day of the count is a "normal" market day and not one affected by exceptional weather or special fairs and festivals, that the count is taken on peak hours of market activity, and that the whole market area is covered without omitting any sections or inadvertently counting the same section twice.

Each classificatory category in the count is a column on the counting sheet. It is important to assure that the width of the columns is roughly proportional to the probable incidence of each category in the total of traders. The definition of categories should be based on preliminary studies of several markets, noting which types of merchandise are frequently sold together and which types are almost invariably sold by different traders. An

example of such a set of categories derived from the author's work in Ecuador (Bromley 1975a, 51) is as follows:

PERISHABLES

1. Fruit, vegetables and flowers
2. Grains and root crops
3. Preserves, flour, bread, sugar, salt and fats
4. Meat, fish, eggs, milk and cheese
5. Food, drink and tobacco ready for consumption
6. Fuel and animal fodder
7. Small, live domestic animals

DURABLES AND SERVICES

8. Textiles, clothing and footwear
9. Metal, plastic and glass products, and medicines
10. Artisan products and raw materials (excluding clothing, footwear and metal goods)
11. Services (e.g. tailors, musicians and cobblers)

In cases where a stall buys or sells from more than one of the classificatory categories, it is classified under the category which is judged to account for the largest proportion of its total turnover.

Some researchers have incorporated data on stall "size" into the counts of market traders, dividing stalls by observation into two or three size categories and assigning to each category a weighting so as to produce an approximate equivalency between larger and smaller units. Bromley, in a study of highland Ecuadorian markets in 1970-71, classifies stalls into two size groups:

large, with a daily turnover of over 250 sucres (ten dollars), and small, with a daily turnover of under 250 sucres. Detailed informal interviews and prolonged observation of individual traders showed that the average 'large' stall has a mean daily turnover by value about four times as great as the average 'small' stall. On the basis of these data, it was decided to create a measure of daily turnover called the 'trading unit.' Each small stall working for one day is considered to be equivalent to one trading unit, and each large stall trading unit, and each large stall working for one day to four trading units. ... In the marketplace counts, trading establishments were assigned by eye into either the large or the small size categories, and

were classified into one of eleven categories of types of merchandise (Bromley 1975a, 49-50).

Livestock sales present a difficult classificatory problem. In many areas of the world, livestock accounts for a substantial proportion of the value of all market sales; perhaps a majority. In highland Ecuador, for example, 72 of the 164 market centers existing in 1971 had livestock sales, but these 72 were generally the largest centers and as such had the greatest total (general produce plus livestock) turnover. Taking all the 164 market centers together, livestock sales accounted for about 35 percent of total turnover, with 20 centers deriving over two-thirds of their turnover from livestock trading (Bromley 1975a, 325-27). All recorded livestock markets were periodic rather than daily, and were generally held in separate marketplaces.

Livestock markets are particularly difficult to study using counts of market traders or stalls. They do not have easily definable stalls, there is often no clear distinction between producers and traders, and the animals sold may be sold several times on the same day, or, in some cases, they may remain unsold. Livestock marketplaces are usually more confusing and disorderly than general produce marketplaces because many of the animals move of their own free will or are driven around by their owners, and because buyers and sellers may move from place to place as they bargain. Only a minority of the world's livestock markets have stalls or corrals, so that the simplest approach to estimating levels of market activity is to rely on official registration of sales if such procedures are well organized and yield comprehensive data. Where sales data are inadequate, it is necessary to count all animals in the marketplace at the peak period of trading activity, either by walking through the marketplace in a systematic fashion counting as you go along, or by taking a high vantage point and counting with a "bird's eye view." By studying livestock prices and comparing them with estimates of stall turnovers, it should then be possible to estimate an approximate equivalency between stall turnover and livestock values. In his study of highland Ecuadorian markets, for example, the author (Bromley 1975a, 53) established the concept of the "livestock unit," which was considered to be roughly equivalent to one "trading unit" in the general produce markets. The livestock in the marketplace were counted, and, on the basis of observations of 1970 average prices in several sample markets, were converted to livestock units as follows:

1 sheep or goat	= 1 unit
1 pig	= 2 units
1 cow, bull, or steer	= 15 units
1 horse or mule	= 7 units
1 llama	= 2 units
1 donkey	= 1 unit

Having established such equivalencies between "livestock" and "trading" units, and having conducted the necessary counts in the market centers of the study region, the regional systems of market centers can be analyzed either as two

separate studies -- livestock market centers and produce market centers -- or as a single study of market centers combining livestock and trading units into a single aggregate measure of market commercial activity (e.g., "market units").

Temporal fluctuations in market activity

Marketplace trade usually undergoes severe fluctuations in levels of activity from day to day during the week, and in some areas of the world, from season to season during the year. Weekly variations are usually very regular and predictable, corresponding to the sequence of periodic market days. So as to have a full appreciation of market activity, it is necessary to conduct counts on all periodic market days in the week, and also on at least one sample non-market ("ordinary") day. By multiplying the ordinary day activity by the number of ordinary days each week, and then adding the activity of the periodic market day(s) it is possible to derive a total for the market commercial activity of the week. This total can then be divided by the number of days in the week to produce the average daily level of activity. This data should provide a comprehensive source of information on day-to-day fluctuations in amounts and types of commercial activity and on the total level of activity in the market center in the season when the study was conducted.

Day-to-day variations in market activity can be presented as tables, bar graphs (e.g., Figure 3) or regional maps (e.g., Figure 4). It is in this latter form that they have the greatest visual impact, demonstrating clearly that the spatial distribution of commercial activity in a given region may be markedly different from one day to another, and that movements of transport services, traders, consumers and government service providers should be similarly adapted to these spatio-temporal distributions.

In Figure 3, the 22 largest produce market centers in highland Ecuador are presented in rank order by weekly total of produce trading activity. Each bar graph is accompanied by the coefficient of day-to-day variation of market activity over the seven-day week, a figure (V), which can range from 0, if all days of the week are exactly equal, to 2.65, if all market activity is concentrated on a single day. Some centers, most notably Quito (no. 1), the largest city, and Ibarra (no. 6), another of the larger cities, have a wide spread of market activity over the week, while others, most notably the relatively small towns of Saquisilí (no. 12) and Quero (no. 22) have an almost total concentration of their market activity on one day per week.

Figure 4 shows a fairly typical pattern of day-to-day variations in market activity in an essentially Catholic area of Latin America. Sunday shows a great predominance of small market gatherings, mainly taking place in small towns and villages to which the population of the immediate surrounding areas make dual-purpose journeys to attend both mass and market. The small Sunday markets are retail gatherings with a heavy concentration on the sales of cooked foods, alcoholic drinks and manufactured goods which are consumed frequently such as matches and soap. In contrast, the largest weekly periodic markets in the area are mainly held on Saturday and Monday, days to which they were shifted in the nineteenth century in an attempt to avoid conflict between the aggressively commercial and materialistic character of the larger markets and the supposedly sacred and "unworldly" character of Sundays. Overall, however,

FIGURE 3

Day-To-Day Variations in Produce Market Activity in the 22 Third- and Fourth-Order Produce Market Centers in Highland Ecuador, 1971. (At the top of each bar graph, the order of the market center, the major market day, and the coefficient of variation [v] are listed. At the bottom of each bar graph, the name and size ranking of the market center are given.)

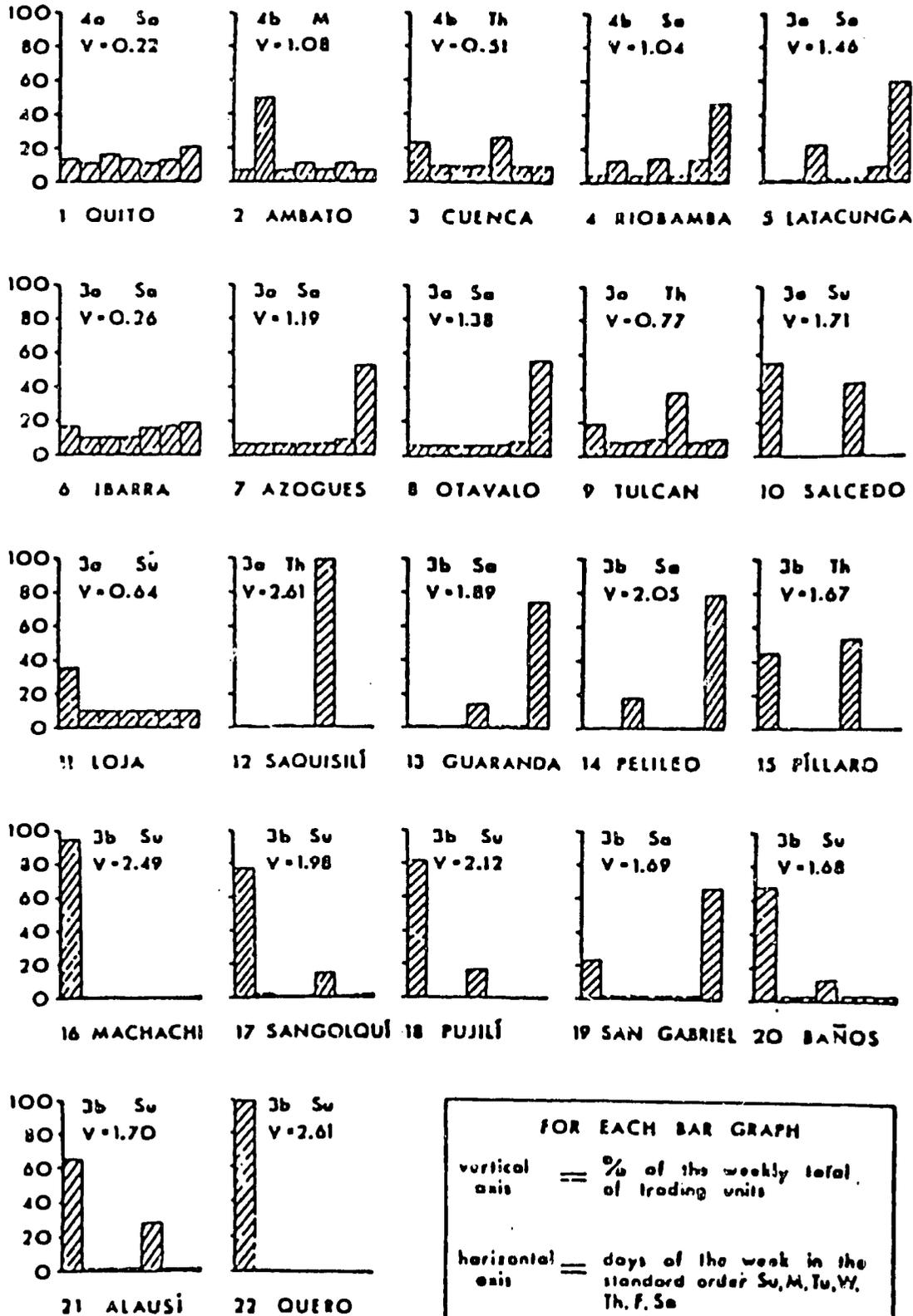
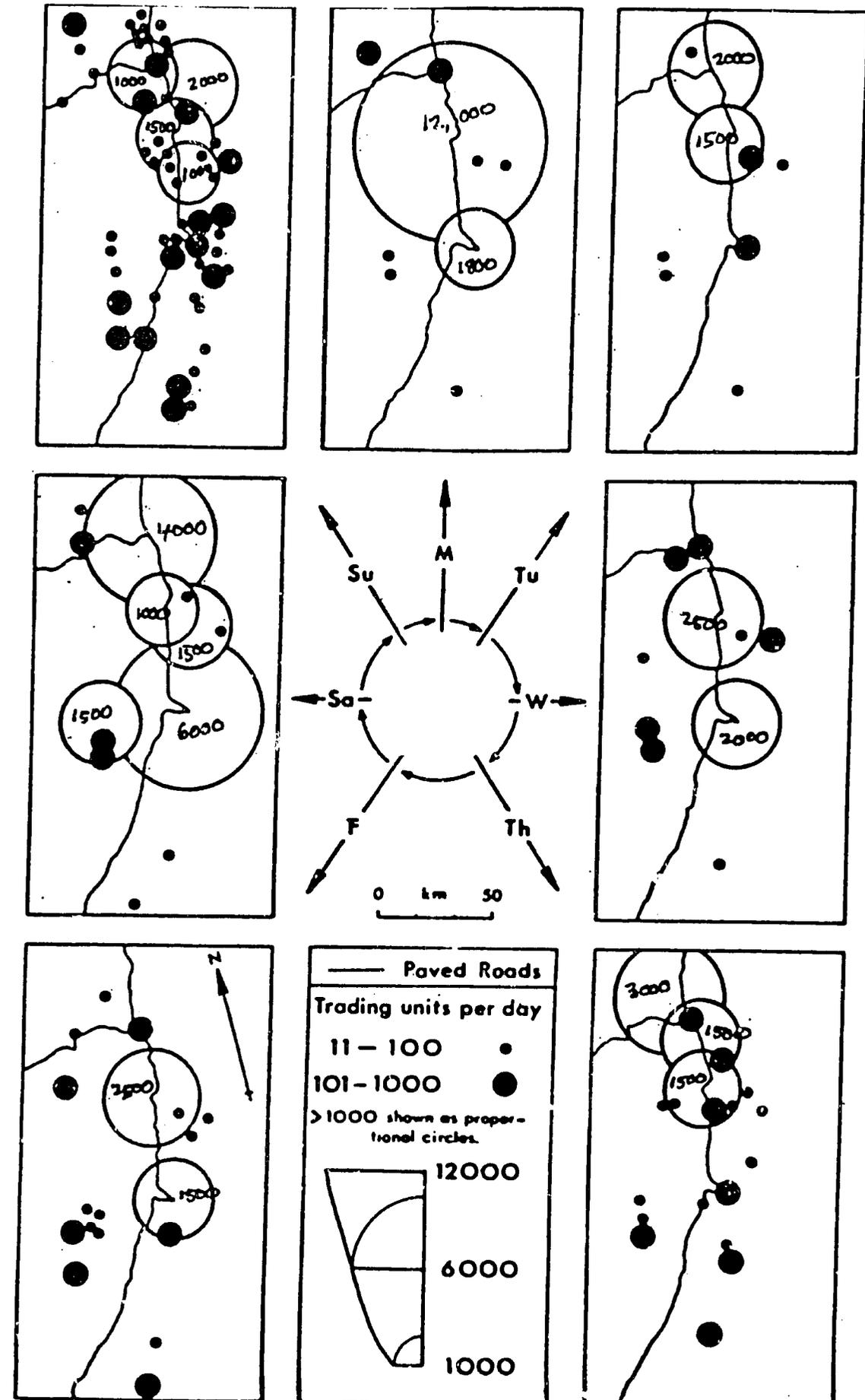


FIGURE 4

Day-To-Day Variations in the Spatial Distribution of Produce Market Activity in the Central Highlands of Ecuador, 1971.



there is still a concentration of market activity on and around the weekends. Most of the markets held around mid-week are secondary periodic markets in centers holding their main periodic markets at the weekend. Thus, the spatio-temporal distribution of market activity in the region is determined by a mixture of historical legacies, cultural and economic criteria. Because of such factors, the authorities must take great care in selecting new market days and locations in order to avoid cut-throat competition with existing centers and, at the same time, to fit in with established divisions of time between religious activities, recreation, commerce, and the production of goods.

Seasonal variations in market activity are relatively insignificant in some areas of the world, relating to little more than minor changes in the composition of the products on sale in the markets, while in other areas of the world, where there are marked summer and winter or wet and dry seasons, they may be of enormous importance. In areas with poor road communications, for example, wet season market attendances may be less than half those in the dry season; the quantities of agricultural products being bulked in the marketplace may well be reduced to zero for several rainy months. Under such circumstances it is best to conduct counts of market activity in two periods of the year: at the height of the summer or dry season and at the height of the winter or wet season. Such counts will produce a much more realistic estimate of market center size and specialization than data for only one season, providing a more accurate data base for such locational decisions as the selection of sites for warehousing and agro-industries. For government intervention in agricultural marketing, it is also very useful to collect data on the prices of major products being bulked in the marketplace at different seasons of the year. Once an appropriate methodology for market counts and price surveys has been established, regular repeat surveys can be conducted by a mobile team going from center to center in the study region, or they can be entrusted to local schoolteachers who, along with selected pupils, collect the data as an exercise in studying the local economic situation.

RELATING COUNTS OF MARKET ACTIVITY TO OTHER URBAN FUNCTIONS

The inventory of service centers

In order to have a comprehensive understanding of the relative significance of market and non-market activities in central places, it is necessary to broaden the surveys of market activity by taking into account non-market services. These broad surveys are known as "inventories of service centers," and are usually based on a combination of direct observations in each center and interview and questionnaire data supplied by the local authorities and sectoral government departments. For a selected study region, the data collection procedure and requirements might be as follows:

- 1) Attempt to produce a comprehensive listing and mapping of nucleated settlements and concentrations of commercial activity; i.e., all agglomerations of buildings with over 100 resident house holds and/or a daily or weekly market with more than 10 traders and/or more than 5 shops.
- 2) For all such settlements, specify:

- a. Population of nucleated area plus its location vis-a-vis other competing settlements and the road network;
- b. Political/administrative status;
- c. Religious status (number and type of religious buildings and whether clergy are present);
- d. Presence/absence of police/army and numbers;
- e. Number of scheduled bus services per week in/out of settlement and where services run to;
- f. Whether there is a market, on which day(s), including the market approximate number of traders selling in the market(s) each day, and numbers of livestock sold per day/week by type of livestock;
- g. How many shops are open on most days of the week for most of the year;
- h. How many small service establishments and workshops (tailors, carpenters, etc.) are open on most days of the week for most of the year;
- i. Any festivals with major inflows of visitors from other settlements with dates, any special characteristics, specializations, etc.;
- j. Number/size of primary schools, secondary schools and other educational establishments and numbers of teachers and pupils;
- k. Number/size of medical facilities by type and numbers of doctors, nurses, and beds, with the proportion of the week they actually work;
- l. Availability of electricity, drinking water supply, sewerage or other effective sanitation by number and proportion of houses supplied, and, if possible, quality/reliability of service;
- m. Amount/quality of street paving, parks, gardens;
- n. Presence/absence/capacity/use of market buildings, slaughterhouses, government owned silos, warehouses, food distribution shops etc.;
- o. Presence/absence/number of banks, post office, telegraph, telephone, and office or specific government departments (e.g., agricultural extension).

- 3) Using simple hinterland delimitation techniques (Thiessen polygons, watersheds of hills between settlements, ease of access to different roads leading to different larger settlements, etc.) approximately delimitate service area/population served by each settlement, using a simple 3-5 level model of a central place hierarchy.
- 4) For all roads, nucleated settlements, and concentrations of commercial activity, specify distance between settlements, road type/quality, and (if possible), number of regular scheduled bus services per week.

The variety of data collected in inventories of service centers all vary somewhat from country to country, and according to the specific fields in which government investment and regulation are most likely to take place. Thus, for example, mosques are only likely to be counted in Islamic countries. Details of the ownership capacity and characteristics of warehousing facilities are likely to be given special emphasis if the government is contemplating the establishment or reinforcement of a marketing board or other intervention in food wholesaling. In general, it is useful to present the whole inventory as a list or questionnaire in which facilities can be tabulated by presence/absence, numbers and capacity. The presence/absence data for the centers in the study/planning region can then be tabulated as a scalogram and the more detailed quantitative information can be weighted and condensed into a centrality index (see Rondinelli 1980, 20-32; Haggett, Cliff and Frey 1977, 139-90). Such tabulations permit the identification of key "missing functions," and also the classification of centers by size and functional diversity in order to provide a ranking of centers and the basis for classification into hierarchical categories of importance. Finally, the data obtained on regular transport services can be used as a further basis for hierarchical classification, permitting the ordering of centers and the delimitation of service areas (see Bromley and Bromley 1979; building on the work of Paver and McLintock 1935; Green 1948, and others).

In most inventories of service centers a marked contrast emerges between centers which are relatively well equipped with public services, but which have relatively little commercial activity, and other centers which are very important in commercial terms, but which have very inadequate public services. This contrast usually relates to the political, administrative and historical significance of the centers. The centers which are high on public services but low on commerce have usually held a high administrative status for a long time, and their authorities have used this administrative status to channel government investment to the center. In contrast, the centers which are high on commerce but low on public services are usually of low administrative status, and their authorities have not been able to obtain significant government support. These "high commerce/low public services" centers are usually located at road junctions or other strategic transport nodes in the middle of densely populated peasant farming areas. As nucleated settlements, they have fairly low populations relative to their levels of commercial activity, thus representing the classic "key market towns" to be reinforced with public services in a UFRD strategy. In contrast, the centers with "low commerce/high public services" are usually less conveniently located to serve substantial rural

populations, tending to serve the population of the nucleated settlement. In other words, they are not so much "service centers" as "well-served settlements."

The implications of the above generalization for the implementation of a UFRD strategy are considerable. Such a strategy must be based on a "General Service Center Plan" (GSCP) for a whole zone or region, specifying, on the basis of an inventory of service centers, which ones require reinforcement as well as specifying the means by which they should be reinforced so that they can play a greater role in stimulating rural development. The methodology of GSCPs has been particularly well developed in India (see Roy and Patil 1977, 15-34), yet the implementation of such plans both in India and elsewhere has tended to be partial and distorted, favoring centers with strong local authorities rather than centers with "high commerce/low public services" and greater potential to act as "key market towns." The result has often been the intensification of benefits to centers with little potential to service their surrounding rural areas, and even worse, the reinforcement of urban-rural differentials and the exploitative/parasitic functions of urban centers in predominantly rural areas. What is required to break these local monopolies is an alliance of interest between regional authorities and organized groups of the rural population, facilitating the concentration of service provision in centers which currently have high levels of commerce and poor public services, simultaneously protecting and supporting the increased participation of rural producers in marketing, processing and savings/loan activities.

As an extreme, but highly illustrative, example of deliberate policies to bypass existing central places and to create a new set of central places more effectively attuned to the needs of the rural population, it is worth citing the case of Bolivia, and particularly the northern Altiplano after the revolution of 1952 (see Clark 1968; Preston 1969, 1970). Land reform measures broke up large estates into smallholdings, generally handed over to or forcibly taken by the former estate workers. Before 1952, the large landowners sold estate products in bulk direct to the mines or to traders in the cities. Local markets were relatively rare and were unimportant institutions for local exchange and limited purchase of city-made goods. After the revolution, the new peasant proprietors sold an increasing proportion of the crops to collecting wholesalers in local markets. The wholesalers, a new entrepreneurial class, frequently of rural origin, then passed the products through an extended marketing chain to the consumers in the mines and cities. The former landlords generally spent most of their incomes in the cities. The peasants, however, earning a much greater income than before, made most of their purchases in the local market centers. Thus, the level of commercial activity in rural, high-land Bolivia increased considerably in the 1950s and 1960s. This led to a great expansion of some existing market centers where peasant syndicates had sufficient political power to ensure relatively competitive trade with little or no market taxation. In sharp contrast, it led to the deliberate avoidance of and induced decline of some traditional market centers where the local authorities enforced strict licensing and taxation policies to preserve commercial monopolies for the local townsfolk. Even more notable was the founding of new market centers by the peasant syndicates at strategically-located green-field sites, establishing weekly markets and gradually forming nucleated settlements around the marketplaces. Such locations have formed key articulation points for the rural economy, enabling the gradual nucleation of rural settlements and the increased participation of some of the rural population as traders and transporters.

Adapting to the long-term changes in central place systems

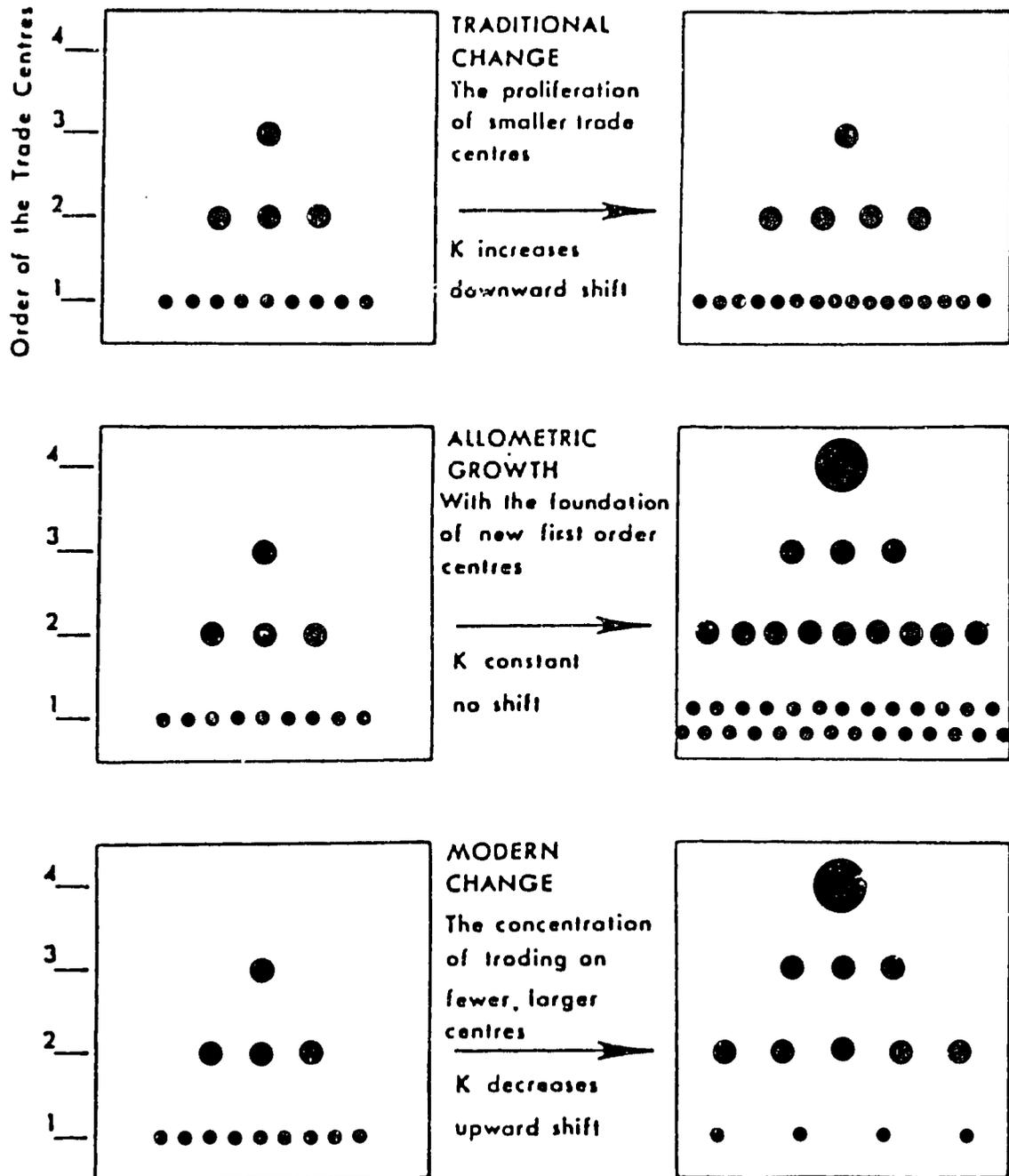
Any development strategy which is concerned with locating service facilities in existing centers or creating new service centers must be carefully attuned to the growth prospects of the selected places. It is all too common for facilities to be located in centers which stagnate or decline, leading to the underuse of service facilities and the evident misuse of investment funds. GSCP methodologies, which are based simply on an inventory of existing facilities and the "diagnosis" of appropriate new investments to improve service coverage, are extremely susceptible to criticism because of their essentially "static" and "ahistorical" approach. It is crucial that they be combined with population projections, studies of the probable distribution and impact of new communications links, and some "objective image" of the type of settlement system which should be created. In other words, the preparation of a good GSCP with a UFRD approach is an exercise in imaginative planning and not simply the routine allocation of missing services.

Planning is, of course, an exercise in selecting among feasible alternatives and, in most cases, it is foolhardy to try to go against firmly established and near-universal trends. Most governments have an essentially "incrementalist" approach to policy-making; moreover, radical reversals should only be attempted when there is a combination of strong conviction and intense political will. Systems of market centers alter considerably as demographic, environmental, economic, social and technological changes take place. Many of the most basic changes, such as population growth, urbanization, the shift of the labor force from primary to secondary and tertiary economic activities, the improvement of transport and communications, and the increasing significance of roads and motor transport as major influences on settlement patterns, are near universal in their impact.

Berry (1967, 114-15), following terminology applied to Chinese market systems by Skinner (1964-65, 195-228), has divided the growth of central place systems into two basic categories: "traditional change" and "modern change." Traditional change is likely to occur under conditions of population growth without transport improvements or more general socioeconomic modernization. It takes place by the addition of new, lower order market centers, the reduction of the market areas served by most of the older centers, and a general "downward shift" in the relative importance of the levels in the hierarchy. Thus there is an increase in the importance of the lower levels relative to the higher ones. Modern change normally occurs because of transport improvements and general socioeconomic modernization, and it is usually associated with population growth. It takes place by a decrease in the total number of centers, and a general "upward shift" in the relative importance of the levels of the hierarchy. In other words, there is an increase in the importance of the upper levels relative to the lower ones. Traditional change occurs through the proliferation of small market centers, while modern change occurs through the concentration of commercial activity into a few larger centers. Berry's dichotomy between traditional and modern change can be improved by the addition of a third and intermediate category of "allometric growth," where all parts of the central place system grow at the same rate, and eventually, new lower order centers are founded at the bottom of the hierarchy. If central place systems are represented as hierarchical pyramids (Figure 5), then there are three basic

FIGURE 5

Alternative Growth Patterns in Hierarchical Central Place Systems



pyramidal forms: a low, broad pyramid resulting from traditional change; a regular pyramid resulting from allometric growth; and a high, narrow pyramid resulting from modern change. The pyramid resulting from modern change may well be narrower at the base higher up.

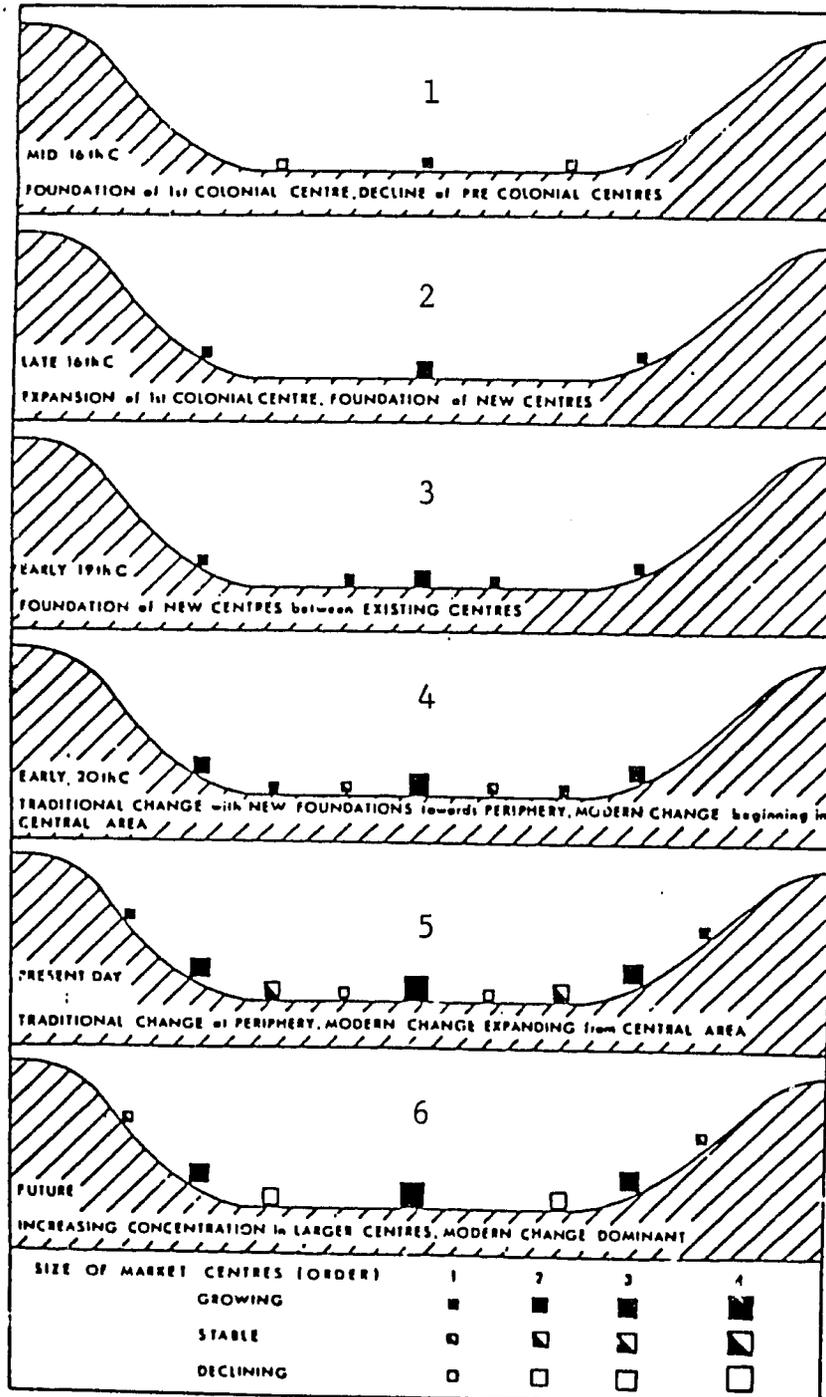
The assessment of whether a system of market centers is likely to undergo traditional change, allometric growth, or modern change in the foreseeable future is crucial to the adoption of a feasible service location and regional development strategy. Where possible, historical information should be compiled on the growth of the market system, facilitating the preparation of a regionally-specific historical and predictive model. Useful examples of such studies have been prepared by Good (1970, 209-22) for the Ankole region of Uganda, Eighmy (1972, 304-13) for Western Nigeria, and Bromley (1978) for highland Ecuador. The basic model prepared for highland Ecuador is presented in Figure 6, and its policy implications are fairly obvious: a reinforcement of investment and service facilities in centers which are growing and expected to continue to grow; a more modest level of investment in centers which are likely to remain static or to decline slightly; and the avoidance of "permanent" investment in centers which are likely to decline sharply or disappear altogether from the system of service centers. Such centers usually remain as residential settlements, but they lose their functions as service points for the surrounding rural populations. Their short-term investment and service needs can most effectively be catered to by the construction of temporary buildings, the assignment of visiting staff, and the visits of mobile services, minimizing long-term commitments and overall levels of investment.

Despite the utility of historical-predictive models as bases for determining levels of investment in different market centers, it is important to recognize that some centers will grow more or less rapidly than expected because of the impact of such difficult-to-predict factors as local natural disasters, the discovery of unexpected local resources, and the exceptional ability or incompetence of local authorities. Such factors underline the requirement for a degree of flexibility in the implementation of UFRD strategies, allowing public investment schemes to be modified during implementation. Such flexibility is facilitated when most investments are considered as stage-by-stage modular schemes, allowing increases in capacity whenever demand is clearly evident, but avoiding the creation of excess capacity without obvious evidence of demand. Market buildings, for example, can be constructed in 20-stall, one-story blocks, with an additional block being initiated each time that there is evident demand for more permanent stalls. The financing and maintenance of such constructions can be greatly facilitated by policies of sale such as installments, rather than long-term rent, reducing the administrative load on local authorities and encouraging the permanent commitment of local traders to the market center.

There can be little doubt that the dominant worldwide type of change in central place systems is "modern," with the gradual extension and improvement of road communications, a growing preference for urban living, and an increasing search for greater variety, competition and scale economies. Such factors underlie much of the tendency towards metropolitan expansion and national "primacy" which UFRD policies are intended to counter-balance, yet for UFRD to be successful it is vital that investments be concentrated in the more significant and strategically-located rural service centers. Particular attention should

FIGURE 6

A Six-Stage Cross-Sectional Model of the Development of Central Places in a Hypothetical Andean Basin



be given to ensuring that new trunk highways and transport services support the growth and functioning of the key market centers chosen for UFRD investments. In areas where the density of existing service centers is not particularly high and where there is substantial population growth, new settlement and colonization are expected, serious consideration should be given to the deliberate promotion of new urban centers at the meeting points of major trunk roads.

DEFINING AND CHARACTERIZING THE MARKET CENTER'S AREA OF INFLUENCE

In order to adjust the service facilities provided in a market center to the requirements of the population to be served, and also in order to be able to assess the impact of new feeder roads and other transport links on existing centers, it is important to be able to assess the size and characteristics of a center's service area.

Crude measures of areas of influence: administrative divisions, natural barriers, and Thiessen polygons

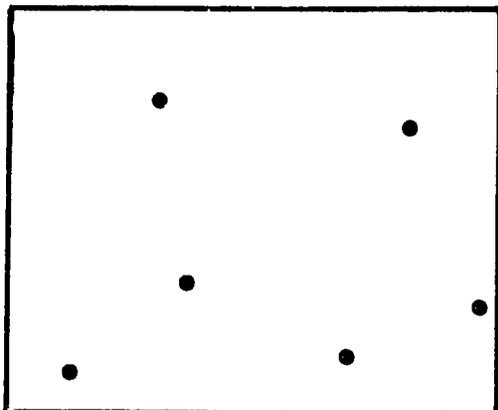
When time, personnel and funds are all extremely limited, it may be necessary to rely on the most basic and simply available information to make rough estimates of areas of influence. In many countries a market center's commercial area of influence is roughly coincident with a political/administrative area for which it is the capital. Even when political boundaries are not a good approximation, in commercial terms, there is an argument that these boundaries are more important than commercial ones because they represent the administrative jurisdiction of the center and the area over which the center's authorities have influence.

In mountainous areas with poor communications and a very uneven distribution of population, areas of influence may be sharply and unquestionably divided by barren and uninhabited mountains, deep gorges or unbridged rivers. In coastal areas, swamps, estuaries, and rocky capes may play similar roles as natural barriers and hinterland divisions.

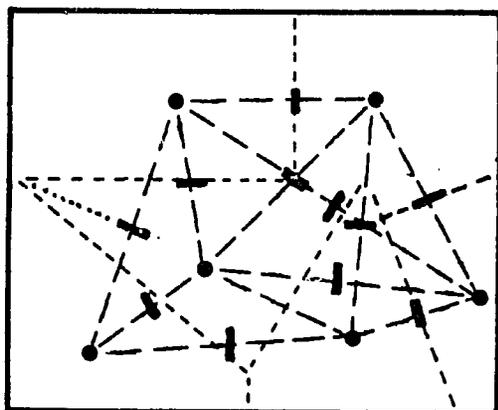
In fairly evenly populated areas with mainly pedestrian transport, Thiessen polygons may prove good approximations to the service areas of centers. They can be drawn quickly and easily on a map, assuming that all centers are of the same order, or that a hierarchical ordering of centers has been defined which establishes a nested hierarchy. The simplest case, without any form of hierarchical ordering, is diagrammatically illustrated in Figure 7. The Thiessen polygons are merely polygons around each service center with the dividing line (limit) between two polygons areas being equidistant from the two centers. They are drawn by joining all of the centers with temporary, pencilled straight lines, then bisecting these lines at right angles at their midpoints, then prolonging the bisecting lines until they cross one another, and then running out the initial temporary, pencilled inter-center links, leaving the bisecting lines as the polygon boundaries. A similar approach can be adopted to a nested hierarchy of service centers, delimiting the areas of influence of the higher-order centers, delimiting the areas of influence of the higher-order centers as higher-order polygons, then delimiting the areas of influence of all centers (higher and lower order) as lower-order polygons.

Figure 7

The Construction of Thiessen Polygons

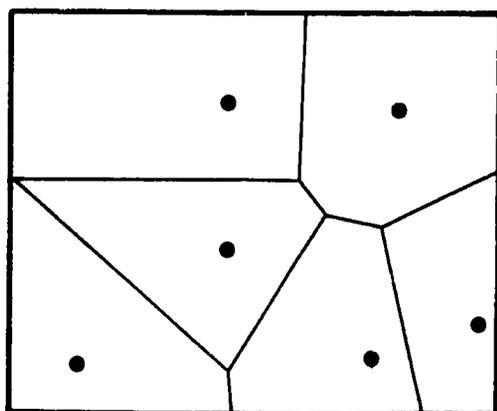


(A) Service Centers



(B) Construction Lines to Establish Polygons:

- inter-center links
- + - mid-points of the inter-center links
- prolongations of the bisection of inter-center links



(C) — Limits to the Areas of Influence of the Service Centers

Road transport data as a means of delimiting centers' areas of influence

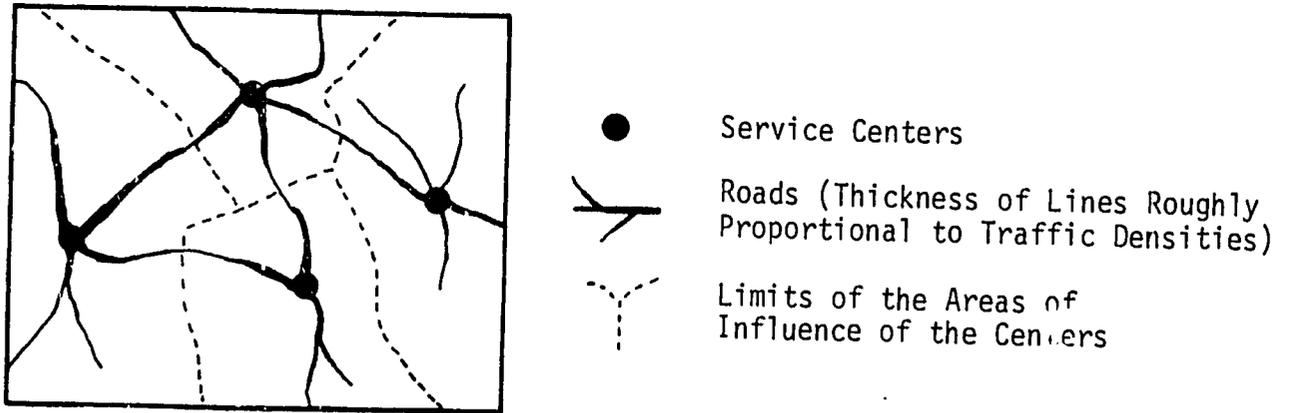
Thiessen polygons may be fairly accurate approximations to centers' areas of influence in the "isotropic plains" (flat plains of uniform resources) beloved of classical central place theory. They may also prove good approximations to centers' areas of influence in areas with very high density of roads and no major transport services other than those which run on the normal roads. In much of the world, however, there is a medium to low density of roads and a combination of pedestrian/animal transport and motor vehicle transport. In such conditions, and where adequate traffic data are either available or can be collected through new traffic censuses, service areas can be delimited using the basic principles set out by Paver and McLintock (1935). On all inter-center roads, the point marking the division between the areas of influence of two neighboring or comparably-sized centers is the point of minimum traffic in between the two. Where branch roads "feed" to a specific center, and do not have any function as inter-center links, they are considered to fall wholly within the service area of the center that they "feed." The basic principles of drawing Thiessen polygons are then applied to the division of service areas, bisecting the inter-center roads at the points of minimum traffic and establishing lines equidistant between the endpoints, and/or roughly parallel sections, of adjacent but unconnected feeder roads feeding to different centers (Figure 8).

Where a nested hierarchy of service centers exists, the technique of delimiting service areas from road traffic data can be applied successively to each level of the hierarchy, producing different orders of service areas in accordance with the order(s) of the service centers. It should be recognized, however, that traffic data is not usually available for sufficient points on the road network to permit the delimitation of lower-order service areas. Such data can be collected through new traffic surveys (on methodology see Bromley 1982a), but such surveys are relatively expensive and laborious.

In general, the most basic sources of traffic data in developing countries are the registers kept at police checkpoints, the registers of ferries and tollpoints, and the road-use surveys carried out by many Ministries of Transport. In many cases, however, a more comprehensive source of data is available for regular public transport services, or more specifically for bus services, through some licensing or control mechanism of who operates services from where, to where, how often, and when. Such registers allow public transport services to be mapped and card-filed, facilitating the assessment of center size in terms of the number of vehicles coming from centers with lower populations or lower centrality indices. Centers can then be grouped into hierarchical levels. For example, in an analysis of Ecuadorian central place systems based on registered bus services, Bromley and Bromley (1979) divide the 103 centers into three levels: 2 third-order centers (Guayaquil and Quito) of national significance; 16 second-order centers of regional significance, and 85 first-order centers of local significance. Such hierarchical levels can then be converted into maps of service areas, maps of inter-center flows, and diagrams of the functional structure of systems of centers (see Bromley and Bromley 1979, 429 and Figures 9 and 10).

FIGURE 8

The Delimitation of Service Areas Using Road Traffic Data



Whenever road transport data are used, it is vital to use total flows per week, month or year, or average daily flows, ensuring that all days have been taken into account in building up the flow data. Flows for single days may be grossly "distorted from the normal pattern" by the existence of periodic markets or special festivals on those days.

Questioning places of origin in the marketplace

A great deal of useful information can be gathered by "quota sampling" questionnaires in the marketplace. The quota sampling procedure is used because there is virtually never an accurate register of all the stalls and stallholders in a marketplace. Even where registers are supposedly complete, some "normal" traders may not turn up on a specific market day, some "exceptional" traders may turn up, or there may simply be no map or index by which specific traders can be located. Quota samples are based on a count of stalls/traders taken earlier the same day, and involve interviewing a specific proportion of all traders in each of the classificatory categories used in the count. For example, a 5 percent (one in 20) sample may imply interviewing twelve female vegetable sellers, two male vegetable sellers, five female clothing sellers, and eleven male clothing sellers. Interviewers then go out into the marketplace interviewing traders in each category until their quota of successful interviews is completed. "Refusals," "idiotic responses" and other negative interviews are simply replaced by another interview so as to ensure that the target is achieved. Within each category interviewers are instructed to ensure a reasonably broad spatial distribution of cases, bearing in mind the overall distribution of traders in that category, and to avoid concentrating on specific types of traders within a category (e.g., old vegetable sellers, rather than interviewing a mixture of old and young roughly proportional to their distribution in the total population of vegetable sellers).

Interviews based on quota samples can be used to find information about traders' origins, previous occupations, places of residence and overnight sleeping, working routes, means of transport, sources of merchandise, hours of work, and marketplaces visited. It should be recognized, however, that these are quick interviews not relying on any great rapport or previous contact between interviewer and interviewee. As much as possible, therefore, questions should be avoided on opinions, prices, intensely personal matters, and above all, incomes. If such questions are asked, they may well affect responses to much simpler and less controversial questions and answers are likely to be grossly distorted. Prolonged observation and intensive discussions with a few trusted (and therefore carefully selected) informants are likely to yield good data on opinions, prices, personal affairs and incomes, than broader, but more superficial questionnaire surveys.

Questionnaire data may be used to map the places of origin of the good sold in a particular market center, though it should be recognized that many traders do not know the ultimate origins of their products as they obtain them from a wholesaler in the same center or elsewhere and have taken little interest in ascertaining their origins. A common response, for example, is to say that manufactured goods come from a port city in the country, when in fact they come from overseas manufacturing centers like Hong Kong, Taiwan and South Korea. Some awareness should also be shown for the significance of contraband

in the trading of a significant number of products, producing deliberate distortions in some traders' answers.

A more useful measure of a center's "pull" can be derived from data on where mobile traders trading on periodic market days actually reside. This can be combined with data on trader routes to gain an idea of the functional inter-linkages between market centers and the degree to which groups of centers are functionally related in "circuits," "rings" or "cycles." A detailed review of such data, based upon eight major case studies in different parts of the world, concludes that:

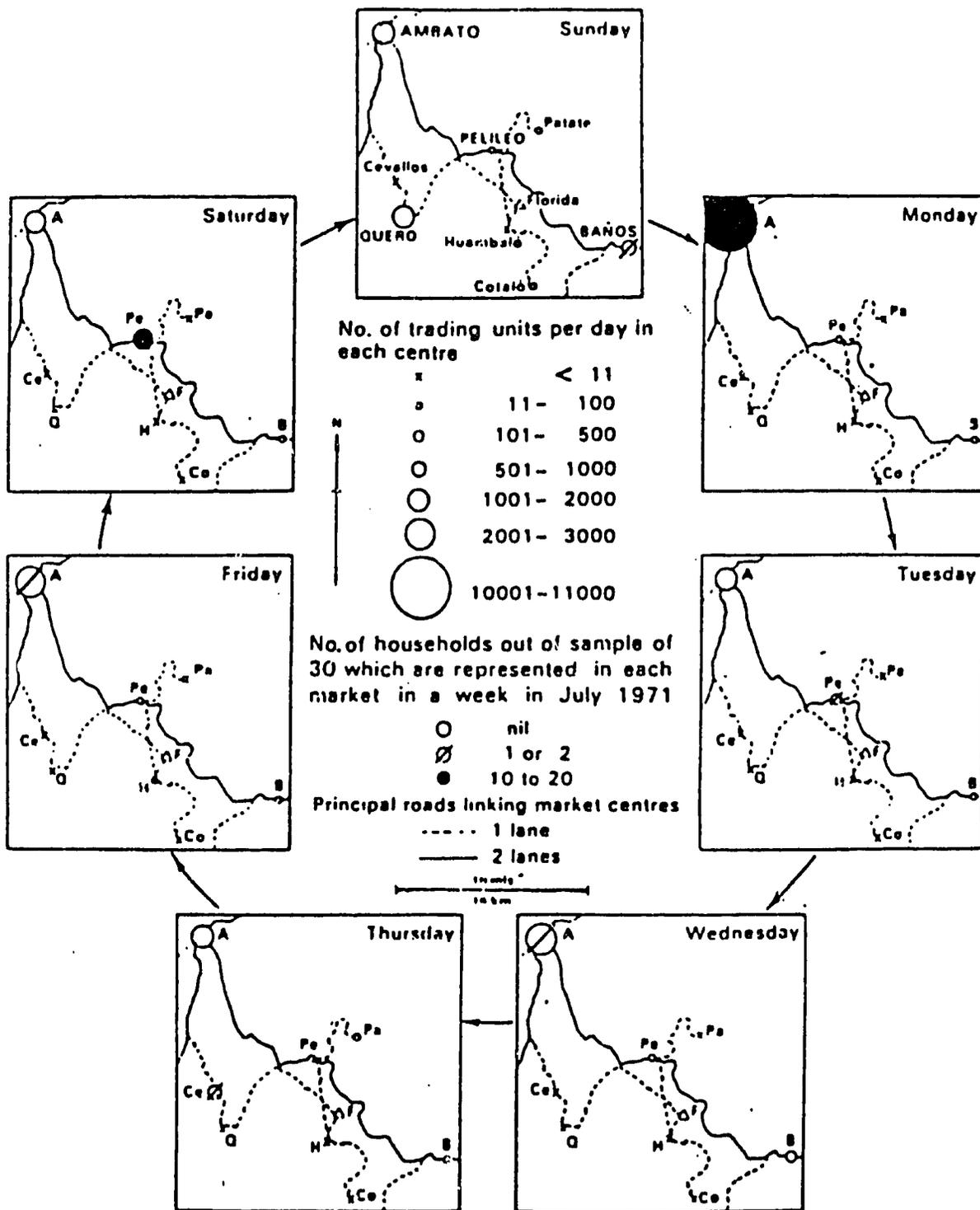
all (of the case studies) show considerable diversity in the working regimes of traders dealing in the same markets. In particular, they confirm the wide variety of mobile traders' activity patterns, the considerable significance of part-time trading, the predominance of home-based traders over traveling salespersons, and the rarity of en masse trader movements. They also emphasize the importance of such factors as sex, wealth/ poverty, other occupations (if any), type of merchandise, place of residence, and type of commercial activity (retailing, wholesale buying, etc.) as influences on the working regimes and activity patterns of traders (Bromley 1980, 168-9).

Finally, under the category of "questioning in the marketplace," a few researchers have questioned by-standers and passers-by about where they live. Quota categories may be applied in relation to the general structure of the population, taking proportions of "old adults," "young adults" and "children" according to the ages guessed by eye of the interviewer, but there is no easy way to relate the sample interviewed to the categories and proportions of market customers. In very approximate fashion, however, such interviewing may give an idea of where customers in the marketplace have come from in order to participate in the market.

In delimiting the areas of influence of comparable market centers on the basis of origin information, it should never be assumed that limits between areas of influence are rigid and that no one crosses them to go to a more distant market center. The market-visiting behavior of mobile traders is particularly complex and diverse, sometimes involving long-distance, inter-regional journeys. Even rural dwellers without major trading activity, however, may visit different market centers on different days of the week, or may divide market-visiting responsibilities within the household so as to participate in the activity of more centers. An example of such a behavioral pattern for thirty sample families is shown in Figure 11. In this particular case, the interviews were made at the family homes in their community of origin, but the basic conclusion is equally applicable to data gathered in market centers: that market visiting behavior in moderately-to well integrated systems of periodic and daily markets is highly variable. Behavioral patterns respond to distance, travel time and transport costs, but traders and customers may often prefer more distant, larger centers to closer, smaller ones, and distant centers may also be preferred because of their specializations in particular

FIGURE 11

The Aggregate Cycle of Point Patterns of Periodic Market Activity in Part of Tungurahua Province, Ecuador, 1971, as Defined by Market Visiting Behavior of Thirty Sample Households in the Dispersed Rural Settlement of Florida.



SOURCE: Bromley 1980, 145.

types of merchandise or because their main market day is especially convenient to the individuals involved.

Dividing lines between the areas of influence of neighboring centers are not so much "frontiers" as "equilibrium lines." It is assumed that persons living along the line will visit the two centers (A and B) with equal frequency. The line is therefore the 50-50 line in the percentage division of market visits between A and B. Going from the line towards A, the proportion of the population visiting A relative to that visiting B should steadily rise, while going towards B the opposite will occur.

Market movement surveys

These surveys involve simultaneous counts and origin/destination surveys of pedestrians and vehicles at all entrances to the market settlement during the build-up of a periodic market. Generally, this involves surveys on all entrances between 4 a.m. and 1 p.m. on the market day and, in some of the larger centers, surveys have to be made on the main entrances throughout the preceding night and sometimes on the day preceding the market. Such surveys are usually made by groups of volunteer secondary schoolchildren or paid assistants in the 15-25 age range. The surveys procedure is described in greater detail in Bromley (1982b) and is best suited to centers serving a predominantly rural population and having most of their market activity concentrated on one day of the week.

Before each survey, detailed plans and arrangements are prepared over a two-week period in five major stages: (1) to secure local collaboration from police, army detachments and, most important of all, from secondary schools or other potential sources of census-takers; (2) to map the perimeter of the market center, and all the roads and paths leading into the settlement; (3) to observe the flow of people into the market center on and before the major market day, in order to determine the starting and finishing times of pedestrian and vehicle flows into the market center for the periodic market; (4) to prepare a detailed plan of action, including timings of commencement and termination of work, dropping off the survey takers at their posts, serving refreshments, changing shifts, checking on efficiency, picking everyone up at the end of their jobs, and collecting the results; (5) to hold one or more briefing sessions for the six to one hundred people participating in the work.

The survey work at each entrance is planned to commence before any significant flow of persons enters the market center and to finish by the time inflows have diminished to relatively insignificant levels. The counting forms are divided into half-hour periods so that there is a register of how many people enter in each period. Arrivals before and after the survey on each entrance can then be estimated by projecting the frequency curve of arrivals to zero at both ends.

The survey-takers are divided into two groups, those dealing with "pedestrians," and those dealing with "vehicles." The pedestrian survey takers are positioned so that there is a pair of them on each road or path into the settlements, while the vehicle survey teams are similarly positioned but are usually assisted by a policeman or soldier. Those dealing with pedestrians have to record pedestrians including those riding on livestock, bicycles and

motorcycles on standard counting sheets by mode of transport, and to try to ask as many pedestrians as possible where they have come from on the day of the survey. Intelligible replies are recorded on separate counting sheets, providing sample data on origins to relate to the complete count of entries. The proportions of pedestrians from each place recorded in the sample are projected in the final survey results to give approximate origin information for all pedestrians using each entrance.

Motor vehicles are counted and classified by categories: for example a five-part classification into trucks, buses, cars, pick-ups and jeeps. They are stopped by the policeman or soldier assisting with the survey at that entrance, then their drivers or conductors are asked where the vehicle began the journey it is on and where the journey will end. The passengers are counted roughly by eye, and it is assumed that the great majority of them come from the area where the vehicle began its current journey. Observations may also be made of quantities and types of cargo and livestock in vehicles, and information on cargo may be requested.

Market movement surveys yield a very rich body of data about the relationship between a center and its area of influence, especially since it is relatively easy to make classifications more specific or to introduce additional questions. When the data for the various entrances are brought together, strong regularities show up in the spatiotemporal patterns of arrivals (Figures 12 and 13). In general, the larger the market center in terms of market activity, the more people it attracts from outside the center for its major weekly periodic market. In general, the larger the market center, the greater the proportion of the people attending who come by vehicle rather than on foot, on animals, or by bicycle.

Vehicle movements tend mainly to be medium- to long-distance, while pedestrian movements tend mainly to be short-distance. Overall, large centers attract market participants from much longer distances and larger areas than do smaller centers.

When several neighboring centers are cartographically interrelated by plotting the results of their market movement surveys on the same maps (Figure 13), there is a striking difference between pedestrian and vehicle movement patterns. While the service areas of the main centers are fairly limited and discrete in terms of pedestrian movements, they are strongly interlinked and overlapping in terms of vehicle movements.

Market movement surveys can be used to measure the quantities of agricultural and livestock products being brought into market and to gather data on the places of origin of these products. They also have considerable potential as tools for evaluating demand for access roads, measuring the principal pedestrians and commodity flows on specific axes, and facilitating the application of cost-efficiency criteria when such flow data are related to the construction costs of alternative roads.

FROM MARKETPLACE TO MARKETING SYSTEM: POLICY GUIDELINES FOR UFRD

UFRD strategies are based heavily on the provision of appropriate infrastructure in "key market centers," selected because of their strategic locations

FIGURE 12

Frequency Histograms and Cumulative Frequency Curves for the Arrival of People from Outside the Market Centers of Ambato and Penipe, Highland Ecuador, for their Major Weekly Periodic Markets

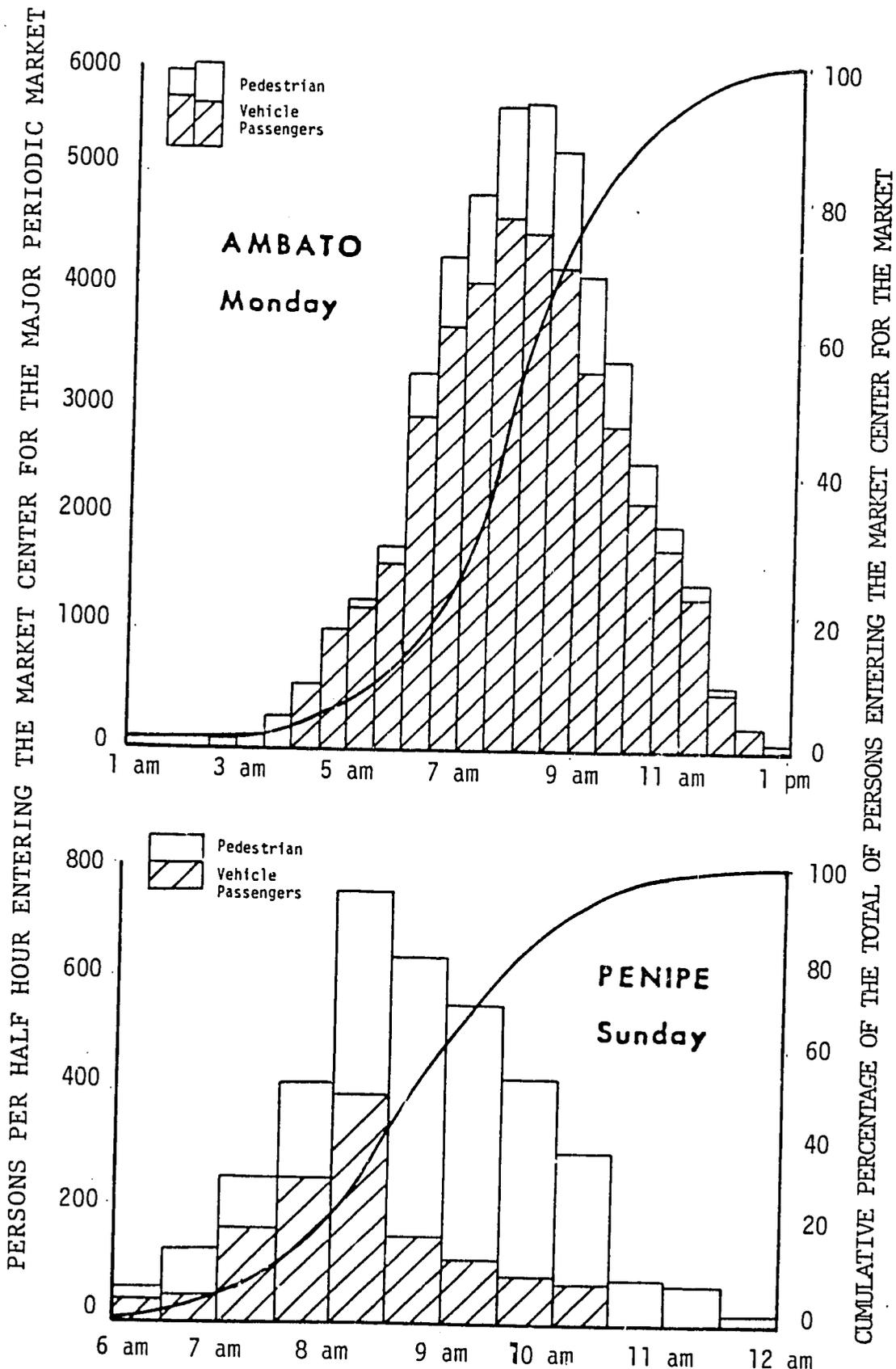
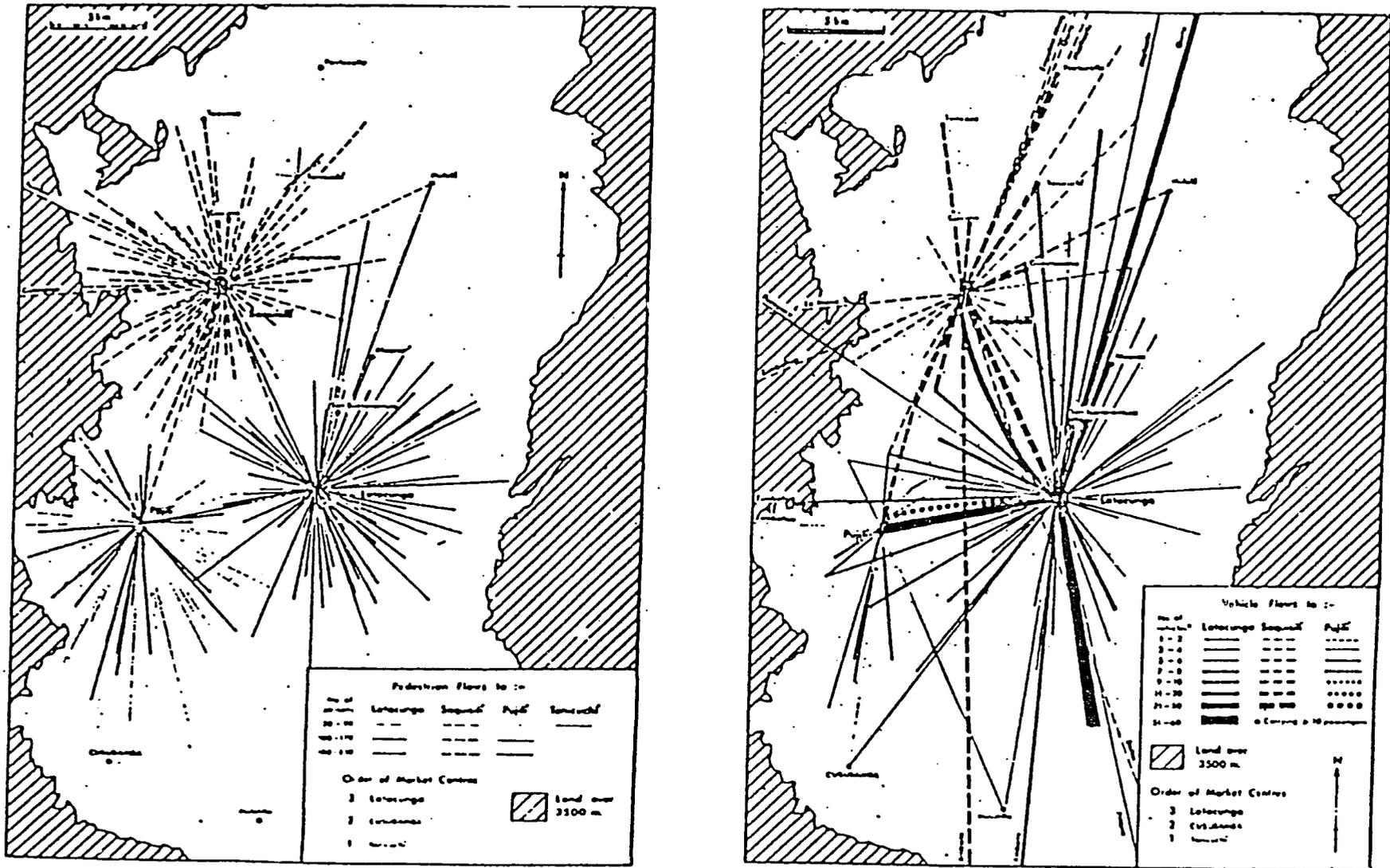


FIGURE 13

The Spatial Pattern of Pedestrian (left) and Vehicle Passenger (right) Movements to the Major Weekly Periodic Markets of Latacunga, Saquisilí, Pujilí, and Tunicuchí, Neighboring Market Centers in Highland Ecuador.



SOURCE: Bromley 1975a, 274-5.

and potential to contribute to rural development in their surrounding areas. The growth potential of these towns is increased by the construction of feeder roads to facilitate rural access to the urban services. Given investments to increase agricultural productivity, these roads can also serve to channel local produce at lower costs and in greater quantities to the towns. Not surprisingly, therefore, "appropriate infrastructure" for key market centers is usually taken to include marketing, warehousing and processing facilities for rural products.

Despite the frequently-stated need for better marketing, warehousing and processing facilities in developing countries, and despite the almost interminable tirades from all shades of the political spectrum against exploitative middlemen, hoarding and speculation, most governments have proven remarkably inept in their manipulations of the marketing system. Much of this ineptitude stems from a lack of clarity in the objectives and means of intervention, combined with a lack of basic knowledge of marketing problems.

The diversity of objectives for marketing reform

Marketing processes and marketing reforms in developing countries have generated a large bibliography (see FAO 1965 and its many later supplements). Unfortunately, however, most of this literature is singularly ambiguous as to whether marketing reforms should be considered in isolation, or as promoters of more widespread changes in social and economic relationships. Relatively little work has been done on the interrelationships of marketing structures with levels or stages of socioeconomic development. Furthermore, insufficient attention has been given in most countries to the changes in marketing processes brought about by socioeconomic changes such as land reform, the introduction of new cash crops, the alteration of rural settlement patterns, and the processes of urbanization and industrialization. Marketing reform is often naively seen as a simple process with one relatively simple goal, the "modernization" of the economy, by which is meant increasing efficiency and the substitution of capital-intensive methods for traditional laborintensive marketing techniques (see Drucker 1958). In practice, however, different reforms can have widely different aims, and the advantages gained through "modernization" may be offset by such disadvantages as increased socioeconomic inequalities, increased unemployment, the diversion of scarce capital from potentially more productive projects, and the growth of bureaucracy and corruption in the marketing system.

Marketing reform measures generally have one or more of the following thirteen aims:

- 1) To increase the prices received by primary and secondary producers for their products.
- 2) To reduce the prices which consumers pay for the goods that they buy.
- 3) To increase the "efficiency" of the marketing process by reducing the number of intermediaries and breaks of bulk, or by improving transport and handling facilities.

- 4) To reduce wastage by the application of appropriate preservation techniques in storage, packing and transport.
- 5) To stabilize prices through price-support or long-term stockpiling policies.
- 6) To standardize and control weights and measures in commercial practices, in order to prevent or as least reduce corruption, price-fixing, discrimination and the formation of monopolies and monopsonies.
- 7) To prevent, or at least reduce, trading in impure, low quality, unhealthy or contraband goods.
- 8) To increase the efficiency of taxation on commercial activities and/or to augment the total revenue acquired from such taxation.
- 9) To reorganize the locations or types of trading institutions through the provision of regulated markets, or the adoption of rural growth center strategies.
- 10) To diffuse information on prevailing prices through such media as radio, public announcements, handbills and the press, so as to reduce the likelihood of underpayment or overcharging by unscrupulous intermediaries.
- 11) To provide, or encourage the provision of, credit and savings facilities, in order to enable producers, intermediaries or consumers to avoid channelling their trade through the hands of moneylenders, and/or to enable producers and intermediaries to modernize their installations and techniques.
- 12) To encourage the vertical integration of commerce. This might be achieved by assisting producers to control marketing activities, by assisting intermediaries to control production, or by assisting consumers to control marketing activities.
- 13) To encourage the horizontal integration of commerce. This is normally achieved by the promotion of cooperatives, and is generally designed to enable groups of small-scale producers, intermediaries or consumers to obtain the scale economies and bargaining power possessed by their larger-scale competitors.

Each of the aims favors a particular section of the population, and most of them are likely to prejudice the interests of some other sections of the population. Thus, for example, reform measures designed to reduce the prices paid by urban consumers for food products may prejudice the interests of producers and intermediaries, and may eventually lead to reduced production and increased unemployment.

In the specific context of UFRD it is all too common to find that rural development strategies and the provision of marketing facilities for small farmers are undermined by national food policies involving the receipt of food aid, bulk importation of key commodities at "dumped" prices, price controls and the sale of government stockpiles - all intended to hold down food prices for the politically-articulate urban consumers. Such national policies remove most of the incentives for increased rural production and directly prejudice small farmers' incomes. Further problems occur when there is a heavy concentration on the provision of physical marketing, storage and processing facilities without any attention to the provision of agricultural credit. Many small farmers are unable to take up new marketing opportunities because their crops have been sold in advance of the harvest to middlemen offering vital, but expensive, credit. Indeed, crops may even be committed before they are planted if share-cropping arrangements have been made in return for access to land, seed, or other agricultural inputs. A final problem, especially significant for UFRD, are the numerous mechanisms which frequently ensure that commercial activity is a virtual oligopoly of the urban middlemen, effectively reserving all of the profits from trading activity for these groups and condemning the small-scale rural producers to a situation in which they sell cheap and buy expensive. Through a heritage of "internal colonialism" and "parasitic towns," many countries have trader licensing and control policies which operate in a highly discriminatory fashion in favor of the established interests of the urban center (see Dubly 1973). Substantial involvement of small farmers in marketing activities is further impeded by their inability to break into the urban land market, the ownership of trucks, or the tightly controlled circuits of large city wholesaling activities.

Even when there is a genuine attempt to orient marketing reforms to the needs of small farmers, specific interventions often fail because of a lack of knowledge of the special characteristics of the products involved. Even in the same regions, different products have highly different marketing channels and processes because of their different degrees of perishability, bulk/value ratio, and seasonality. Different products, for example, have different producing and consuming areas, and markedly different patterns of commodity flows between these areas (Figure 14). Similarly, they have strikingly different patterns of price fluctuations, gravely affecting the types and quantities of storage facilities which should be installed (Figure 15). Marketing interventions which fail to take account of such information usually result in badly-located and underused facilities, and in uneconomic buying, selling and storage policies. Storage and transport must usually be adapted to the precise physical characteristics of the products being handled, including susceptibility to heat, cold, humidity, pressure, sudden bumps, insect pests, vermin, and fungal infestations. Furthermore, many products have sharp variations in price depending on variety, quality, size and physical appearance, and blanket buying or selling policies can easily lead to financial losses and rejection by potential clients.

Policy-oriented research on marketing chains and prices

Any well-formulated intervention in marketing processes must be based on a thorough understanding of the marketing chains of the product(s) concerned, taking into account the structure of these chains, the factors influencing the behavior and incomes of the participants in the marketing process, and the

FIGURE 14

Patterns of Production and Distribution for Four Food Products in Ecuador, 1972.

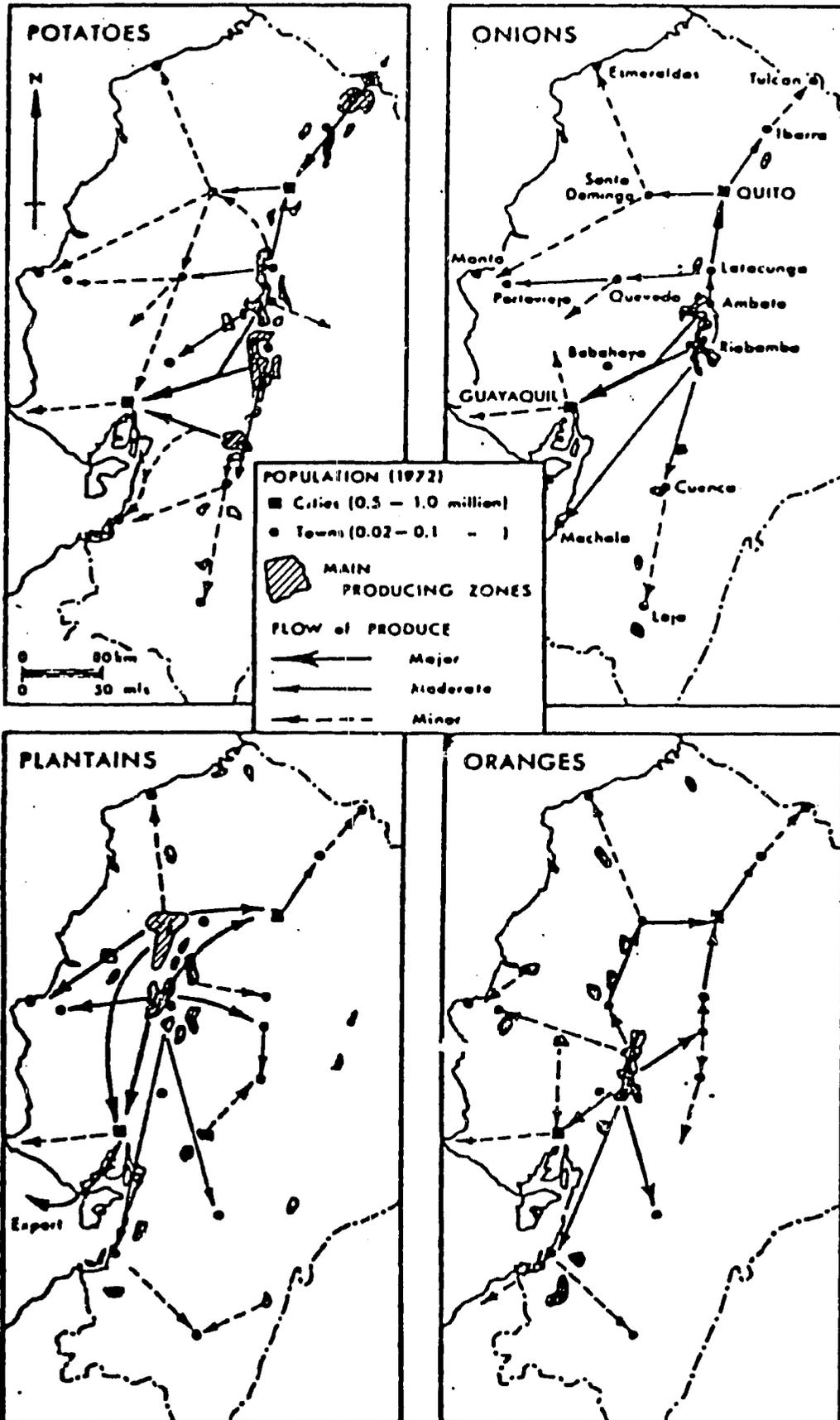
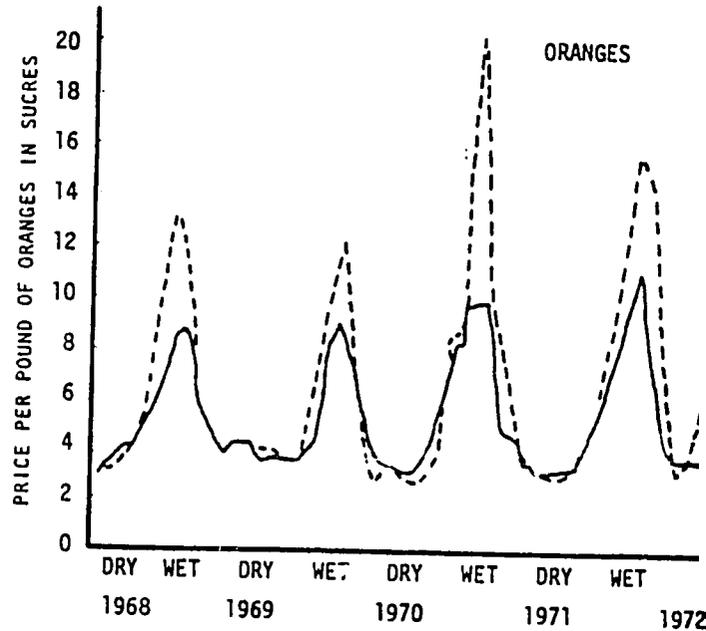
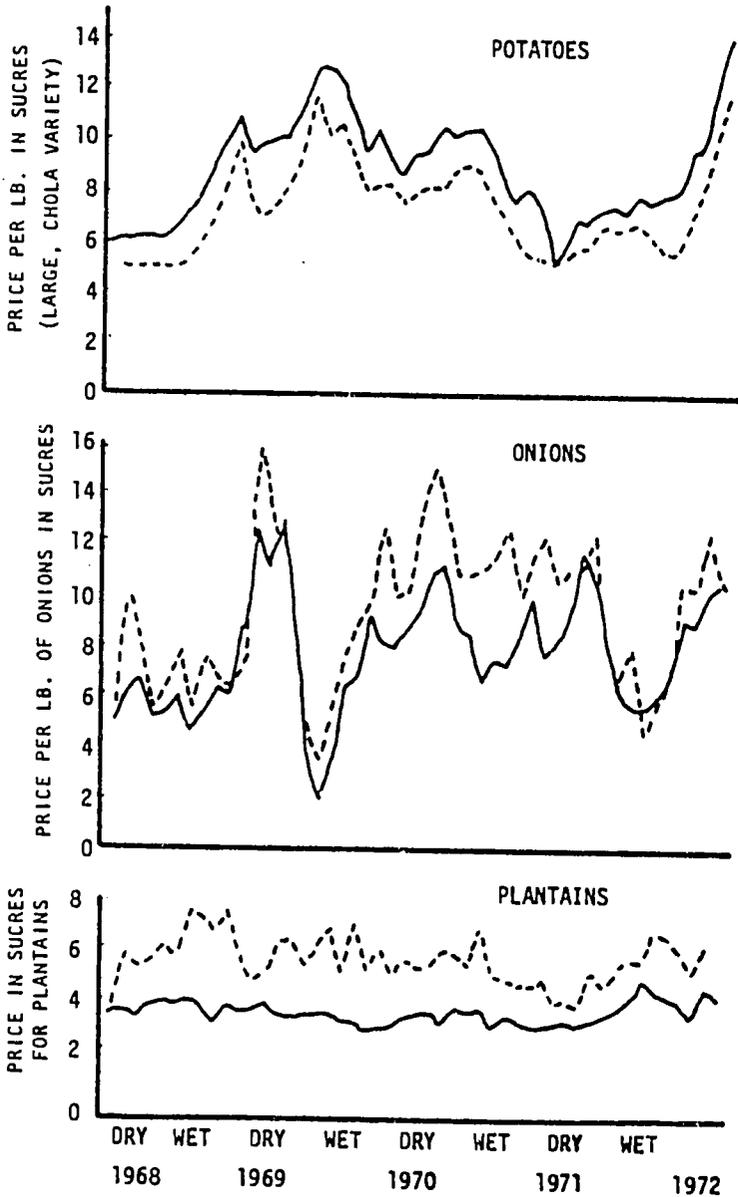


FIGURE 15

Retail Price Variations for Four Food Products
in Ecuador, 1968-1972



KEY:

————— GUAYAQUIL
- - - - - QUITO

WET SEASON:
Early November
to mid-May

DRY SEASON:
Mid-May to
Late October

SOURCE: Bromley 1974b, 251.

price margins at each stage in the process. The research required should place a heavy emphasis on prolonged observation, in-depth interviews with selected participants, and a considerable use of informants. Large-scale questionnaire surveys are not to be recommended because of the relatively high expense and effort involved, and because of the relative superficiality of the information gathered. It should be remembered that marketplaces are public places, and that much can be learned from observing transactions and from making sample purchases there.

The initial aim of a marketing study for a particular product is to establish a diagrammatic model of the marketing chains involved (e.g., Figure 16), and then to relate this information on production zones, commodity flows, consumption zones, and price fluctuations (Figures 14 and 15). Once such a structure of basic information has been established, additional price data may be gathered. While series of wholesale and/or retail prices for most major agricultural products are available from government agencies in a fairly wide range of countries, such series (as used in Figure 15) are only of limited confidence. A fuller appreciation of the potential for intervention in marketing processes must involve following products through their marketing chains, attempting to establish prices for each transaction and for each major operation of handling, transport or processing. Such work is both laborious and at best, highly approximate. Most participants are anxious to give the impression that they buy dear and sell cheap, and hence make little or no profit. While this is true in a few cases, there is usually a great deal of exaggeration which can only be removed from the general picture by talking to both sides; i.e., a selection of sellers and a selection of buyers at each stage of the process. Each interview should be conducted as independently as possible comparing the information given with direct observations and with personal attempts to buy at specific stages of the marketing chain, bargaining hard, buying little or even nothing, and taking advantage of the fact that there are many competing sellers at most stages of the marketing chain.

The information derived on prices should be related to data collected in a similar fashion on the real costs of production storage, transport, processing, packaging, bulking and distribution, so that a complete price structure can be built up like a layer-cake, each layer representing a necessary expenditure or level of profit. The vertical dimension of the layer-cake can then be presented in percentage terms relating to the final retail price of 100 percent. Using more professional terminology, the marketing chain is represented as a bar diagram proportional in length to the final retail price and using a percentage scale (Figure 17). It should be remembered, of course, that the income of participants in the marketing process is not only determined by their "percentage take," but also by the volumes of the product that they handle. The fact that in Figure 17, for example, the retailer takes 17 percent of the final price as profit while the distributing wholesaler takes only 5 percent does not mean that the retailer is necessarily exploitative, speculative, or richer than the wholesalers or producers. The average wholesaler may handle hundreds of tons of a product over the year, while the average retailer may handle less than a ton in the whole year. In such circumstances wholesalers have much higher total profits and incomes than retailers, even though their margins are lower. Finally, it is worth noting the fact that in situations of high supply and/or low demand, participants in the marketing process may actually make "negative profits;" i.e., the costs of their activities in production or purchasing,

FIGURE 16

Principal Marketing channels for Plantains Produced in the Quevedo-Santo Domingo Zone of the Central Ecuadorian Coastal Lowlands, 1972

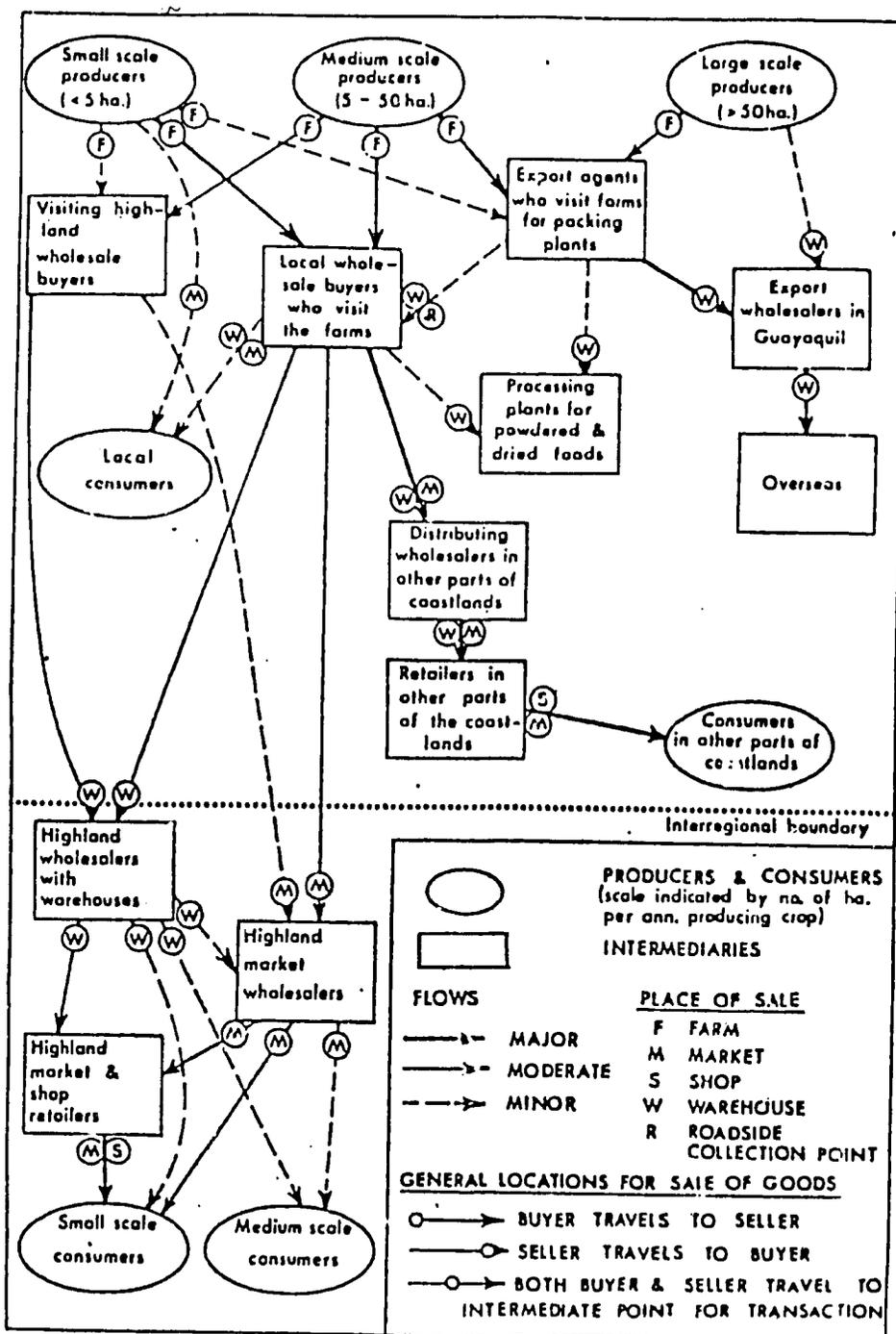
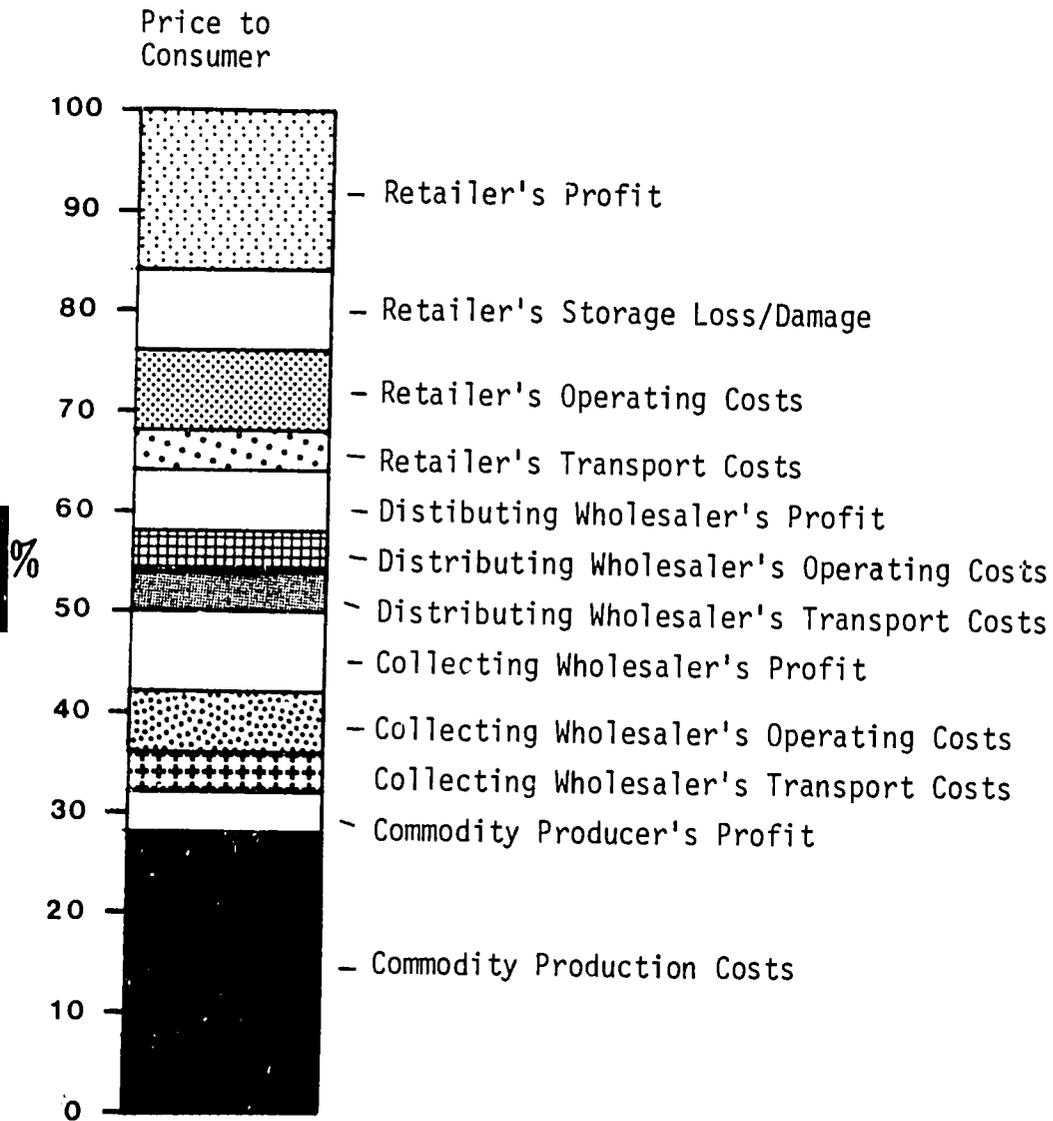


FIGURE 17

An Example of a Price Structure for the Marketing Chain of a Particular Product at a Specific Time and in a Specific Set of Circumstances



transport, general operations, storage, and so on may actually exceed the prices for which they can sell the product. For wholesalers such "negative profits" (losses) are fairly infrequent, but for small-scale producers and petty retailers they are all too common. Indeed, much peasant farming and petty retailing is only economically viable if the participants' labor is either not assigned a monetary value or is assigned a value well below the national poverty line or minimum wage.

The compilation of information on prices, operating costs and margins at different times of the year and in different market conditions (such as abundance and shortage) allows the policy-maker to assess where critical interventions might be made in the marketing process, and who might be likely to benefit. It should always be remembered, however, that any intervention will damage the interests of some marketing participants, and hence it is essential to assess the impact on these groups and their likely response. A classic scheme, for example, is to support organized groups of small-scale farmers to obtain storage, processing and transport facilities, and to deliver their products directly to retailers' cooperatives or even to direct-retailing farmers' markets in the major cities. Such a scheme is intended to by-pass the collecting and distributing wholesalers, and any successful intervention of this type must take account of the wholesalers' likely responses. The producers' storage and processing facilities and their vehicles may have to be given police protection against sabotage, and the property of the existing wholesalers may have to be expropriated, purchased with compensation, or contracted for alternative uses. Substantial credit may have to be given to farmers' and retailers' organizations for several years, and key investments may have to be made in telephone or other communications links to better coordinate supply and demand.

The provision of marketing installations in key market towns

Whether or not governments opt for major interventions in marketing chains, a normal element of UFRD strategies is the installation of marketing and warehousing facilities in selected market centers. In most countries such investments have been made by municipal, district, regional and even national authorities for many years, yet they are often characterized by disfunctional designs and uneconomic operation. A common situation is for public market buildings to be badly located away from the main central and commercial areas, "over-designed" in the sense that they are more sophisticated and costly than necessary, and severe financial liabilities for the local authorities because of a combination of low rents, low occupancy, and high staffing and maintenance costs. Similar comments can often be made about public warehouses and slaughterhouses, and many local authorities have a critical lack of basic urban planning, architectural, engineering and financial management skills. When public facilities are provided, they are usually unnecessarily expensive, badly designed, and essentially inappropriate to the real needs of the participants in the marketing process. An obvious reflection of such a situation in the case of public market buildings, for example, is the underuse of many markets while street vendors proliferate.

In many small market centers, public market buildings are not necessary at all, and infrastructural provision can be based on the paving of key streets and marketplaces and the roofing-over of a small section of the marketplace for

the sale of products such as meat and fish which are particularly likely to deteriorate in strong sunlight. At a later stage, rudimentary cement and tiled stalls can be provided under the roofed areas for meat and fish sellers, and traders can be allowed to erect their own mobile or semi-permanent stalls in the marketplace. Such simple facilities require minimal maintenance and cleaning, and it is realistic to expect running costs to be covered from market taxation. One to three paved marketplaces and smaller roofed, but open-sided, areas, are sufficient to accommodate substantial periodic markets, and more solid, walled structures are only justified when there are substantial daily markets.

When permanent market buildings are provided for major daily markets, the following eight basic guidelines should be followed:

- 1) Try to ensure that public market buildings are constructed to play a role in a growing commercial system which is not subject to violent changes and in which petty traders are not significantly discriminated against in favor of larger establishments.
- 2) For the successful implementation of UFRD policies, give special preference in stall allocation, licensing and taxation procedures to rural producers, reserving some key warehousing and retailing sites for producers' cooperatives.
- 3) Try to avoid an obsession with developmentalist modernization, attempting to copy commercial institutions and physical designs from richer countries without seriously considering their relevance to the local context or the merits of existing institutions and physical designs.
- 4) Though some "zoning" may be required regarding the sites for loading and unloading heavy trucks, do not attempt to segregate wholesaling from retailing in cities with less than half a million inhabitants. Such procedures can impose considerable extra costs and hardships on petty retailers in the procurement of their merchandise, and they can also prejudice those rural suppliers who wish both to sell to wholesalers and to purchase their consumer needs in the same area (Bromley 1981).
- 5) Ensure that public market buildings are adequately protected against competition and forestalling from street traders, and that sufficient market facilities are available to enable street traders to move into them. This means charging rather lower occupancy rents for market buildings than for the public highways, viewing market buildings as public services which should only cover their maintenance costs, rather than as investments which should cover their construction costs and make sufficient profits to pay back not only capital but also interest on loans for market construction. Public markets in small to medium-sized towns are not good candidates for loan financing, and instead their

construction should be paid for out of local government revenues or central government grants.

- 6) Ensure that public markets are located at focal points in local public transport systems, and that complexes of private shops and warehouses are able to develop in the vicinity of the markets.
- 7) Adopt three basic design criteria for public market buildings: (a) they should face outwards rather than inwards, so that commercial activity is clearly visible to passers-by; (b) they should be cheap, simple structures, usually with only one story, and they should rely as much as possible on natural lighting and ventilation; (c) they should be designed and constructed in such a way that they can be installed in stages, adding an extra section every time the existing section(s) reaches capacity use.
- 8) When possible, transfer control and ownership of public market buildings progressively to the traders, so that rents are converted to installment payments on the purchase of stalls, and so that the traders take on increasing responsibility for market refuse collection, security, publicity, etc. Such a strategy is likely to increase trader involvement and to reduce the possibilities of ineptitude and corruption on the part of the authorities. It is also likely to promote the sort of trader organizations which have some potential to combat effectively the influence of the super-market companies, and to negotiate bulk purchase discounts with wholesalers and producers' organization.

Concluding comments

In many senses, commercial activity forms the central complex of functions characterizing the sorts of small- to medium-sized urban centers which form the basis for UFRD strategies. The implementation of UFRD policies, therefore, must pay very close attention to commercial functions, attempting to strengthen their "motor" role in the local, regional and national economies and at the same time give the rural population a greater and more equitable participation in commerce. A regional commercial system should be established which is open, competitive, dynamic and flexible, providing rural producers with a range of selling, buying and credit options, and enabling them to intervene directly as part-time traders and transporters. More effective marketing processes can reduce the costs of living for the urban and rural poor, generate increased employment, and reduce the wastage of key commodities due to excess humidity, rotting, spillage and vermin. Well-selected and carefully-implemented changes in local marketing systems can make significant contributions both to economic growth and to reducing socioeconomic inequalities. Badly-designed interventions, however, may reinforce existing exploitative processes and largely annul the benefits to be achieved from improvements in other urban services such as education, health care and sanitary infrastructure. It is through improving the spread effects of beneficial urban services and facilitating rural access to such services that UFRD must function, and the nature of rural-urban commercial relations is a crucial determinant of whether such a strategy can succeed.

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MARKET CENTER ANALYSIS IN THE URBAN FUNCTIONS IN
RURAL DEVELOPMENT APPROACH

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