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RAPID RECONNAISSANCE GUIDELINES FOR AGRICULTURAL MARKETING AND FOOD SYSTEM RESEARCH IN DEVELOPING COUNTRIES

by

John S. Holtzman

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Working Paper

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These guidelines for rapid reconnaissance have evolved out of my work on food systems and agricultural marketing with Michigan State University and USAID over the past eight years. As a doctoral candidate at Michigan State, I conducted studies of livestock and food systems in Cameroon and Somalia, using both rapid appraisal methods and longitudinal, cost-route formal surveys. Upon completing my studies at Michigan State, I became a technical advisor in agricultural marketing to USAID (1982-85). In this capacity I had numerous opportunities to use rapid appraisal techniques in doing feasibility studies, identifying and evaluating projects, and initiating programs of applied marketing research. I also reviewed many agricultural marketing studies carried out in developing countries. Many of these studies are conducted under limiting time and resource constraints, and their quality varies greatly. The findings of short term studies often seem to reflect the interests or preconceptions of the researchers. Moreover, biases associated with the timing of the rapid appraisal exercise, as well as the selection of places to visit and informants to be interviewed, are often evident.

This paper represents an attempt to improve the quality of marketing research conducted in developing countries under time and resource constraints. It is hoped that the paper will stimulate discussion of rapid appraisal methods among developing country analysts, researchers at universities, international agricultural research centers and other institutes, and technicians in donor agencies and consulting firms. While my experience in longer term programs of research has instilled an appreciation of the limits, potential misuses and biases of rapid assessments, I am convinced that rapid reconnaissance methods are useful for learning a lot of policy relevant information about marketing systems in a short period of time, and for identifying system problems, constraints and opportunities. Rapid appraisals are especially useful as an input into the design of longer term programs of marketing and food systems research, in the same way that exploratory surveys are invaluable in initiating programs of farming systems research.

This paper draws heavily on earlier work done at the Institute of Development Studies at Sussex University, on papers presented at conferences at Sussex on rapid appraisal in 1978 and 1979, on papers by farming systems researchers at CIYMMT and the University of Florida, on books on the systems approach to agribusiness management by Harvard Business School researchers, and on efforts of applied researchers in many fields, including agricultural economics, anthropology, geography, development

administration, and agribusiness management. I owe an intellectual debt to colleagues at USAID and in the Department of Agricultural Economics at Michigan State University. Merle Menegay provided important substantive and conceptual input at an early stage in the preparation of the paper. Harold Riley reviewed several drafts of the paper and made many useful suggestions and comments. Nicholas Minot reviewed the paper at a late stage in its development and offered valuable suggestions on how to improve its organization and substance. James Shaffer, Stephan Goetz, Michael Morris, Thom Jayne, David Smith and David Campbell provided critical input in the final stages of the paper's development. Michael Weber offered invaluable critical and editorial assistance in moving the paper from draft to publication stage. Finally, I gratefully acknowledge constructive and critical reviews of earlier drafts of this paper by Edgar Ariza-Nino, John Abbott, Lehman Fletcher, Jerry Martin, David Atwood, and Michael Burton.

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I. INTRODUCTION

This paper develops rapid reconnaissance guidelines for conducting research on agricultural marketing components of food systems. The term rapid reconnaissance (RR) will be used interchangeably with the designations rapid appraisal, rapid assessment and rapid diagnostic assessment in this paper. A rapid reconnaissance survey is a broad and preliminary overview of the organization, operation and performance of a food system or components thereof, designed to identify system constraints and opportunities. It can especially be used as a tool for identifying system dynamics, linkages and overall problems, which can then be examined more intensely during follow-up programs of research.

1.1 Increasing Interest in Rapid Reconnaissance Techniques

Interest in rapid appraisal techniques has increased during the past decade for several reasons. First, long term programs of farming and food systems research have become increasingly, and in some cases prohibitively, costly. These studies absorb significant financial and management resources and effective techniques are needed to help keep costs down. There is also frustration with many data-intensive, long term studies that fail to generate usable research findings within a time frame suitable to policy-makers. Such studies may be useful over the long run in generating knowledge about agricultural production and marketing systems. Policy-makers must make decisions on the basis of limited yet best available information, however, and cannot wait interminably for research results. At the same time, entry, processing and analysis of longitudinal survey data are becoming far more rapid as the use of microcomputers in field research expands.

A second and perhaps most important reason is that many researchers who have carried out both short and long term studies have found that rapid reconnaissance techniques, when used judiciously, can yield valuable insights about subtle and dynamic factors in food systems. Researchers who have undertaken longitudinal surveys often find that the management requirements are so great that they have little time and few resources available for informal interviews and case studies. Many who have reserved time for these less formal data collection methods report that they are often a quicker and sometimes more effective means (as compared to data-intensive surveys) for

learning about the interrelationships and linkages in farming and marketing systems, understanding system constraints and opportunities, and identifying potentially viable interventions. Farming systems researchers have successfully used rapid reconnaissance techniques to identify farm-level constraints and guide allocation of applied research resources to help alleviate these constraints. Researchers such as Byerlee and Collinson report that accurate qualitative and quantitative information can be generated by informal surveys which serve as a baseline against which later comparisons can be made (Byerlee, et. al., 1980; Collinson, 1982).

Notable contributions in the development of rapid reconnaissance methodologies applied at the farm level are the work of the Institute of Development Studies of Sussex University in the U.K. (Chambers, 1980, 1981), papers by farming systems researchers such as Hildebrand (1979, 1981), Collinson (1981, 1982) and Byerlee (1980), and papers on rapid reconnaissance for development administration by Honadle (Honadle, 1979 and 1982). Entire issues of two journals (Agricultural Administration, 1981 and Institute for Development Studies Bulletin, 1981) were devoted to rapid reconnaissance. More recently, in October 1985, a conference on rapid appraisal was held at the University of Khon Kaen in Thailand.

1.2 The Appropriate Uses and Context for Rapid Reconnaissance

As will be discussed in this paper, RR has several potential uses in marketing and food system research. First, it can be used by governments or donor agencies in the identification and design of agricultural marketing projects. Second, RR methods can be used by private firms to evaluate the feasibility of making particular types of investment, such as a new storage or processing facility. Third, a rapid appraisal can generate knowledge about an agricultural commodity subsector needed for making a policy decision or for evaluating the effectiveness of a policy or set of policies. A fourth potential use of RR is in monitoring and evaluating the effect of an agricultural marketing project or policy. A fifth use for RR methods is as a descriptive and diagnostic tool in the design of a program of longer term agricultural marketing and food system research.

Despite these potentially varied uses, RR surveys are often inspired by policy initiatives, wherein host country governments and donor agencies require help in identifying possible projects or need for policy reform. In responding to such short term

planning needs, RR risks being a subjective exercise, resulting in strong advocacy of predetermined positions. In these cases rapid appraisals provide economic or technical justifications for project proposals that host country governments and donor agencies intend to implement. Researchers should strongly resist pressures from research sponsors to simply devise justifications for predetermined food system interventions.

At the same time, researchers do need to be responsive to their client groups. When the client is a government organization or a development assistance agency, researchers are expected to prescribe project proposals or policy reforms. Hence, the applied research will have an action orientation. In doing rapid reconnaissance this poses a dilemma. While research sponsors expect policy prescriptions, rapid reconnaissance techniques seem most useful as a tool for learning more about commodity marketing or other aspects of the food system through observation and analysis, for identifying system constraints and opportunities, and for identifying promising areas of further applied research. In most circumstances, it should not serve as a basis for generating definitive policy prescriptions, although policy-makers are free to use the RR prescriptions as they wish. Policy prescriptions will often be tentative and preliminary. In some cases rapid reconnaissance surveys may generate robust and conclusive enough findings so that policy-makers can choose with considerable confidence to implement particular policies or to discontinue policies with adverse consequences. Yet recommended interventions emerging from rapid assessments, particularly improved technologies, marketing institutions, and management methods, should be tested as pilot projects and regarded as experiments.

1.3 Organization of the Paper

The paper is organized into two major parts. The first part examines the substance of rapid reconnaissance in agricultural marketing research--its important characteristics (Chapter II), the analytical framework used in rapid reconnaissance of commodity marketing systems (Chapter III), key areas of investigation during rapid appraisals (Chapter IV), analysis of prices and marketing margins (Chapter V), proxy variables and key indicators (Chapter VI), and nonmarket or institutional economics, and noneconomic factors (Chapter VII). The second part of the paper discusses the process of rapid reconnaissance (Chapters VIII and IX), including sections on the preparation for RR field work (Chapter VIII) and implementation of RR surveys (Chapter IX). These include selection of the RR team, research planning, review of the literature and analysis of

secondary data, the elements of RR field work, selection of key informants, and information gathering techniques. Report preparation, presentation of RR findings, and followup to rapid reconnaissance surveys are discussed in a section on wrapping up rapid reconnaissance (Chapter X). Limitations of rapid appraisal methods are addressed in Chapter XI, and concluding remarks are made in Chapter XII.

II. IMPORTANT CHARACTERISTICS OF RAPID RECONNAISSANCE IN A FOOD SYSTEM CONTEXT

2.1 Rapid Reconnaissance Focus

Doing rapid reconnaissance of an entire food system is an unmanageable agenda. Yet keeping relevant system relationships and linkages as part of a narrowed-down focus is important. Classifying commodities into related groups, such as staple grains, legumes, vegetables, fruits and livestock products is a first step in narrowing down that agenda. The technical characteristics of related groups of commodities are often similar, which generally leads to similar organization and operation of commodity subsectors. RR teams may wish to focus on one commodity in each group, because it is representative, the most important in terms of volume or value, perceived to be the most problematic, or regarded as having potential to generate the most income and foreign exchange earnings or savings.

Many RR surveys will focus only on one commodity production-distribution subsystem and in any case no more than two or three related commodities, such as grains or ruminant livestock. In a relatively short period it is impossible to look at all agricultural commodities in a food system in any depth. Restricting the commodity focus allows researchers to interview several participants at each major stage of each subsector, as well as to observe marketing processes and activities, within the time constraints of RR.

Alternatively, researchers can focus on food distribution in one or more urban markets. The focus may also be on staple commodities which provide most of urban consumers' calories, particularly where expenditures on those staples claim a high proportion of household budgets or where urban consumers have difficulty meeting basic daily calorie requirements. In addition, analysts might focus on commodities for which the urban market is growing most rapidly.

As another alternative to a commodity focus, researchers can do rapid assessments of particular industries in the food system, such as grocery stores, vegetable canners and processors, grain millers, or agricultural equipment manufacturers and distributors. The need for such a delimited study might arise if particular functions in the food system are performed poorly and at high cost, or if poor performance of those functions constitutes a system bottleneck.

2.2 Geographic Scope

Rapid reconnaissance will often be limited in geographic scope to one region, or to a major urban market and the rural areas from which it draws its food (food shed). The geographic breadth of coverage will depend, in part, on resources available for the study. Area coverage can be expanded if several teams of applied researchers work concurrently in different regions.

Geographic coverage will also be guided by judgements as to the need for visiting additional producing areas and markets. Researchers will have to evaluate whether it is worth the extra cost to expand coverage. For example, does a producing area appear, on the basis of limited yet best available information, to be sufficiently different from other areas (in terms of crop mix, marketed surplus or numerous other criteria) to justify RR field work? In a survey of grain marketing in Burkina Faso conducted in 1984-85, the University of Michigan did RR field work in several surplus and deficit regions (Sherman, Dejou, et. al., 1986). In an assessment of secondary crops marketing in Indonesia, USAID, the Food Crops Directorate of the Ministry of Agriculture, and several local universities have carried out RR surveys in several surplus producing regions which are characterized by different agroecological conditions, cropping patterns, and marketing systems (Menegay, 1985). In some cases RR teams may wish to look at more than one major urban market and their respective food sheds for comparative purposes. Where food systems are driven by foreign demand, RR teams may decide to survey demand and marketing opportunities in key importing countries.

2.3 Duration and Timing of Rapid Reconnaissance

Rapid reconnaissance surveys are usually at least one month and less than three months in duration, depending on prior knowledge of the food system components and regions where the RR will be conducted. In countries where many commodity subsectors have been heavily researched, and where the objectives of the RR are quite delimited, a rapid appraisal could be conducted in a few weeks. On the other hand, if little is known about a region and subsector, and the objectives of the RR are somewhat diffuse, rapid reconnaissance has a more difficult time standing on its own, and becomes important as the first step in a longer term research program, requiring collection of a great deal of primary data.

Conducting RR during a period of less than three months precludes observation and data collection over an entire annual agricultural production and marketing cycle. Yet this may not be necessary, as RR uses longitudinal data from previous studies and secondary sources to document patterns of secular and seasonal change. Participation of researchers in rapid reconnaissance who have followed commodity subsystems over time will also improve understanding of trends and changes in the food system, as well as seasonal variations in agricultural production, marketing and consumption.

The timing of RR will depend upon the perceived need for observing particular marketing functions and processes. Farming systems researchers typically plan rapid reconnaissance surveys to coincide with the crop growing season, particularly during critical periods when crops are flowering, or during periods of peak household labor utilization (e.g., weeding periods in Africa). Timing in marketing and food system studies will depend in large part on what are initially perceived to be the key food system constraints and opportunities. If policy-makers are concerned most about storage practices and losses and alleged speculative practices, RR could be undertaken during periods of storage and sales from storage. If it is suspected that producers receive unremunerative prices for produce sold during the post-harvest period, the RR could be carried out at this point to observe transactions and terms and conditions of sales. RR surveys of particular industries in the food system that are judged to be bottlenecks or highly inefficient might be timed so that industry performance could be most easily observed.

2.4 Composition of Rapid Reconnaissance Teams

The composition of the RR team will vary according to preliminary identified food system problems and needs. Rapid reconnaissance can be conducted by one researcher, typically a social scientist, or by several researchers with similar disciplinary training. If the objectives of rapid reconnaissance are limited, multi-disciplinary teams are not usually necessary. The quality of most RR surveys will usually improve, however, if researchers with complementary disciplinary skills participate. These teams may include an agricultural economist or economist, an agribusiness management specialist, an economic anthropologist, a post-harvest technician, a transport economist, institutional analyst, or commodity specialist. It is important that an analyst with a general background in agricultural marketing (typically an agricultural economist) lead the team, and edit and complete the final RR report to provide an integrated picture.

III. AN ANALYTICAL FRAMEWORK TO GUIDE FOOD SYSTEM APPLIED RESEARCH AND DEVELOPMENT ACTIVITIES

3.1 Need for an Analytical Framework

In conducting applied research under time and resource constraints, it is helpful to work from an analytical or conceptual framework that is cast in a development strategy perspective. This enables researchers to distinguish between information and factors, programs and policies which are 1) likely to be relevant and important for helping to improve performance of the system, as opposed to 2) those which are interesting but nonessential or perhaps trivial. Without a framework of analysis on which to hang disparate observations and findings, the researcher risks missing the big picture and focusing on narrower problem areas, which may not be the most critical ones to improving system productivity and performance.

3.2 The Concept of a Food System and Strategies for Food System Development

The broad analytical framework underlying RR is the food systems approach, developed and elaborated by researchers at Michigan State University (see Harrison et. al., 1974; Shaffer, 1980; Riley and Staatz, 1981; Shaffer with Riley, Weber and Staatz, 1983). The food system incorporates the agriculture and livestock sectors, and industries within those sectors. The participants in the food system that produce, transform and distribute the full range of agricultural commodities include input producers, input suppliers, agricultural producers, domestic traders, importers and exporters, processors, retail firms, institutional buyers and consumers.

A food system has both horizontal and vertical dimensions. The horizontal dimension refers to firms within a particular industry, or to a particular stage of the food system where a similar set of functions are performed. Examples of this include the transportation industry, the tomato canning industry, agricultural equipment manufacturers, and retail stores. The vertical dimension refers to subsystems of single commodities or relatively homogeneous groups of commodities. This dimension is conceptualized as vertical because it cuts across stages of the system, where different functions, such as input distribution, production, assembly, storage, transport, processing and product distribution are performed. Initially labelled as a subsector (see Shaffer,

1973), but better described as a subsystem, a commodity subsystem incorporates productive transformation and value adding at each stage as inputs are supplied and a product moves from the farm to the consumer.

One tool for usefully thinking about the food system and its dimensions is a matrix of agricultural products and functions, as conceptualized by Shaffer. Agricultural products are arrayed vertically, corresponding to commodity subsystems. Food system functions, which are generally carried out by related groups of firms, or industries, are arrayed horizontally. Table 1 illustrates this matrix as applied to the food system in Senegal (Ndoye and Newman, 1984). In designing programs of applied food systems research, it is not possible to study each cell in the matrix, given funding and resource limitations. Subject to the approval of policy makers, researchers are forced to make choices about those parts of the system on which they intend to concentrate their efforts. These choices will be governed by numerous possible criteria, including political factors, the importance of commodities as staples or in generating/saving foreign exchange, regional considerations, or the degree to which particular functions or industries constitute system bottlenecks. Judgements as to the likely payoff from doing the research, as well as the feasibility of carrying out the research, will of course come into play.

Another way to think about food systems is to develop an input-output or food accounting matrix (see Hay, 1980). This approach emphasizes quantification of technical production and transformation coefficients at different stages of the system, as well as input and commodity flows between parts or cells of the system. While this matrix serves as a useful accounting tool, it requires voluminous data and it is essentially a static construct. It stresses quantification of interrelationships rather than describing and diagnosing system constraints, bottlenecks and opportunities, and striving to capture dynamic interactions and disequilibria. It is difficult for all the cells of such an accounting matrix to be filled with the data available in many developing countries.

The food systems framework as developed and applied by MSU researchers is a developmental approach (see Harrison et. al. and Shaffer et. al.). It seeks to identify promising opportunities for improving the productivity of food systems as well as to diagnose barriers to improved system performance. Developing strategies, programs and projects for both private and public sector participants is central to the approach. It also assumes that there are alternative ways to constitute or organize the system so as to

Table 1

SENEGAL FOOD SYSTEM MATRIX

Production/Distribution Functions	Commodity Subsystems												
	Millet	Sorghum	Maize	Rice	Wheat	Peanuts	Vegetables	Fruits	Cotton	Sugar	Livestock	Fishing	Wood
Input Distribution													
Extension													
Production													
Transformation													
Storage													
Transport													
Exchange, Transactions													
Financing													
Coordinating Functions													
Prices													
Information													
Grades and Standards													
Regulations													
Property Rights													
Exchange Arrangements													
Risk-Sharing Mechanisms													
Consumption													

Source: Ndoye, Ousseynou and Mark Newman, "Approches Methodologiques pour l'Etude de la Commercialisation des Produits Agricoles et Alimentaires au Senegal," Actes de l'Atelier de Kahone, 8-13 Mars 1984, Institut Senegalais de Recherches Agricoles, Bureau d'Analyses Macro-Economiques, Document de Travail 84-2, Dakar, December 1984.

improve productivity and performance. These alternatives will vary from country to country and political/economic setting to political/economic setting. It also recognizes the possibility of alternative outcomes of different sets of policies and programs, rather than promoting canned solutions or universally applicable blueprints, such as simply getting the government out of the food system, or "modernizing" of marketing institutions so they more closely ressemble those found in the US, Western Europe or Japan.

In contrast, the food system approach argues that the government is able to play, and in many cases must play, an important regulatory and facilitating role in food system development. The mix of public/private sector roles and activities will vary from country to country, depending upon historical and political factors, the stage of economic development, and the level of human capital development. An important part of a food system analyst's task is to examine the economic viability of alternative institutional arrangements, policies and technologies and their actual or probable effects on food system performance. Analysts then present the likely costs and benefits of these alternatives to policy-makers. Researchers are also encouraged to prescribe that set of policies or interventions that achieves government policy objectives at lowest cost and is most likely to foster growth and increased productivity. The extent to which linkages between different participants in the food system and among the agricultural, industrial and service sectors can be strengthened is also an important consideration.

In the interest of making agricultural marketing and food system research in developing countries manageable, the next section will describe the important features and emphases of subsector or subsystem studies. While not all agricultural marketing studies in developing countries will follow a subsector format, many of them will, and the subsector framework is a useful method of examining commodity marketing subsystems.

3.3 The Subsector Approach: Evolution and Principal Characteristics

Given the above strategy for promoting food system development, the approach to rapid reconnaissance presented in this paper is grounded in the commodity subsector (or subsystem) analytical framework. This approach has been best articulated by researchers of NC Project 117, partially funded by USDA, who have examined commodity subsectors in a comprehensive study of the U.S. food system (see Marion and NC Project 117, 1986), and by researchers at Michigan State University (see Harrison et al., 1974 and Shaffer,

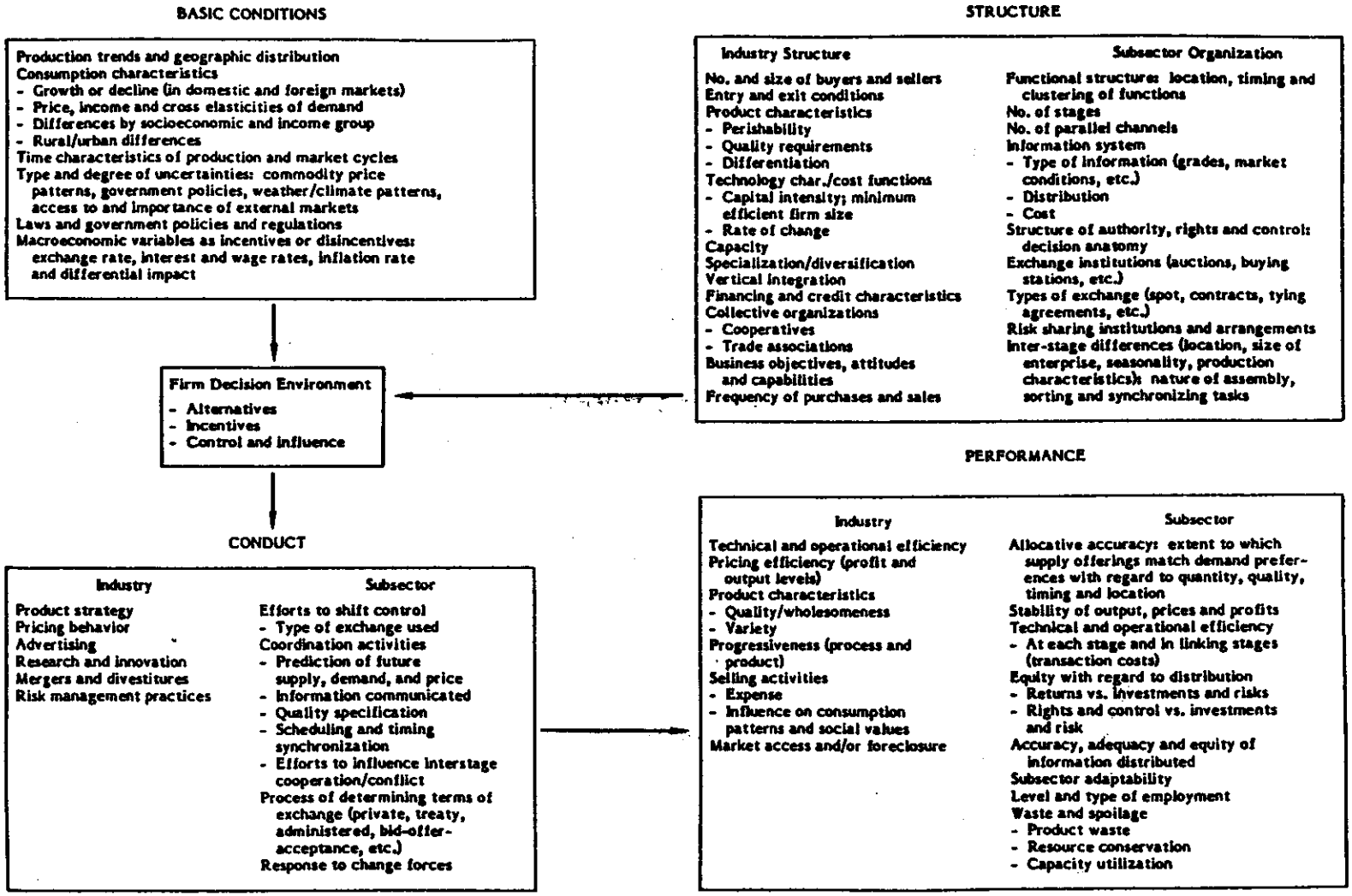
Riley, Weber and Staatz, 1983). A schematic representation of this approach, developed by Bruce Marion, is shown in Figure 1 (Marion, 1976 and 1986).

The subsector framework builds on the structure, conduct, performance framework, developed by industrial organization theorists such as Bain (1968) and Scherer (1980). Industrial organization scholars examine the structure (organization), conduct (operation) and performance of industries, defined as a group of firms which produce similar commodities, (e.g., the meat-packing industry, the automobile manufacturing industry, the micro-computer industry). The focus of industrial organization is on horizontal linkages among firms. It is essentially static, taking industry structure as a given and anticipating certain types of conduct and performance characteristics from alternative structures. The macroeconomic environment and institutional landscape (rules and regulations, distribution of resources) are generally assumed to be exogenous.

The subsector approach is similar to industrial organization theory in focusing on the performance consequences of alternative forms of industrial or economic organization. Yet it differs in several fundamental respects. First, a subsector is a vertically linked set of participants (firms or organizations) which produce a related output or group of outputs. Rather than adopting a conventional dichotomy of on-farm being "production" and beyond the farmgate being "marketing", the subsector approach emphasizes transformation, adding of value, and transactions at every stage in a subsector from input supply through production, marketing and consumption (Shaffer, 1973). In agriculture, subsectors are organized around particular commodities or commodity groups, such as grains, ruminant livestock, fruits, tuber crops, or any one of many individual commodities. Participants in agricultural commodity subsectors include input suppliers, farmers, first handlers, wholesale traders, retailers and consumers. Consumers are considered as subsector participants, because their demand for agricultural commodities in the aggregate influences production and marketing decisions of all other participants in the subsector.

A second fundamental difference of the subsector approach is that it closely examines underlying supply and demand conditions for commodities and likely trends and changes in commodity output and use. The subsector approach is demand oriented. Demand drives commodity subsectors or, alternatively, it pulls commodities through these subsectors. Shifts in demand induced by changes in relative prices, in purchasing power of consumers (per capita income), and in consumer tastes and preferences, affect

Figure 1. A Schematic Representation of the Structure, Conduct, Performance Paradigm as Applied to the Commodity Subsector Approach



Adapted from Bruce W. Marion and NC 117 Committee, The Organization and Performance of the U.S. Food System, D.C. Heath and Company, Lexington, Massachusetts, 1986.

in a significant way the set of incentives facing participants throughout the subsector to supply inputs, produce, transform, store and transport agricultural commodities, and to supply products to consumers or end users in forms, at times and at places that they desire. While changing demand is often an important dynamic force in transformation of commodity subsectors, shifts in supply can also be an engine for change. Increased productive capacity, at the farm level or at other stages of the subsector, can lead to reorganization of commodity subsectors and affect subsector performance in important ways. As an example, heavy investments by the government of Senegal in two large scale dams on the Senegal River will dramatically increase the land area under irrigated cultivation. The subsequent expansion in output will likely lead to significant changes in the organization and operation of the rice subsector in Senegal, inducing entry of traders and processors into the subsector, decreased flows of imported rice from Dakar to markets in Northern Senegal, and increased flows of locally produced rice to markets outside Northern Senegal (Morris, 1985). By emphasizing ongoing and potential changes in supply and demand, the subsector approach is dynamic in orientation and goes beyond the static efficiency analysis common to many neoclassical studies of marketing systems or industrial organization studies (Riley and Staatz, 1981).

A third important difference between the subsector approach and industrial organization studies is the emphasis in the former on the nature of coordinating institutional arrangements, such as contracts and vertical integration, and the role of selected firms, cooperatives, industry associations, and other active coordinating agents. Subsector studies examine vertical linkages between firms that contribute to the production, transformation and marketing of related commodities. In the agricultural sector the level of agricultural output is partially dependent on climatic factors, and aggregate output and agricultural commodity prices are uncertain from one year to the next. Producers, processors, traders and institutional buyers have an incentive to devise institutional arrangments for coordinating fluctuating supplies so they match demand without excessive price fluctuation. Coordinating mechanisms also facilitate specification of quality expectations and requirements.

Coordination of food systems is an active process (see Shaffer with Weber, Riley and Staatz, 1983). It will generally not be achieved in developing countries without active intervention of the government, coordinating private and public institutions, and private firms with ample resources and a system perspective. Effective economic coordination is not assured by benign public sector laissez-faire, unsupported and

unfacilitated "private sector initiatives," and simplistic prescriptions of "getting the prices rights." This is not to prescribe heavy-handed and direct state involvement in agricultural production, marketing, processing, storage and distribution of food. Rather, ensuring effective coordination results from clearly defining public and private roles in the food system, government provision of public good type facilitating services or functions, such as market information, communications, funding of production and marketing resesarch and extension, regulation which minimizes abuses and unfair play, and a policy environment which removes disincentives and fosters entrepreneurship and the undertaking of risk. Through such developmental efforts food systems can move from low levels of productivity, plagued by small scale operations unable to innovate and achieve scale economies, high costs and minimal specialization, to systems where increasing specialization and exchange and achievement of scale economies lower food production and marketing costs and improve the welfare of producers and consumers alike.

The subsector approach is most productive when it is used to describe salient elements of the subsector, diagnose key subsystem constraints to improved performance, and prescribe policies and projects to overcome these constraints. The subsector framework also emphasizes the search for opportunities to improve the performance of the system, as well as to take advantage of unexploited and underexploited opportunities to tap new markets, generate significantly higher levels of output, and improve food system efficiency. Improving food system performance is an incremental and iterative process. In evaluating performance the analyst should consider a set of diverse performance dimensions, which may not all be attainable in any given country context.

Food system performance is evaluated broadly in terms of the effectiveness of coordinating mechanisms, technical and operational efficiency of the system, system progressiveness, and equity of returns to system participants given the distribution of risks, costs and responsibilities. A more detailed list of performance attributes is provided below. These may or may not be of interest in a given situation. The list draws heavily on earlier work by marketing researchers such as Sosnick (1964), Marion (1976), French (1977), Helmberger, Campbell and Dobson (1981), and Shaffer (1980).

1. Market coordination effectiveness, or the matching of supply and demand at each level of the production/marketing system.

2. Technical efficiency, which translates into maximum output per unit of inputs (in a narrow economic engineering sense), and operational efficiency, which refers to minimal cost/price relations (in a broader economic sense).

3. Equity of returns to participants in the subsector, in light of the distribution of investments made, risks faced, costs assumed and responsibilities undertaken.

4. Progressiveness, or the ability of the subsector to adapt improved technical, management and institutional innovations which enhance productivity.

5. Minimal degradation of resources (soils, forests, water resources) in agricultural production and processing, i.e., minimization of external diseconomies.

6. Broad participation in food system activities, particularly in countries where employment opportunities are limited, and where unemployment or underemployment are an important social and economic problem.

7. Wholesome and nutritious diets for a broad range of urban and rural consumers, particularly those most likely to be nutritionally vulnerable.

It is important to note that these attributes may be conflicting, and that tradeoffs will often be involved in attempting to attain (or maximize/minimize) one set of attributes as opposed to another. Policy-makers' perceptions of the desirability and feasibility of emphasizing one objective or group of objectives will be important in assessing what constitutes good system performance. As an example, policy-makers might concentrate on achieving increased technical efficiency and system progressiveness, which might adversely affect equity and resource management.

One of the challenges of food system research is to develop better definitions of performance attributes and to relate these attributes to precise and unambiguous performance norms. By reference to these norms, performance in a particular system can be assessed. But caution needs to be exercised in defining performance norms. They may vary in different sociocultural, political and institutional settings, and in different agroecological environments, where resources and endowments differ. When expatriate researchers become heavily involved in food systems research, it is essential to involve local policy-makers and researchers in defining performance norms and measures.

While evaluating the performance of a particular commodity subsystem or the food system against a comprehensive set of performance attributes and norms is desirable, the overriding emphasis of RR marketing studies should be on identifying barriers to improved performance and unexploited or underexploited economic opportunities. The research challenge is to discover and focus on critical points of intervention which could not only alleviate known constraints but also lead to increased opportunities and system productivity.

IV. KEY AREAS OF INVESTIGATION IN RAPID RECONNAISSANCE OF COMMODITY SUBSECTORS

Table 2 lays out ten broad areas of investigation for rapid subsector appraisals, lists components of each area, and notes methods of inquiry for obtaining necessary information. RR teams will not attempt an exhaustive study of all of the areas outlined below. The purpose of RR is not to describe food systems in great depth or to diagnose in full detail all system problems. Critical system wide linkages to specific subsector components must be identified, however. In addition, the payoff from examining in depth any one research area may be marginal in some rapid reconnaissance studies. This may not always be the case, however. For example, agricultural policies may have significant disincentive effects, and researchers may wisely elect to devote most of their attention to the effects of such policies. As a second example, particular stages of the food system, such as wholesaling or retailing, may be perceived as especially problematic. Payoff from examining special problem areas or constraints may be judged sufficiently high ex ante to justify allocating most or all of the RR research resources to an in-depth analysis. Such a judgement will depend upon researchers' skill and experience, and preliminary identification of researchable problems and needs.

In addition to listing key areas of investigation, Table 2 briefly notes reasons for considering those key areas. Examining public sector intervention and performance in the food system (key area No. 8) is critically important in nearly all studies of food systems. On the other hand, focusing research resources on detailed analysis of the operation of firms and organizations in the marketing system (No. 6) will often be beyond the scope of a RR survey. Furthermore, while an exhaustive examination of the organization of a commodity subsector or marketing system will generally not be possible in RR, a broad understanding of food system organization is usually essential to evaluating performance. Initial judgement, based on preliminary knowledge of a subsector, will be required to assess the importance of gathering information in any one of the key areas. This will depend on what are perceived to be the most likely barriers to improved performance. In addition, researchers will often find that certain areas of investigation are well-researched, while others are underresearched or not at all researched. This may be because researchers have judged ex ante that the likely payoff from examining the latter was not worth investing research resources. It may also reflect biases and preconceptions of previous researchers.

In carrying out most RR surveys, researchers are generally recommended to focus on estimating orders of magnitude rather than focusing on obtaining precise estimates of marketing variables. The cost of obtaining precise estimates is generally high in doing survey research in developing countries. In carrying out rapid appraisals under time and resource constraints, the benefits of increasing precision will likely not be justified by the high opportunity costs of gaining such precision. Researchers who undertake rapid reconnaissance need to ask themselves continually whether it is worth the time and effort to gather particular types of data.

Table 2

KEY AREAS OF INVESTIGATION IN RAPID RECONNAISSANCE

AREAS OF INVESTIGATION	COMPONENTS	METHOD OF INQUIRY	REASONS FOR INVESTIGATING
1. Commodity Characteristics	a) Different grades, end uses. b) Degree of bulkiness, perishability. c) Physical handling requirements. d) Degree/type of processing.	1) Review commodity manuals, studies. 2) Observation of handling and processing. 3) Develop commodity calendars showing periods of production and transformation.	a) Commodity characteristics can influence operation of subsystem, which functions are performed, how they are performed, and relative cost at which performed. b) Nature of production process influences timing and magnitude of producer sales and marketed flows.
2. Consumption Patterns	a) Seasonal and secular trends in domestic and export markets. b) Disaggregated consumption patterns by socioeconomic and ethnic group. c) Future market prospects.	1) Review consumption studies, food balance sheets, and demand projections. 2) Construct food balance sheets if data available. 3) Interview nutrition/consumption researchers, selected commodity importers and exporters and institutional buyers, and selected rural and urban consumers.	a) Demand drives (or pulls commodities through) subsystems. b) Strength and seasonality of demand affect production and storage incentives, as well as direction and magnitude of marketed flows. Longer run trends and opportunities affect investment decisions of participants in subsystem.
3. Supply Situation	a) Production by year and by region for recent years, noting trends and variability. b) Stocks for transformation and consumption by season and region. c) Flows from major supply areas to major markets, including imports and exports.	1) Review commodity studies. 2) Interview large wholesalers, parastatal managers, crop production researchers, importers, exporters, processors, cooperative and trade association officials. 3) Use map to show flows and apparent surplus and deficit areas. 4) Describe seasonal variation in stocks and flows.	a) Supply and demand are basic elements of economic analysis. b) Production levels and variability affect prices (depending on elasticities), returns via price mechanism, and risk perceptions of producers. c) Level of stocks during different periods affects seasonal variation in prices and commodity availability. d) Shifts in supply over time may indicate response to policies, technological change, institutional environment and alternative institutional arrangements.
4. Price Relationships and Seasonality	a) Secular trends in real prices at the farmgate, wholesale and retail levels. b) Seasonal and cyclical trends in prices. c) Changes over time in relative price relationships.	1) Gather secondary price data for commodity and close substitutes/complements for ten or more year period. 2) Deflate prices or express in constant price terms. 3) Analyze secular, cyclical and seasonal price trends, and changes in relative price relationships. 4) Estimate supply and demand relationships if data permit.	a) Prices are a measure of incentives facing food system participants. b) Changing relative price relationships may indicate shifts in production and marketing incentives, especially if coupled with accurate cost of production data. c) Pricing structure provides insight into regional and national comparative advantage.
5. Food System Participants and Organization	a) Marketing channels and commodity subsector stages. b) Types, numbers and geographic distribution of firms at key subsector stages. c) Important assembly, redistribution and terminal markets.	1) Review previous commodity studies. 2) Check if existing enumerations or sample frames in government agencies (e.g., licensing offices). 3) Interview knowledgeable observers of subsectors and selected participants. 4) Draw subsector map (flow chart) showing principal stages and marketing channels. 5) Use map to show important marketplaces.	a) Food system organization (or structure) influences conduct of participants, which in turn affects performance. b) High levels of concentration of firms at particular stages of food system may lead to higher production/marketing costs than under conditions of lower concentration. c) Prevalence of myriad small firms who fail to specialize at one or more levels of food system may lead to scale diseconomies and high costs.

Table 2 - (Cont.)

AREAS OF INVESTIGATION	COMPONENTS	METHOD OF INQUIRY	REASONS FOR INVESTIGATING
6. Subsector and Food System Operation or Behavior	a) Practices and strategies of subsystem participants (individuals, firms, organizations for procuring inputs, productive transformation, storage and marketing of outputs). b) Vertical coordination mechanisms: exchange arrangements, risk-reduction/sharing, information dissemination. c) Adaptability and responsiveness of subsystem to shifting supply/demand, exogenous shocks, policy changes and uncertainty. d) Evidence of market power.	1) Identify key stages and participants. 2) Develop informal interview guidelines. 3) Sample purposively based upon knowledge of universe from previous records or studies, or from above characterization of subsystem (#5). 4) Conduct selected in-depth informal interviews. 5) Crosscheck findings with other subsystem participants and knowledgeable observers.	a) Operation and behavior in the aggregate affect performance. b) Adaptability and responsiveness of commodity subsystems to changing conditions and uncertainty affect levels of output and performance, as well as continued viability of subsystem in a particular country.
7. Marketing System Infrastructure	a) Physical infrastructure (transport, marketplaces, storage and processing facilities, communications). b) Adequacy and bottlenecks.	1) Review studies of transportation and communication infrastructure, storage/processing capacity and utilization, and marketplaces. 2) Inspect and assess adequacy of sample of above. 3) Use map to show key infrastructure. 4) Identify bottlenecks.	a) In some developing countries infrastructural constraints constitute severe bottlenecks to food system development.
8. Government Marketing Institutions and Policies	a) Regulatory environment: rules; input and product regulations; laws affecting marketing and trading activities; property rights. b) Public marketing institutions (parastatals, cooperatives, joint ventures): extent and nature of participation in marketing; effect on behavior and performance of private participants in food system. c) Macroeconomic policies: price policies; exchange, interest, wage rate policies; fiscal and monetary policies. d) Banking and credit policies.	1) Regulations: use informal interviews with subsector participants to identify vexing or constraining regulations. Followup interviews with selected policy-makers. 2) Institutions: interview managers, determine mandate, outline functions, estimate market share, examine pricing policies, assess effectiveness of marketing services, assess impact of participation on system. 3) Policies: review macroeconomic assessments of World Bank, IMF or others. 4) Interview bank and credit agency officers.	a) The regulatory environment and particular regulations affect the behavior and incentives of food system participants. b) Public marketing institutions dominate food systems in some countries, influence the organization, operation and performance of food sytems in all countries, and generally affect behavior of system participants. c) Macroeconomic policies condition and shape the environment in which system participants make decisions about investments and operations. d) All of the above contribute to food system stability and/or uncertainty, which greatly influence behavior. e) Banking and credit policies determine who gains access to formal credit, which is often subsidized.
9. International Trade	a) Commodity exports and world market situation. b) Imports of commodity or substitutes and impact on domestic production, markets and prices. c) Trends in exports and imports. d) Likely changes in exports and imports, and emerging market opportunities or dependencies.	1) Analyze trade quantity and price data available in statistical abstracts or outside assessments. 2) Review commodity production, price and trade forecasts.	a) Few, if any developing country food systems are autarkic. International trade in agricultural commodities affects production and marketing incentives, consumption patterns and preferences, and the behavior and opportunities of system participants. b) International market conditions influence developing countries' comparative advantage in production and export (import) of agricultural commodities.
10. Representativeness of Period Under Study	a) Timing of RR relative to annual production/marketing cycle. b) Agricultural and economic characteristics of year of RR relative to earlier years or climatic cycles.	1) Compare rainfall data and production estimates with earlier years. 2) Compare economic data: GDP, balance of payments, inflation rates, trade patterns. 3) Assess political factors: change of government, policy changes.	a) The period of observation may be unusual with respect to climate, agricultural production, economic and political conditions, and effects of recent changes. b) Food system development is an ongoing and long term process. Historical perspective of long run patterns of change in basic economic, institutional, political and environmental conditions is valuable in understanding food system development.

V. ANALYSIS OF PRICES AND MARKETING COSTS AND MARGINS[1]

Price analysis is critically important in agricultural marketing and food system research. Prices are a mechanism by which signals are transmitted in market economies. These signals provide incentives to food system participants to supply inputs, produce commodities, and market, transform and consume these commodities. Prices also serve as guideposts in essentially administered economies, although they may not reflect scarcity values and social opportunity costs, and hence encourage nonoptimal allocation of resources. In many developing countries with administered pricing systems, parallel markets emerge in which prices more closely reflect scarcity values, although there is typically some risk premium for participating in the parallel market. This risk premium will vary in direct proportion with the frequency and severity of punishments or sanctions for non-compliance with administered prices and participation outside formal marketing channels.

5.1 Data Collection and the Quality of Price Data

In an ideal research situation reliable price data are available at the farm, wholesale and retail levels of the marketing system on a weekly or monthly basis over a ten or more year period for a broad range of commodities (agricultural and non-agricultural), as well as inputs, in rural and urban areas. This is often not the case, however. When available, agricultural price data are more likely collected at higher levels of the marketing system (terminal and urban retail markets) than in rural areas. Moreover, price data are frequently of unknown reliability because little real analytical use has been made of them. Careful attention needs to be paid to analyzing existing data and examining the way in which the data are collected. An important part of analyzing price data is to ask a series of basic questions that can be remembered by reference to the interrogative pronouns who, what, when, where, and how.

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[1]For a detailed training guide to the use of fundamental price analysis tools and to the use of a microcomputer software program to facilitate this analysis, see Goetz and Weber, 1986.

5.1.1 Who collects the data?

Have they received any training in data collection? How are they compensated? Do they have other responsibilities, such as agricultural extension? If enumerators are poorly paid or collecting data part-time as a secondary activity, they may have little incentive to collect data accurately.

5.1.2 What types of data are collected?

Are farm level, assembly market, wholesale market (consumption/redistribution), retail, FOB or CIF prices measured? Are buying or selling prices (or both) observed? Are the types of data collected by government agencies well-defined? Have the definitions of the data collected changed, or have the actual market participants (levels in the system) from which data are collected varied from one period to the next? If so, then data from different time periods may not be comparable.

5.1.3 Where are data collected?

Are data collected only in urban areas or in rural areas as well? In many African countries, for example, price data are only collected in large urban markets, and sometimes only with any frequency and accuracy in capital cities. If prices are collected in rural areas, at what level of the system are they collected (farmgate, rural assembly markets, consumption/redistribution markets)? If prices are collected in urban areas, are they gathered at municipal markets or in shops or supermarkets? If both, are the prices reported separately or averaged?

5.1.4 When are data collected?

During which periods are data collected (throughout the year, after the harvest)? With what frequency are data collected (daily, weekly, monthly, quarterly)? Are they collected on days of greatest buying and selling activity (large market days as opposed to ordinary days)? Is there consistency across data collection intervals and in the timing of data collection at particular markets?

5.1.5 How are the data collected?

If enumerators are given money to buy commodity samples, they may report exaggerated prices and pocket the difference between the inflated and actual prices. If produce is purchased by data collectors, do they purchase it as anonymous, impersonal buyers and weigh it away from the marketplace? Or do they merely ask marketing agents how much they are asking for conventional lots, which may not be standardized, without ever weighing them? In this case, data will be collected for offered as opposed to actual transacted prices. How often are data collected and how many observations are taken per collection period?

5.1.6 How are the data analyzed?

If data are not reported for periods corresponding to the collection interval or frequency, how are they aggregated? Is there any attempt to adjust, say, weekly average prices in calculating monthly averages? If inflation rates are extremely high, as in many South American countries, are adjustments made to average weekly prices obtained at different periods of the month before arriving at monthly averages? In calculating monthly or annual averages how are missing weekly or monthly values handled? If adjustments in the data are made, are these adequately noted? Are price data in any way weighted to reflect volumes moving through different channels?

While it is important to understand how price data are collected and prepared, researchers need not be paralyzed if data collection methods fall short of the ideal. Rather, analysts need to view prices as approximations which provide insights into the workings of markets, the relative scarcity of resources, and incentives facing food system participants. A good understanding of how data are collected, what they represent, and likely orders of magnitude of data error will help researchers appreciate data limitations. Using existing data and asking these questions is an important step in helping to improve the quality of price information collected over the longer run.

5.2 Recommended Types of Price Analysis

Important types of price analysis are listed in Table 3, and supplemented with brief notes about potential data collection and methodological pitfalls. This list draws heavily on work by Tomek and Robinson (1981), Timmer, Falcon and Pearson (1983), Timmer (1985) and many others. The interested reader is advised to see Newberry and

Table 3

PRICE ANALYSIS AND POTENTIAL PROBLEMS

Type of Price Analysis	Data Requirements	Data Collection Pitfalls	Methodological Problems
1. Trends in Real Prices	a) Farmgate prices b) Wholesale prices c) Retail prices d) Deflator	1) Definition of farmgate price. 2) Which side of wholesale transaction (buyer, seller). 3) Reported vs. transacted prices. ** These points apply to other types of price analysis as well.	a) Change in nature and characteristics of product over time. b) Deflator only available for urban area (consumer price index). c) Representativeness of basket of goods, accuracy of weights in constructing deflator.
2. Relative Price Relationships	a) Prices for key substitutes and complements.	1) Are data available for key substitutes?	
3. International/Domestic Price Comparison	a) Import parity prices, including international transport costs. b) Export parity prices, including domestic transport costs. c) Exchange rates.	1) Are domestically produced and internationally traded commodities close substitutes? 2) Which international price? 3) Quality differences. 4) Are actual transport costs known (e.g., if transshipment)? 5) Official exchange rate may diverge greatly from shadow exchange rate.	a) Assumes domestically produced commodity traded or potentially tradeable. b) Poor comparability of domestic and international product can confuse analysis. c) May be no direct transport between international exporter and country.
4. Seasonal Price Variation	a) Average monthly, weekly, or daily prices at same level of marketing system.	1) High rates of inflation and strong trends may distort results of analysis.	a) Price data are typically only available for urban areas. b) Price seasonality facing urban consumers may differ from variation facing rural households.
5. Interspatial Price Variation	a) Detailed price data for at least several locations, collected at same points in time, preferably for same level of market system.	1) Multilocational price data are not often available in time-series. 2) Data may only be available for major towns and not for rural markets.	a) High intermarket correlations may be evidence of effective competition or collusion/oligopoly. Need more information for determining which is the case. b) Correlation may be spurious and no evidence of causality.
6. Marketing Margins	a) Prices at different levels of the food system for same commodity. b) Data on marketing costs if wish to analyze net margins.	1) Prices at different levels of system must be collected during same period. 2) Cost data difficult to collect; may be misrepresented. 3) May fail to enumerate key cost components.	a) Marketing costs vary by scale of enterprise, resulting in different margins for different firm sizes. b) Size of margin and percent of return to producer vary by commodity, reflecting degree of value added and marketing costs.
7. Commodity/Input Price Ratio	a) Consistent series of commodity prices and input prices or cost index series.	1) Need to identify relevant input (fertilizer, insecticide, pesticide type).	a) Cash inputs (ferts, pests) may only be used by large farmers. b) Importance of input may vary considerably over length of time-series.
8. Processed Product/Raw Material Price Ratio	a) Prices of processed product. b) Consistent prices of raw material.	1) Nature and quality of processed product may change over time. 2) Quality differences in raw material.	a) Comparing ratios with other countries with different factor proportions, costs of production, and prices may be misleading.

Stiglitz, 1981, for an advanced treatment of price analysis and commodity stabilization programs.

In some developing countries, price data are only available for capital cities and large towns (and not for the region of interest or rural areas). When data are available, they are frequently of poor quality, available over a short period, or incomplete (missing observations). In some assessments of marketing systems, it may be necessary to generate price data at different levels of the commodity subsector, although these very short term snapshots of price patterns cannot substitute for longer term information on prices. In most developing countries agricultural production, trade and price data are most complete for exported cash crops, such as cotton, cocoa and coffee, and for staple grains. Data on tuber crops, legumes, oilseeds, and domestically consumed fruits and vegetables are often less complete and reliable, if available at all, or they are highly aggregated (averaged across quarters or years).

Even when reliable price data are available for the commodity in question, it is difficult to do all the analyses listed above in most rapid reconnaissance surveys. Examination of spatial price variation (No. 5) is most useful when detailed, frequent observations of agricultural prices are available for a wide range of markets, which is rarely the case. Analyzing the price ratio of a processed commodity to its raw commodity material (No. 8) is an imperfect measure of technical efficiency, which may be better quantified through raw product/processed product transformation ratios. Nevertheless, attempting price analyses No. 1 - 4 and Nos. 6 and 7 is useful for rapid reconnaissance purposes. Potential difficulties and pitfalls in doing each type of price analysis are discussed below.

Examining trends in real farm level and urban wholesale and retail prices for related commodities (No.1) can be very useful in understanding how incentives to produce and consume particular crops change over time. The validity of the analysis will depend critically, however, on the quality and appropriateness of the deflator used in generating real prices. The only deflator available in many developing countries is typically an urban consumer price index, which is constructed using a basket of goods and services (e.g., food, electricity, transport) consumed by urban residents. This may not be the most appropriate for the analytical task at hand. In some cases, such as where producer supply response is being estimated, an index of prices paid by producers may be more appropriate. An urban consumer price index is better suited to estimating demand functions which use urban wholesale or retail price data.

Since urban consumer price indices are generally all that is available, it is useful to comment on potential problems in using these indices as deflators. Urban and rural consumption patterns differ markedly in many developing countries, so the appropriateness of the basket of goods used in generating the deflator can be questioned. Certain goods consumed in urban areas are not widely available (or available at all) in rural areas. Moreover, these goods may not be important in rural consumption patterns. Including these goods in a deflator to calculate real farmgate prices may introduce bias. In addition, the data from which consumer price indices are generated are urban household and expenditure surveys. Relative prices, per capita incomes, tastes and preferences, and hence consumption patterns, as well as the composition of the urban population are likely to change over time. As a result, the basket of goods used in generating the deflator and the weights assigned to each type of good may not even accurately reflect urban consumption patterns ten or perhaps five years after the budget and expenditure survey has been completed. The differential effect of inflation on the relative prices of goods and services in the basket can also affect the reliability and accuracy of the deflator. Certain goods, particularly luxury goods, may drop out of the basket or carry lower weights several years after the survey data were generated. Other goods, particularly necessities, may assume greater importance as a result of inflation or declining real incomes.

A second difficulty in examining trends in real commodity prices over long periods is that the commodities may have changed fundamentally in nature and quality. The commodity may have greater value added in recent years, through improved sorting and grading or better packaging and hygiene, than in earlier years. Hence data may not be readily comparable over the entire time series. Exercise care in ascertaining whether the definitions of the commodity form and grade are consistent over time.

Examining changes in relative prices facing producers (No. 2), as well as relative costs of production, is extremely useful in analyzing changes in farmers' crop mix and changing regional/national patterns of resource allocation. Researchers should note if prices for commodities are official prices or actual prices, particularly in cases where parallel markets are important. Analyzing changes in the terms of trade facing agricultural producers presupposes availability of time-series price data for rural areas for a broad range of agricultural inputs and outputs, as well as consumer goods. Data are rarely available in long enough time-series or reliable in rural areas of developing countries, particularly in Africa. Using urban price data in analyzing rural-urban terms

of trade is misleading, because urban prices of consumer goods (particularly manufactured consumer goods) are generally far lower than prices paid by producers in rural areas. Similarly, food prices in urban areas overstate returns to producers, because they are composed of farm level prices plus marketing margins.

Comparing border prices with domestic prices (No. 3) is not appropriate when the commodity is not traded (e.g., tuber crops in Africa). This is not to say that production and consumption of nontraded staples are not affected by shifts in international prices of traded commodities, such as grains, which may be substitutes.

Monthly price data are not always available at the farm level or for rural markets, so analyses of price seasonality will often rely on urban retail or wholesale data (No. 4). These urban price data will show seasonality of prices facing urban consumers but not necessarily seasonality of prices received by rural producers or faced by rural consumers. This will depend upon the degree and volume of storage of commodities after purchase from rural producers, the magnitude and variation over time of transport costs between rural and urban areas, the degree of integration of rural and urban markets at different times of the year, and the possible existence of bottlenecks in the provision of marketing services. Seasonal price trends may also vary between rural and urban areas due to seasonal demand shifts, caused by cultural events or availability of income at particular times of the year (e.g., post-harvest period in rural areas).

Analyzing commodity/input price ratios (No. 7) will not be appropriate when little or no fertilizer or other cash inputs are used in crop (or livestock) production. This is certainly the case for grains such as sorghum and millet, tuber crops and some legumes and oilseeds produced in developing countries, particularly in Africa. Even when a particular group of farmers, such as large commercial farmers, uses cash inputs in agricultural production, the input/output price ratio may not be useful in analyzing the responsiveness of small farmers who do not use cash inputs. The price ratio will, of course, be a useful indicator of incentives to use the inputs for larger, commercially oriented producers.

Examination of available price data can provide analysts with important insights into incentives producers and consumers face in making decisions about agricultural production and consumption patterns. Without a good understanding of this incentive structure, a limited study of one or more related commodities risks overlooking

interrelationships among commodities and patterns of comparative advantage. Subsector studies are partial, which can be a serious drawback when the commodity (or commodities) under examination is not analyzed in a broader context of substitutes and complements in production and consumption.

5.3 Analysis of Price Data

When price data for a broad range of agricultural commodities, inputs and consumer goods are available, and do not have to be obtained from many government agencies, one researcher in the RR team may profitably spend several weeks to a couple months analyzing these data. Since improved data analysis software packages, such as Micro TSP (Time Series Processor), the price analysis modules of Microstat and Ab-stat, and the relevant subprograms of MSTAT, have become available for microcomputers, a surprising amount of price analysis can be accomplished in a short period of time. Analysis can be expedited if the data have been collected and entered into a computerized data base. If the data are ready for analysis, the RR researcher can rapidly analyze seasonal and secular trends in prices of key commodities and their substitutes, compare changes in their relative prices over time and in production and consumption patterns, calculate marketing margins, and perhaps estimate supply and demand functions if data on prices and quantities of inputs, outputs, imports and exports and per capita incomes are available. In addition, constructing food balance sheets can give the analyst a simple overview of supply and demand conditions and food consumption patterns.

As implied in section 5.1, it is advisable to check the accuracy and reliability of secondary data sources. If time permits, researchers might also collect supplementary price data at levels of the marketing system, such as the farm level and rural markets, for which secondary data are not available. In longer RR exercises, the analyst can distill, summarize and further examine useful quantitative information from earlier farm level, marketing and commodity studies, and from rural or urban consumption surveys. Typically, however, a researcher requires more time than available during rapid reconnaissance to process and analyze large data sets.

5.4 Analysis of Marketing Costs and Margins

For the purposes of RR, practitioners are generally advised to examine gross marketing margins rather than trying to collect detailed information on each cost component so as to estimate net margins. High gross marketing margins in developing countries often reflect real marketing costs, due to inadequacies in transportation systems and/or isolation/dispersion of producers in rural areas. In such cases investment in marketing infrastructure is likely to lower marketing costs. High gross margins may also indicate geographic areas or levels of the marketing system where returns to particular marketing activities are high, and where improved access to markets and information or greater competitiveness might lower returns and hence marketing costs.

If researchers are able to collect data on the prices at different levels of the marketing system and costs of different marketing system participants, net marketing margins can be estimated. Collecting such cost data is very time-consuming, however, and marketing agents may not report costs accurately. Cost and return data are sensitive information, and many informants will not divulge complete or accurate information during an initial interview. They usually fear that these data are being collected for tax purposes and will be used to increase their tax burden. This attitude has evolved over years of typically antagonistic relations between developing country governments, particularly regulatory agencies, and private traders.

In-depth case studies, which use multiple interviews, are usually a better tool for obtaining information about marketing agents' costs than single visit interviews carried out with a limited number of informants during rapid appraisal. It is possible, however, to estimate approximate net margins of participants from data gathered during RR field work. One way to do this is through informal surveys, designed to help construct enterprise budgets using data obtained from a purposive sample of relatively homogeneous firms. In most cases researchers will find that it is easier to collect some but not all cost data from individual informants during RR interviews. Certain informants are asked about particular cost components, while others are asked about other costs. What emerges is a composite or synthetic enterprise budget. The budgets are synthetic in that they incorporate data pieced together from different sources but representative of the marketing costs of a relatively homogeneous sample of informants.

VI. KEY INDICATORS AND PROXY VARIABLES IN RAPID RECONNAISSANCE

Rapid reconnaissance techniques developed by other researchers, such as Chambers (1980, 1981) and Honadle (1982), strive to capture essential features of rural and agricultural systems through use of key indicators and, where appropriate, proxies for a series of variables or complicated phenomena. These researchers emphasize that use of key indicators can provide valuable insights and substitute in part for massive data collection. These indicators include soil color as a proxy for soil type and quality, birth weight as a proxy for nutritionally adequate diets, and vehicles (and their contents) at marketplaces, ferry crossings or along important arteries, as indicators for marketed surplus in a rural area and direction and magnitude of commodity flows.

This paper makes only modest contributions to the development of key indicators and proxies for agricultural marketing research. Several of these are discussed below. Considerably more work needs to be done in this area.

6.1 Degree of Commercialization of an Area or Region

One commonly used proxy of the degree of commercialization of an area or region in a developing country, and the purchasing power of people living in that area, is inventories of particular goods. Inventories of consumer goods, such as soap, kerosene and mirrors, in village shops are one example (Chambers, 1980 and 1981, and Honadle, 1982). The proportion of dwellings in rural areas having tin roofs or doors, glass windows or wood-burning stoves is another proxy for village wealth and degree of commercialization. A similar indicator is an inventory of the proportion of households in a village possessing consumer durables such as bicycles or radios. Calculating the ratio of the number of functioning units to the number of purchased units is also a useful indicator of the availability of spare parts and hence a proxy for the effectiveness of input and consumer goods distribution networks, as well as maintenance services (see Pruitt, 1984 and Food Studies Group, 1985).

6.2 Vehicle Ownership and Availability

Another set of indicators which provides insight into the organization and performance of the agricultural marketing system is patterns of truck and pickup ownership and utilization. Transportation of agricultural commodities is typically a high

cost component of marketing in developing countries, especially in Africa, making up a large part of the gross marketing margin. Inefficient utilization of transport and any concentration in ownership or distinctive patterns of ownership and use are likely to affect transport costs. If truck ownership is highly concentrated in the hands of relatively few entrepreneurs based in urban markets, as in the case of Fulbe traders in Northern Cameroon, there may be opportunities for collusion in provision of transport services, which may increase the costs of food crop marketing. In many countries entrepreneurs who provide transport services are, for the most part, a different group from those engaging in agricultural marketing.

Another useful indicator in analyzing transport effectiveness and the performance of input supply networks is the ratio of functioning vehicles to vehicles owned and operated in a region. We shall refer to this as the effective vehicle availability rate, which is defined as the ratio of operating vehicles to the total number of vehicles in a regional fleet, including non-operating vehicles that are potentially repairable and operative. In rural areas of some African countries effective vehicle availability rates are reported to be as low as 25-33% This cripples the ability of rural-based traders to compete against trader/transporters based in urban areas, who have far better access to spare parts and maintenance services. It may also raise marketing costs, as competition among transporters may be reduced, increasing the opportunity for monopoly pricing.

6.3 The Relationship Between Administered and Parallel Prices

Another example of a key indicator in agricultural marketing research is the disparity between official or administered prices and parallel market prices in developing countries characterized by direct state intervention in agricultural pricing. Parallel markets develop as alternative channels to official markets where legal monopolies are granted to parastatal agencies. A large disparity can indicate one of two possibilities. If parallel prices greatly exceed official prices for an agricultural commodity, which is the more common case, it is likely that a) most of the commodity moves outside of official channels, and that b) the effects of any effort to liberalize prices will be minimal. Since most of the commodity moves in the parallel market already, parallel market prices likely approximate quite closely market-clearing prices that would prevail without government intervention. Participants in the food system have adjusted in part to the distortion of administered prices. Yet uncertainty and transactions costs may still be high, affecting the dynamics of the system, participants' incentives, prices (which will

reflect a risk premium), and participation in the food trade. The extent and severity of these impacts is partly dependent upon the enforcement capacity of the government and its ability to administer sanctions. Nevertheless, less short-run adjustment may accompany liberalization when the formal market captures a small share of the commodity trade (see Berg, 1985).

In the second case, where official prices greatly exceed market-clearing price levels, liberalization will likely have a profound effect on the organization and operation of the marketing system (see Timmer, 1985). In order to support an official price above market-clearing levels, the government must stand ready to procure the commodity at the high support price. This can distort incentives of producers and marketing agents, who will shift resources from alternative enterprises to production and marketing of the price supported commodity, for which returns have become artificially high. Once the government is no longer capable of maintaining the support price, and the price drops toward market-clearing levels, producers and marketing agents no longer have the same incentives to grow and market the once-supported commodity.[1] Such a scenario actually unfolded in Liberia in the early 1980s. The parastatal agency, the Liberian Produce Marketing Corporation (LPMC), was compelled to buy paddy rice from all comers at a price above the world price beginning in late 1982. LPMC bought large volumes of paddy at the high support rice until its storage facilities were filled and it no longer had the financial resources to maintain the support price. Local producers sold a larger than normal marketed surplus, and paddy streamed into Liberia from neighboring countries, until LPMC went heavily into debt by August 1984 and ceased buying paddy.

As more RR techniques are applied in food systems research, it will be important to develop and use other key indicators and proxies. The discussion in this chapter is only a beginning.

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[1]This argument is essentially static and dismisses a possible infant industry policy objective. That is, a developing country government might promote production of a particular crop through offering a guaranteed price above international market levels. The government might do this if it believed that production costs would decline or international prices would rise over time, thereby resulting in a shift in that country's medium or long term comparative advantage.

VII. INSTITUTIONAL AND NON-MARKET FACTORS IN FOOD SYSTEMS

During the past couple decades the literature on institutional, public choice, and non-market economics has burgeoned. This literature has arisen in recognition of the limitations of neoclassical economic analysis in addressing common problems of externalities, where private costs and benefits do not correspond to social costs and benefits, of high transactions costs, of the critical role of property rights in determining who has access to particular sets of resources or opportunities, and whose preferences count in economic decision-making, and of the pervasiveness of uncertainty in economies of all types. The literature is broad and diffuse, and there will be no attempt to summarize it here. Rather, we will identify several institutional issues which merit attention during rapid reconnaissance surveys.

7.1 Transactions Costs and Market Improvement

A fundamental problem of agricultural market development is transactions costs. In some cases transaction costs may be so high that no market exists. Assembly of agricultural commodities from small producers in developing countries is plagued by high transactions costs. Small farmers often produce little for the market. Small lots of marketable commodities are widely distributed and assembled at very high cost. Given differences in agroecological conditions across space, even from year to year (e.g., in levels of rainfall, pest and disease incidence and prevalence), and poor information about commodity supplies and surpluses, traders may incur signficant search costs in identifying areas from which marketable surpluses can be obtained at costs which may not exceed likely returns.

High transactions costs in developing countries have encouraged entrepreneurs to create a wide range of both formal and non-formal institutional arrangements which significantly lower these costs as well as uncertainties in relying on spot market mechanisms. Forward contracts negotiated between producers and either assemblers or processors are one means of lowering transactions costs and uncertainty associated with fluctuating supplies, prices and producer incomes. These contracts are most common in the production and marketing of high value commodities, such as fruits and vegetables, dairy products, or export commodities, such as coffee, cocoa, palm products, and copra. Vertical integration of processing firms with suppliers is another institutional arrangement for reducing risk and uncertainty that gives the firm that integrates

vertically greater control over the timing and flow of inputs (e.g., raw unprocessed commodities) and/or the distribution of outputs.[1]

In conducting rapid assessments, investigators need to be alert to these types of institutional arrangements. If most of a commodity flows through such an institutional channel, researchers need to evaluate the effect on returns to producers, processors and handlers, conditions of entry to production, marketing and processing, consumer satisfaction with commodities flowing through these channels, and responsiveness of participants working under non spot market coordination arrangements to changing demand, technology and relative prices.

7.2 Property Rights

Neoclassical economic analysis generally assumes that the distribution of resources, rights and privileges is given and rarely questions the effect of this distribution on access to income streams, participation in economic decision-making, and responsiveness to new economic opportunities. Yet resource distribution in many developing countries is highly unequal. Urban-based people typically have better access to policy-makers and administrators of government programs than do rural people. This enables urban interests to influence policy formulation and facilitates their access to credit, licenses, inputs, information and other resources. Urban based people are able to extract favors which defend and enhance their interests. In some countries rural landed groups control access to land, particularly higher quality, fertile, well-watered and level land. They own large holdings, where economies of size make economically viable and attractive adoption of improved technologies such as mechanization and irrigation. Rural land holders, especially the larger ones, are sometimes able to capture most of the gains from improved technology, inflation (which increases the value of land), and other economic factors affecting rural income streams. Last, particular ethnic groups may dominate trade in certain commodities, particularly at higher levels of marketing systems, restrict entry, and perhaps capture oligopoly rents. In effective food systems research, it is important to understand the evolution of the existing social structure and

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[1]See Minot, Nicholas, Contract Farming and its Impact on Small Farmers in Less Developed Countries, MSU International Development Working Paper No. 31, Department of Agricultural Economics, Michigan State University, East Lansing, Michigan, 1986.

the power and prerogatives of urban, rural or ethnic groups in developing countries. Members of interest groups which control particular types of commerce or trade in certain commodities may compete effectively among themselves, but this is not always the case.

Control of resources, such as land, non-recoverable or depletable resources (e.g., minerals or petroleum), irrigation rights, water resources or rights to import/export, obtain credit, technology, etc., has a critical effect on patterns of resource allocation and income streams. The existing distribution of property and rights determines whose preferences count. Groups that benefit from this distribution will most certainly oppose proposed changes in rights and privileges that will weaken their positions and prerogatives. Certain types of research may be opposed by influential interest groups, whether governmental, urban, rural or commodity based, who stand to lose from any change in the distribution of resources and rights. Researchers who conduct rapid reconnaissance need to be sensitive to this. Proposing a thorough and critical review of the accounts and activities of a parastatal organization will, for example, not be well-received in a country where that parastatal dominates trade in a particular commodity and represents a firmly entrenched and special bureaucratic interest.

7.3 Non-Economic Factors

Political economists, sociologists and anthropologists have long been aware of the importance of non-economic factors which affect the performance of food systems in developing countries. In this section we will examine the role of three types of non-economic factors: ideology, religion and cultural endowments.

7.3.1 Ideology

By ideology we mean shared sets of beliefs, attitudes and values in a society which affect the ways in which people interact and engage in political and economic activities. Rigid adherence to an ideology can preclude certain types of economic activity (e.g., gambling, smuggling), lead to prescription of others (collective organization of economic enterprises, administered prices, free markets), and undermine or encourage other types.

One example of how ideology has affected the organization and operation of agricultural markets is the People's Republic of China. The communist ideology of sharing in sacrifice and benefits of work were translated into a particular set of policies before the economic reforms of the late 1970s and early 1980s. Grain production was communally organized, the state controlled disposal of grain surpluses, and prices were administratively fixed. Everyone was guaranteed access to a minimally acceptable quantity of grain. This set of policies affected the incentives of producers organized into collective units. Individuals met the requirements of cooperative units in providing labor to grain production, but they also devoted a lot of time and attention to private production of vegetables and small livestock to meet cash needs. Small vegetable plots or ownership of small stock were means of supplementing meager incomes from communal activities.

A second example of how ideology can affect the organization and operation of an economic system is in the historical evolution of capitalist economies. Capitalist economies are characterized by specialization, exchange, innovation and search for means of reducing costs. This often leads to impressive increases in productivity, but there is a tendency toward increasing scale and concentration over time in many industries, including the food system (see Conner et al., 1985). As concentration increases, opportunities for oligopoly pricing may also increase. Product differentiation may also advance to the point of bewildering proliferation. This is usually accompanied by large outlays for advertising, which do not add value to products but which facilitate capturing of larger market shares by individual companies. Finally, private firms are not always required to internalize the costs of external economies in their production and marketing decisions, thereby imposing heavy costs on society at large or on groups lacking voice in particular.

7.3.2 Religion

Religion is related to and influences ideology, but it will be treated separately here. There is little doubt that religion often has a profound effect on the motivation and incentives of participants in economic systems. The economic dynamism of protestant countries, such as Germany, Switzerland, England and Holland, can be in part attributed to religious attitudes and predispositions toward hard work, savings and investment, characteristics which are not always present in developing countries. In protestant societies commercial success was encouraged and viewed as evidence of

divine blessing. On the other hand, commercial failure and unemployment may be viewed as just desserts for the unfortunate, and redistributive mechanisms may be poorly developed in such societies.

In contrast, Moslem societies are noted for their emphasis on social responsibility of wealthy individuals toward their less fortunate brethren. Moslem societies are often more committed to redistribution of wealth than other western or capitalist societies. There are strong pressures for the wealthy to provide for poor relatives and the indigent. In African countries such as Niger and Senegal, muslim clerics and brotherhoods play an important role in agricultural marketing and redistribution of surplus grain. This does not discourage the accumulation of fortunes, but it may shift relatively more resources to meeting current consumption requirements than to savings and investment. Moreover, it may contribute to fatalistic attitudes which undermine individual initiative in some Moslem countries. "In sha'allah" or "If God is willing" is a phrase which is often uttered. On the other hand, powerful Muslin clerics have the authority to require followers to provide labor for collective agricultural production. This phenomenon, which is practiced by the Mourides in Senegal, is a highly disciplined contractual arrangement for increasing agricultural production and assuring subsistence of the labor force.

Another characteristic of Moslem countries which affects economic activity is the Koranic stricture against charging interest on loans. In principle, interest is never demanded or paid. In practice, profits from use of a loan are sometimes divided between lenders and borrowers. In addition, lenders may not require interest payments, but they may expect other benefits, such as preferential exchange arrangements, tied or close business relations with the borrowers, and special services or favors in providing inputs or outputs. Moslem businessmen are not incognizant of the time value of money. Rather, forms of payment for use of money are often indirect and varied.

Fatalistic attitudes often also pervade animist societies, where rural people attribute economic success or failure to magic, the occult, the blessing or displeasure of ancestors, or the envy and ill-will of neighbors. These attitudes may discourage innovation and receptiveness of producers to new technology and farming practices, as well as to agricultural marketing opportunities. On the other hand, animist societies have often devised redistributive mechanisms for coping with agricultural production shortfalls and periods of exceptional hardship (see Campbell, 1984 and Campbell and Trechter, 1982).

7.3.3 Cultural Endowments

Ruttan and Hayami refer to particular cultural traits, group practices and communal forms as cultural endowments (Ruttan and Hayami, 1984). They cite communal efforts by the Japanese and Taiwanese to maintain irrigation channels as examples of a cultural endowment which has contributed significantly to high rates of agricultural growth in those countries.

Another example of a cultural endowment or characteristic is coping mechanisms developed in resource poor, drought prone African societies. In years of drought, pestilence or other disaster, many African societies redistribute staple foods so that the subsistence needs of as many rural people as possible are met. This redistribution is effected outside of marketing channels. There are strong social pressures to give food, livestock or money to less wealthy relatives and neighbors in times of need. In some cases reciprocity is later expected in the form of agricultural labor, political allegiance or help during crisis periods. In other cases there is little or no expectation of reciprocity. Although there may be no expectation of economic gain or eventual benefit, these types of coping mechanisms can be viewed as a form of social insurance. In addition, in many African societies collective labor is mobilized to maintain rural roads and to meet peak season labor requirements in food production and harvesting, which have important implications for performance of agricultural commodity systems.

A last example of a cultural endowment which affects food systems is the commercial acumen of particular ethnic groups who sometimes dominate marketing and international trade of some agricultural commodities in some developing countries. Examples from Africa include the Hausa in the long distance cattle trade in West Africa and the Somali in the East African livestock trade. The importance of the Bamilike of Cameroon and the Mandingos of Liberia, Guinea and Sierra Leone in domestic agricultural marketing, as well as the predominance of Lebanese or Indian international traders in other countries, are other African examples. An Asian example is the ethnic Chinese who dominate trade in certain commodities in Indonesia, Thailand, Malaysia and other Southeast Asian countries. Numerous examples from Latin America are also available, including regional groups within given countries like Colombia and Brazil.

These ethnic groups are often alleged to wield considerable market power, colluding to force agricultural prices low and to propel prices of consumer goods high to rural producers, and creating artificial shortages through speculation and hoarding. While most empirical studies do not support such allegations, it is sometimes true that trade in particular commodities is dominated by certain ethnic groups, and that entry may be difficult for outsiders. This may have important implications for the organization and performance of marketing systems. Barton (1977), Landa (1981), Cohen (1965), Shaffer et al. (1983), and others have noted that trading within an ethnic group significantly lowers transactions costs and generally decreases risks. Informal social obligations and trust can substitute for formal regulations such as legislated grades and standards in many countries. Doing business with members of one's kinship or ethnic group can reduce risk and uncertainty, stabilize returns, lower marketing costs, and decrease the importance of price incentives in transactions.

VIII. PREPARING FOR RAPID RECONNAISSANCE FIELD WORK

8.1 Preparatory Visit and Planning

Before planning for the RR field work begins, the RR team leader should discuss the objectives of the RR with study sponsors and policy-makers, and negotiate to modify the terms of reference if necessary. Several initial, exploratory interviews with selected participants in the commodity subsector will also prove useful as a crosscheck on policy-makers' perceptions and objectives. The team leader can also identify, and if necessary contract, researchers and institutions to collect, compile and analyze secondary data. If these data are entered into a microcomputer data base, further analysis is facilitated. Finally, the team leader can begin to make administrative arrangements for the RR field work. Generally, planning for the RR and preparation of secondary data will have a gradual buildup, unless an expatriate is asked to lead the team. In this case she/he will usually make a preliminary visit to the country where the survey will be done.

8.2 Selecting the Rapid Reconnaissance Team

RR findings are often most illuminating when the RR is conducted by multidisciplinary teams. Selection of analysts with different disciplinary backgrounds will be guided by preliminary identification of marketing problems and the expertise most effective in addressing particular problems. In some cases the RR team will have to depend on the perceptions and demands of organizations and agencies which fund the rapid reconnaissance.

In carrying out the rapid reconnaissance surveys, the RR team may want to divide into two or more groups of two to three researchers each, preferably having different disciplinary skills. RR surveys will generally be stronger if all of the team participants have conducted rapid appraisals in the past, as well as year or longer studies of food systems in developing countries. By having done longer studies, members of the RR team will be more sensitive to seasonal factors and the potential dangers of making inferences about production/marketing systems from information gathered from a limited number of participants, observations and areas during one short and not necessarily representative time period.

When the RR team is composed of researchers who have not all done longer term studies or rapid appraisal, it is advisable to mix experienced with inexperienced analysts. If expatriates are involved in RR work, it is critically important for host country researchers to participate in the exercise as well. Their knowledge of commodity production and marketing systems can offset potential bias from observing the system at one point in time. Their understanding of the sociocultural and political context is also invaluable in approaching key informants and structuring informal interviews. Local researchers will generally be more skilled in approaching participants in marketing systems and handling more sensitive issues than outside consultants. Knowledge of local customs, institutional and political organization and behavior, and agricultural and economic development in historical perspective will also improve interpretation and analysis of data generated by the RR.

While outsiders may come in with fresh perspectives, they lack detailed knowledge of local conditions. They may also come with preconceptions or inappropriate comparisons. In a few cases, however, expatriate researchers may be able to obtain information that local researchers could not obtain. In these instances informants perceive foreign researchers as outsiders who do not represent the government and will not use sensitive information against them, as a local researcher may be perceived as capable of doing.

By developing the capability to undertake rapid assessments, local researchers and research organizations can use the RR process to continue monitoring and evaluating the performance of commodity subsectors. They may also examine the organization, operation and performance of other subsectors. Familiarity with RR methods, and a critical awareness of their strengths and limitations, will also help to instill a healthy skepticism of the findings of short-term consultants and other RR teams.

8.3 Planning the Rapid Reconnaissance Field Work

During the first week or so of a rapid reconnaissance study, the team will need to define RR objectives, review available studies and secondary data, identify data gaps and needs, develop information gathering strategies, and define clearly the objectives of the RR and the roles of each of the team members in the survey. It is often useful to do a preliminary outline of the RR report (see Chapter X). This helps the team to focus on information needs and priority topics.

During this period it is necessary to define clearly the objectives of the RR and the roles of each of the team members in the survey. In cases where some members of the team have not done RR, it is useful to spend at least one day introducing them to the RR methodology. Experienced team members can give examples of problems they encountered in RR in earlier studies or of particular interviewing strategies or time saving techniques for data gathering that they have used successfully. The review of the RR methodology is not only useful for the uninitiated but also for those who have done RR before, so that every team member has a clear idea of how RR will be used in that particular context.

After the discussion of the RR methodology and review of the literature and secondary data, team members should be encouraged to jot down their hypotheses about the food system components under examination. Developing hypotheses about the organization and operation of the system will help to focus data gathering efforts. It will also hopefully make the researchers more conscious of possible sources of bias in their forthcoming information gathering. As a result, they must plan to offset these biases and preconceptions consciously in their research.

Before actually beginning the RR field work, it is useful to develop a research itinerary and activity lists. These lists should note tentative research plans for each day, including towns, agricultural processing plants, rural markets, and producing areas to be visited and government officials, types of marketing agents, and producers to be interviewed. If researchers plan to visit rural periodic markets, it is advisable to find out beforehand which days or how often particular markets are held. It is also useful to plan around government holidays, communal work days, religious festivals, days of worship and rest, or particular times of the day when potential informants are praying, working or otherwise engaged. An activity list is a useful tool in focussing data gathering on critical and necessary activities. It enforces discipline in planning research logistics. When travel and protocol requirements are taken into account, there are often strict limits on the number of places that can be visited and the number of informants interviewed. However, the researchers do not need to be slaves to an activity list, and it is wise not to overload it. Unanticipated opportunities to observe marketing processes or interview system participants may arise which can justify deviation from a fixed itinerary. It is advisable to allow time for improvisation, possible repeat visits or interviews, and other contingencies.

8.4 Review of the Literature and Analysis of Secondary Data

Although it may seem obvious to many that a logical place to begin research is by reviewing earlier work, there are many cases where this is not done, or not done very systematically. There is often a wealth of useful information and data in scholarly studies (including student theses), annual reports of government agencies or parastatals, ministry of agriculture data banks, records of cooperatives and private firms, project documents, trade and professional journals, and consulting reports. Although many researchers like to think that earlier studies are inadequate or unfocussed for their particular purposes, this work often contains useful information and insights.

While planning the RR survey, the team should review the literature and available secondary data. Not every team member has to review every document or data set, thus division of labor along disciplinary or subdisciplinary lines is usually appropriate. Each team member should summarize the principal findings from the literature and preliminary analysis of available data for other team members. During the first week of the RR, team members can make oral presentations, or draft a series of annotations or memoranda. In preparing important data for others, team members may wish to tabulate secondary data so that it is readily accessible and usable. Critically important papers that every team member should read before beginning the RR surveys need to be identified. The objective of this review is not to burden team members with busy work and supplementary writing assignments. Rather, it is intended to prepare all team members for the RR field work in as rapid and systematic a way as possible.

Types of secondary data that are usually readily accessible include :

1. Wholesale and retail prices for agricultural commodities, usually collected in capital cities and other major urban areas. Farmgate prices are often not collected or may only be official producer prices. (See Chapter V).

2. Price indices, usually consumer price indices, constructed for a basket of commodities purchased by urban consumers in large cities. Serious attention needs to be paid to how representative the basket of commodities and the weights used in constructing the indices are for different groups of consumers. Consumer purchasing patterns and price relationships among commodities change over time. (See Chapter V).

3. Data on quantities of commodities marketed, transported, and imported or exported.

   a) Extension agents or agricultural statistics enumerators sometimes attempt to collect data on the volume of commodities marketed in rural areas, particularly at rural markets, which capture part of total marketed output. While absolute volume figures should not be taken too literally, year to year changes in marketed output may be reasonably accurate indicators of significant changes in production and marketing. It is important to note, however, that policy changes may shift the location of apparent market surpluses, as well as the direction and magnitude of marketed flows. Furthermore, a change in government policy may encourage more officially recorded marketings through formal channels (transfer of sales from informal to formal markets), even though the total quantities sold may not have changed from one year to another.

   b) Interregional transport data are less common and may be highly inaccurate, depending upon government controls and taxes and whether commodities are transported in small or large lots. Data may be collected at entry points to large cities, at shipping and receiving points on rail, air and water lines, and at water crossings (ferries). Origin and destination traffic surveys provide accurate and detailed information but are often carried out at only one point in time, which may or may not coincide with the periods of major commodity flows. When traffic surveys are conducted at intervals over the course of one year, researchers need to assess the representativeness of the periods of data gathering.

   c) Import and export data (quantities and value) are usually more accurate than other types of quantity and flow data, but they may understate actual volume of imports and exports if government restrictions, quotas, taxes or overvalued exchange rates encourage smuggling or underinvoicing.

4. Data on the volume of processed or transformed commodities are sometimes collected by government agencies for taxation purposes. Processing firms are often asked to submit records of the quantities of produce processed to

government agencies. Since taxation encourages evasion, government data may significantly underestimate processed output. For example, livestock slaughter statistics are usually quite accurate for large ruminants (cattle, camels, buffaloes) slaughtered in urban areas, but typically incomplete for smaller stock (goats, sheep, pigs, poultry).

During rapid appraisals investigators should collect and analyze only secondary data which can be obtained with a minimum of difficulty. If RR teams can only obtain secondary data through extensive digging in government archives, or if aggregation of voluminous records is necessary, then these activities may be best reserved for later in-depth studies.

IX. IMPLEMENTING RAPID RECONNAISSANCE SURVEYS

9.1 Elements of Rapid Reconnaissance Field Work

The three critical elements of RR field work are :

1) direct observation of food system facilities and processes,

2) examination of firm and organization records, and

3) informal interviewing of subsector participants and knowledgeable observers of commodity systems.

There is no substitute for observing how food system components functions firsthand. This includes inspecting marketing infrastructure, such as marketplace, storage and processing facilities, as well as the transportation network and transport equipment. Observation of physical handling and packaging of commodities, wear and tear on produce in transport, and transactions at different levels of the system (at the farmgate, at assembly and redistribution markets, in retail stores) is also necessary and instructive. By directly observing marketing processes and functions, investigators are able to identify marketing problems and evaluate what key informants say about the organization and operation of the system against what is actually observed.

Examination of detailed firm and organization records can provide data on the volume of the target commodity bought, processed, stored and sold during particular time periods, the value of organization assets, purchase and sale prices for inputs and outputs, and costs and returns of marketing operations. Yet in many developing countries records for individual firms are incomplete and inaccurate, particularly for smaller firms. Managers of many small firms are illiterate or do not keep records. Even in firms or organizations where data are recorded, these data may not always be organized or recorded in a form which can be readily used by outsiders. Or the records may be organized for the convenience of outside regulators, but they are likely inaccurate and designed to misinform or misrepresent. For example, wholesale grain traders in the Peanut Basin of Senegal keep one set of record for government regulatory officials in order to document that they trade grain at official prices, and a second set for recording actual purchase and sale prices (Newman, Sow, Ndoye, personal

communication, 1985). Some larger firms and marketing organizations may deliberately underrecord transactions, understate sale prices, underinvoice or in some other way misrepresent financial transactions so as to evade taxation or close government scrutiny.

Interviewing key informants in the food system is essential for understanding their perceptions of what constitutes good system performance, problems and constraints at the level of the firm and in the overall food system, and unexploited or underexploited marketing opportunities. It is preferable to interview key informants alone and confidentially, under which circumstances they are more willing to discuss their marketing activities and sensitive topics such as price information, credit arrangements and relations with other firms. Group interviews and informal Delphi methods, which encourage intense and frank interaction among participants, can generate much useful information in a short period of time and provide insights into the interaction of participants, but such methods also risk introducing bias into RR findings.

9.2 Where to Begin the Rapid Reconnaissance

In abbreviated surveys, more so than in longer term studies, what one often finds depends heavily on when the surveys are carried out, who is interviewed, what is observed, and where research is conducted. Where an investigation begins is usually a function of the rapid reconnaissance objectives. If RR studies are funded as an input into the design of a project for improving urban food distribution, surveys will begin in urban areas. Researchers will need to analyze demand patterns and prospects and urban food distribution channels before surveying rural producing areas. If RR precedes design of a project which will promote production of particular commodities, surveys will usually begin in rural producing areas. When a particular rural area is targeted for production increases, the researchers will visit that area early in the RR to examine constraints to increasing production and marketed output. If the objectives of the RR are broad and the organization funding the research does not demand that RR focus on any particular segment of the marketing system or a particular geographic area, researchers will usually find it useful to interview wholesalers based in large markets and secondary towns. They are typically more knowledgeable about the organization and operation of the entire marketing system than other participants, and they often have a vantage point acting as "channel captains" in the marketing system (Harrison et al., 1974). They may be reluctant to divulge much information, especially if they perceive that the study is to be used in developing additional regulations and taxes. Special efforts are often required to relate to key system informants.

Where the RR survey begins will suggest where the investigators wish to go next. Studies which begin in urban areas will usually work back through marketing channels to rural producing zones. Selection of zones is not determined by hard-and-fast criteria. In some cases researchers will go first to the producing area which ships the largest quantity of produce to the urban market.

It may also be useful to visit areas where there is agronomic potential for producing the commodity in question, or for producing significantly more of the commodity, in order to examine why production and marketed output are low or nonexistent. When there are several important producing areas, the RR team will need to develop criteria for selecting particular zones and subzones for examination. Random selection is usually suitable for subzones. Selection of zones may sometimes be guided by political objectives or regional equity considerations.

Selection of particular villages or subsector participants presents other problems. In RR selection is generally purposive and rarely defined clearly, so selection criteria have to be established in each case. RR does not include large sample surveys and does not generate estimates which are representative in any statistical sense. In order to sample purposively, RR teams should know something about the population of villages, trading firms, processors, transporters, etc. This can be determined through earlier studies, interviews with key wholesalers or knowledgeable observers of commodity subsectors, and existing enumerations of firms by government agencies. If the general characteristics of the population are known and different strata can be identified, individuals and firms can be selected randomly from each stratum. For example, RR teams may stratify agricultural producers into five groups : small farmers who do not produce the target commodity; small farmers who produce it but who sell little or none; small farmers who sell a significant proportion of what they produce; medium-sized farms which sell most of what they produce; and large farms which sell all or nearly all of the commodity produced. As a second example, wholesalers can be stratified by volume of the commodity they handle, the approximate value of their assets (vehicles, warehouses, storage facilities), or commodity mix.

Purposive sampling becomes more difficult when there are no existing studies or enumerations, if existing enumerations are incomplete or inaccurate, or if knowledgeable observers cannot provide information about numbers of different size/type firms at

different levels of the food system. RR teams are then encouraged to select strategically placed informants, such as large scale wholesalers or processors, for in-depth interviews. They can then proceed to retail firms, first handlers or producers linked vertically to these informants. Alternatively, researchers might interview a second or third informant at the same level of the system.

One RR team can proceed backward through the subsector toward producers, while a second can move forward toward consumers (or institutional buyers). Through this process the teams are able to gain a better understanding of the organization of the food system, marketing processes and vertical linkages in the system. They are also able to crosscheck information provided in earlier interviews with informants at the same stage or at adjacent stages of the system. Different perceptions of problems and opportunities can also be elicited. These will vary, of course, depending on where firms are placed in the subsystem.

9.3 Processes, Functions and Facilities to Observe During Rapid Reconnaissance

The following processes, functions, and facilities are important to observe and inspect during the rapid reconnaissance:

1) Transactions for both inputs and outputs at the farm level (if possible), at assembly and wholesale marketplaces, and at retail outlets.

2) Handling, weighing and measuring, sorting, grading, packaging, processing, transport, and storage of commodities at different stages of the marketing system, including the farm, assembly markets, processing plants, terminal markets, storage facilities and retail stores.

3) Facilities for buying/selling, processing, transporting, grading and storing commodities in rural and urban areas.

A useful technique for observing facilities, functions and processes is to follow agricultural commodities from the farm to the terminal market, or at least through part of the production-marketing chain. This is a form of what anthropologists call "participant observation." Accompanying wholesale traders or their agents to rural areas and then back to urban markets is one method of observation. Investigators can observe

transactions, note costs and losses for a particular marketing trip, ask the wholesaler how representative these costs and losses are for his/her business, and ask the wholesaler questions along the way about marketing processes and functions. Researchers are also usually able to spot inefficiencies and problems in the system during these trips, as well as to inspect marketing infrastructure and facilities.

During RR field work it is often useful to purchase retail lots of the commodity in question in markets and towns visited during the RR. It is important to bring small scales along so that these purchased quantities can be weighed, the price per unit of measure calculated, and comparisons made with values obtained in other locations. If there are unexpected or unexpectedly large differences, the investigators can interview traders and retailers on the spot in order to ascertain reasons for these differences.

It may also be useful to bring hanging scales (and accompanying hooks and ropes for suspending the scale) for weighing bags of produce (or quarters of beef, crates of vegetables, etc.) or other units sold wholesale. By weighing produce sold wholesale, the weight of local units of measure, and any variation therein, can be determined. Since produce is often bought and sold in the same units (e.g., sacks) at the farm, in rural assembly markets, and in urban wholesale markets, prices per unit can be calculated for produce sold at different levels of the marketing system. Adjustments may need to be made as the commodity moves along the marketing chain for shrinkage, loss or addition of foreign matter. Gross marketing margins can thus be established.

9.4 Selection of Key Informants

There are two sets of key informants: subsector participants and knowledgeable observers of subsectors. In the rapid reconnaissance literature subsector participants are not usually considered key informants, who are designated as "key" due to their special knowlege and understanding of agricultural production and marketing systems (see Beebe, 1985). In this paper the term key informants designates selected subsector participants, as well as outsiders with broad and less parochial perspectives.

Subsector participants are linked forward and backward to other participants in the production-distribution system. Some participants, particularly wholesalers and processors, have a systems perspective about the interrelationships among the parts of the system and resulting system performance. They are able to identify both system-

wide problems and potentials as well as stage-specific constraints. Other participants have long years of experience in the commodity subsector and in-depth knowledge of particular problems. They often have parochial views and attitudes and may not be able to identify system-wide problems. Their perceptions of stage-specific marketing problems are important, however, and need to be tapped by RR researchers.

Table 4 lists key informants who can be interviewed during RR surveys. The advantages and disadvantages of each type of informant are noted. The types of informants who will be interviewed during a rapid appraisal will depend on the objectives and focus of the study. It is clearly not necessary to contact all the types of informants listed in Table 4. Moreover, other researchers will doubtless be able to add to the list.

In most RR surveys, more than one set of key informants will need to be purposively selected in order to elicit multiple views of subsector performance, government policies, and subsector potential and problems. Different informants will emphasize different performance attributes and have different ideas of what constitutes desired performance. This reflects different perceptions and priorities, which are often parochial, as well as concerns about the existing and potential distribution of resources and income, which are unstated and implicit.

The types and numbers of informants selected at any one stage of the subsector will depend upon the degree of heterogeneity of the following characteristics of firms: size, patterns of input use, product mix, geographic distribution, resource endowments, management, technology, and standard operating procedures. The more diverse firms at each stage are with respect to the above characteristics, the larger the sample of informants will need to be. Sampling of disadvantaged and less vocal groups, such as landless laborers or nutritionally vulnerable consumers, as well as systematic contacting of women or their associations, may be necessary to offset common biases of many rapid appraisers. It is noteworthy that women play an important role in staple food crop production, processing and retailing in many developing countries, particularly in Africa. While agricultural production and marketing interventions affect female participants in the food system and may exclude women from gaining access to certain resources, some analysts have failed to anticipate these impacts. Given recent interest in disaggregated welfare effects of food policies, most analysts will probably devote some attention to examining consumption patterns of disadvantaged groups in food systems (Timmer et al., 1983).

Table 4

KEY INFORMANTS IN FOOD SYSTEM RESEARCH: ADVANTAGES AND DISADVANTAGES AS INFORMANTS

KEY INFORMANT	ADVANTAGES AS INFORMANTS	DISADVANTAGES AS INFORMANTS
Wholesalers	a) Located at system node which offers vantage point and system perspective. b) Knowledge of production, stocks, flows, prices and strength of demand in different rural and urban areas.	a) Extremely busy and often difficult to interview for more than a short period. b) Given typical hostility of government, they may be uncooperative informants.
First Handlers	a) Detailed knowledge of exchange arrangements with producers and wholesalers. b) Knowledge of market opportunities, production, stocks, and prices in particular rural areas.	a) Knowledge rarely extends outside circumscribed rural areas. b) May have parochial perceptions and attitudes.
Managers of Processing Firms	a) Located at system node which offers vantage point and system perspective. b) Knowledge of production and prices in selected rural areas, and demand for processed products in urban markets. c) Detailed knowledge of exchange arrangements and risk-sharing mechanisms with producers or producer groups.	a) Given typical hostility of government, may be uncooperative informants. b) May be unwilling to divulge details of exchange arrangements with producers. c) Will often underreport throughput in order to evade taxation.
Transporters	a) Knowledge of direction and magnitude of commodity flows. b) Familiar with structure of commodity trade. Can often identify large volume traders.	a) Do not actually participate in trade, so lack knowledge of trading practices, prices and strategies.
Importers/ Exporters	a) Knowledge of magnitude, timing and prices of imports and exports. b) Detailed knowledge of import/export practices, procedures and regulations.	a) May know little about how commodities are assembled for export, or how they are distributed after importation. b) Since smuggling and underinvoicing are common practices in many countries, they may be unwilling to report volumes or prices. c) If rights to import/export are obtained through privileged access or rent-sharing, they may be unwilling to discuss business practices.
Representatives of Cooperatives, Trade Associations	a) Knowledge of numbers and sizes of member firms, and their output. b) May effectively represent membership and its perceptions of constraints, opportunities.	a) If representatives are appointed by government, may not effectively represent membership. b) Membership may be restricted to larger firms and producers.
Bank Loan Officers	a) May possess information about the operations, throughput and returns of larger wholesalers, processors and retailers. b) Access to information about composition of commercial bank loan portfolios.	a) May not possess systems perspective. May make judgements on basis of narrow rate of return criteria. b) May be unwilling to divulge confidential information about borrowers' operations.
Institutional and Private Sector (Large Supermarket) Buyers	a) Often major buyers of high value commodities, such as fruits and vegetables, livestock products. b) May have negotiated contractual arrangements with large volume wholesalers, processors or importers.	a) As buyers of final products, may have limited knowledge of system organization and operation. b) Usually constitute small proportion of final demand for staple commodities.

Table 4 (Cont.)

KEY INFORMANTS	ADVANTAGES AS INFORMANTS	DISADVANTAGES AS INFORMANTS
Missionaries, PVOs	a) Well-placed to describe difficult to observe phenomena and report on phenomena others unwilling to discuss. b) Sometimes provide extension, input supply and marketing services to rural clients.	a) Usually have separate agendas that lead to parochial perceptions and attitudes. b) May regard donor agencies or government as adversaries. c) May not participate directly in commodity subsystems.
Extension Agents	a) May have detailed knowledge of farmers' production and marketing practices and strategies, producer-first handler exchange arrangements, and the structure of the first handler stage. b) Knowledge of size distribution of farms, alternative technology utilization and range of marketed surplus, and food security situation of local farms.	a) Agents often not natives of area. b) May have few funds and no transport for extension visits. c) Low pay and difficult working conditions may induce poor performance. d) May be biased source of information regarding farmer production practices and technology utilization.
Managers of Parastatal Agencies	a) Parastatals may buy a large proportion of marketed surplus and manage reserve stocks. b) Parastatals are often major importers and exporters of commodities and inputs.	a) If possess legal monopoly powers, may know little of private competitors' operations and oppose them vociferously. b) If parastatal under attack, may be very defensive and try to justify/rationalize parastatal functions and role.
Agricultural Producers	a) Knowledge of sources of input supply, production practices and strategies, alternative technologies, prices, and marketed surplus in own area. b) May be able to identify largest and most productive farmers, as well as least successful farms with precarious food security situations. c) Detailed knowledge of local marketing opportunities and outlets.	a) Primarily subsistence farmers may know little of current prices and market opportunities. b) Some producers may have parochial perspective and malign traders. c) Few producers have systems perspective and knowledge of functions higher up the system.
Urban Consumers	a) Can discuss current and seasonal consumption practices and food prices. b) Able to discuss pros and cons of alternative retail food outlets.	a) Individual consumers cannot speak for full range of consumer groups. b) Care must be taken to identify and interview nutritionally vulnerable groups.
Retailers	a) Possess better knowledge of consumer wants and needs than other market system participants. b) Knowledge of wholesaler-retailer exchange arrangements.	a) Small volume retailers in many countries are relatively homogeneous, parochial, and lack systems perspective.
University or Agricultural Researchers	a) Detailed knowledge of literature and secondary data sources and reliability. b) May possess analytical framework that leads to better understanding of system and its constraints/opportunities.	a) May have parochial disciplinary perspective. b) May lack detailed knowledge of business objectives, practices and problems of participants at different stages of the system.

9.5 Informal Interviewing of Key Informants

9.5.1 Interviewing Techniques

Researchers will rarely have the luxury of developing formal questionnaires (which are pre-tested, translated and back-translated, etc.) for each type of participant interviewed. Rigorous and intensive questionnaire development might be necessary if the researchers wish to focus attention and resources of the inquiry on one or a small number of stages, or if information obtained in initial interviews is deemed inaccurate, inappropriate or ambiguous. Nevertheless, it is useful to develop interview strategies and topic guidelines for different groups of participants, including specific questions, desirable sequences of questions, and types or ranges of questions for initial and followup interviews. Informal interviews will be structured in the sense that the intention is to cover important topics in a preferred sequence. Yet they will be unstructured in the sense that interviewers will be able to vary the length and format of an interview, probing promising lines of inquiry in depth, where feasible, or adhering to non-controversial or less sensitive topics, where necessary. For example, in one instance the interviewer might encourage a respondent to focus on subsector problems, government policies or marketing opportunities. A parallel interview with another informant at the same stage of the subsector might focus on that firm's management, sources and uses of credit, standard operating procedures for carrying out particular marketing functions, and relations with other firms.

While it is useful to develop informal interview guidelines for different types of participants before beginning RR field work, it is important to realize that interviewing busy marketing system participants is an art. Investigators rarely have the time to ask even the most cooperative of informants everything they would like to ask, unless it is possible to arrange a followup interview or two. So investigators have to focus the interview on particular issues and problems. Allowing informants enough flexibility to discuss issues and topics which interest them or problems which they find especially bothersome can have high payoff. Investigators can often uncover unexpected insights in this way.

In addition, it can be very effective to challenge informants on particular issues, if only to stimulate discussion and compel them to articulate their views more clearly. Informants who are bored or annoyed by interviews will sometimes offer incomplete or

unsatisfactory answers to questions, hoping that the investigator will accept those responses uncritically and continue toward completion of the interview. It is very important to challenge such responses and to demonstrate to the informant that the researcher understands enough about the marketing system to realize that his/her answer is incomplete or unsatisfactory. To do this in a humorous or clever way can liven up an otherwise routine interview, improve rapport, and facilitate the information gathering task.

Informal interviews in rapid reconnaissance are best used to elicit information on informants' perceptions of commodity system problems and opportunities, ideas of how the system can be improved, views of the effect of particular government policies, and the need for policy changes. The emphasis should not be placed on accumulating detailed information on the organization and operation of the subsector at each particular stage.

9.5.2 Building in Consistency Checks

Informal interviews can be structured so that information about certain topics is obtained in more than one way, either in different sequences of questions or by approaching the topic from two or more angles. For example, interviewers can obtain information about producers' marketed output by first asking producers directly the number of sacks of a commodity that have been sold since the harvest. An indirect way of obtaining the same information would be to ask the producer the numbers of sacks harvested, given and received, and consumed. The residual would then be the number of sacks sold. Information obtained from interviews with key informants about exchange arrangements, risk reducing and sharing mechanisms, credit arrangements, commodity flows and other vertical linkages should be cross-checked with informants at adjacent stages of the subsector. The overall validity of rapid reconnaissance findings can be also checked with knowledgeable observers of commodity subsectors, including researchers, certain government technocrats, selected agricultural project managers, and regionally important business people.

A useful method of consistency checking is mirror-image interviewing. This technique involves asking informants at adjacent stages of a subsector the same set of questions. Major differences in responses are generally an indicator that one or both informants are misinforming the research team. Such differences may also indicate that one or both of the informants does not know or accurately recall the answer to the question.

9.5.3 Repeat Interviews

Repeat interviews with cooperative and knowledgeable informants, or interviews with informants who substitute for uncooperative or less useful informants, are often necessary in order to:

1) Follow up on initial, more general interviews with questions about the organization and operation of particular firms (especially if these firms play an important role in the subsector or at a particular stage of the subsector).

2) Clarify statements or viewpoints presented during an earlier interview.

3) Cross-check information provided during an earlier interview or by another informant at the same stage of the subsector or an adjacent stage.

4) Discuss more sensitive topics, such as credit arrangements, price formation, relations with other firms, circumvention of government restrictions, parallel markets, etc.

Follow-up interviews with selected key informants during the rapid appraisal can lay the base for case studies during later phases of research. Case studies entail multiple visits over a longer period, typically a year.

9.6 Interviewing Village Headmen and Other Local Informants

One information gathering shortcut in rural studies is to interview traditional leaders, such as village leaders or headmen. In many African countries local notables meet periodically as a group to arbitrate between conflicting parties. These groups often discuss issues of land tenure and use, disputes between farmers and herders and other grievances, and issues of collective organization, such as constructing social infrastructure (schools, clinics), road maintenance, and formation of cooperatives. While calling together all the members of a local deliberating body may take time, it may prove valuable if some of the above issues are addressed in an RR study. When the focus of a rapid appraisal is agricultural marketing, it will generally not be necessary to convene a large group of notables. An interview with a village leader or headman will

usually suffice. Interviews with older members of the community who are producers or traders can also be very valuable in learning about change in agricultural production and marketing practices and policies over long periods. These informants possess a wealth of local knowledge, as well as a longer term historical perspective. Such perspectives are valuable and researchers can elicit perceptions of current problems in historical context, as well as historical information on when particular types of agricultural production technology were first tried and adopted, when rural roads and wholesale trading networks penetrated rural areas, and shifts in agricultural production patterns over time in response to marketing opportunities and availability of inputs.

As a general word of caution, it is advisable not to ask sub-district or village headmen questions which demand detailed responses that they are unable to provide. In other words, it is best to tailor questions to respondents' frame of reference and level of knowledge. For example, a subdistrict official is unlikely to possess detailed information about the size distribution of farms in his jurisdiction or of marketed surplus of particular types of farms, whereas a village headman may well be able to answer questions about these topics.

9.7 Group Interviews

Depending upon the cultural context, interviews of relatively homogeneous groups of subsector participants can elicit views of subsector performance, the need for and effects of government policies and regulations, and system bottlenecks and opportunities. Group interviews can also serve to legitimize the process of inquiry among potential participants. In many Asian and African countries, for example, agricultural producers are more likely to cooperate in survey research once the village chief or elders have met with the researcher and approved the research agenda. The main drawback of group interviews is that they can be dominated by especially articulate and forceful individuals, whose views and perceptions may not be widely shared. The findings of group interviews or of meetings with representatives of producer, trade or industry associations must always be cross-checked with individual informants. Preferably some of these informants will not have attended the group meeting.

9.8 Informal Delphi Techniques

Informal Delphi techniques for obtaining information about the views and perceptions of marketing system participants are sometimes appropriate in rapid reconnaissance field research (Honadle, 1982). Delphi methods are an iterative form of information gathering that can involve several group interviews with brainstorming and intense interaction or iterative, private consultations with anonymous informants. Either form of Delphi is designed to elicit candid appraisals of participants' views, perceptions and ideas (in this case, about marketing system performance, problems, constraints and opportunities). The Delphi approach assumes that the group will move toward consensus and that false or misleading views and perceptions will be exposed and discredited. This approach is a potentially attractive information gathering shortcut for RR researchers in that reliable information on sensitive topics can supposedly be obtained in a short time span. Moreover, the difficult process of trying to separate out reliable information from unreliable information and misinformation supplied by individual informants can be largely avoided.

There are several potentially serious problems with Delphi methods, however, particularly in group meetings. In heterogeneous groupings of Delphi participants, some individuals may not express their views and ideas candidly, deferring to participants with more power in the marketing system or to representatives of government agencies. Less powerful participants avoid risks by being reticent and not openly criticizing participants who can apply sanctions or use confidential information in a way that harms them. Among groups of peers (participants at the same stage of the marketing system), Delphi methods are most likely to generate reliable information. Individual participants are less likely to refrain from criticizing the government or marketing agencies, or other groups of participants (especially powerful participants) in the marketing system.

Informal Delphi techniques can be quite useful in evaluating the performance of organizations and agencies within the marketing system. For example, representatives of producer cooperatives could diagnose problems associated with the input procurement and distribution, crop storage, and crop marketing practices of the cooperative. It is not recommended to include government overseers of the cooperative or appointed cooperative officers, who are often not producers, in the discussions. Unequal status among participants will usually preclude frank discussion of problems.

9.9 Recording Rapid Reconnaissance Findings

When recording information during RR interviews, time-saving techniques must be adopted. There are few things more disturbing to a busy marketing agent than to sit through long interviews where the investigator spends half or nearly half of the time writing longhand notes. Several shortcut techniques are possible. Researchers might only note quantities, prices, and other continuous variables, which are more difficult to recall than qualitative data, during interviews and reserve detailed recording of other information until after the interview is completed. Standardized formats for different types of data gathering, such as forms for recording prices and quantities in marketplaces, and for different types of informants, such as producers, can also speed up the note-taking process. And, of course, developing an effective shorthand for recording information is another means of shortening the time required for interviews.

A common mistake in conducting informal interviews is to postpone writing down observations, perceptions and responses until long after interviews are completed. It is also easy to fall into the trap of taking poor or incomplete notes. It is strongly recommended that researchers record the findings of informal interviews immediately after each interview is completed. In some cases, using a large informal questionnaire is a valuable tool in forcing analysts to record findings during or shortly after each interview. Having this recorded information will be essential at a later stage when the investigators write up the research results.

9.10 Speeding up Information Gathering in the Field

Depending on the circumstances, the two or three members of a RR team can work separately to increase the rate of information gathering. For example, one member of the team can interview wholesalers and retailers at a rural market, while a second can observe the market, counting the numbers of traders of each type, estimating the quantities of the commodity brought to the market that day, noting the numbers and types (make, tonnage) of trucks at the market, and chatting with truckers to obtain information about transport costs and the magnitude and direction of marketed flows. When the RR team is in rural areas interviewing producers, team members can individually interview producers to get a broader sample. The more standardized the informal interview format for producers, the less risk there is in having team members carry out individual interviews. When researchers are not following informal interview

guidelines but are extemporizing, research findings may differ quite significantly, reflecting the interviewers' different interests and biases, or perhaps the asking of questions on similar topics in quite different ways.

While splitting up RR teams will accelerate information gathering, this may not always be desirable. When two or more researchers participate in an informal interview, they may interpret the informant's responses in different ways. At the end of each day, or perhaps immediately after each interview, the team members can discuss informants' responses and their implications. By comparing interview findings and inferences within each RR team, possible bias in interpretation can be offset. Teaming up to do interviews can also speed up individual interviews. One researcher can pose questions in an informal, conversational style, while the other records the informant's responses. The two researchers can take turns asking questions in their areas of specialization during an interview.

In the final analysis, researchers participating in rapid reconnaissance surveys will need to evaluate the tradeoff between breadth of coverage (numbers of participants interviewed) with depth and accuracy of coverage. Choices about interviewing strategies will be influenced by the time available for RR, the skills and experience of researchers participating in RR, and the degree of variation in interview findings and interpretations of informant responses.

9.11 Periodic Meeting of Rapid Reconnaissance Teams and Exchange of Preliminary Findings

Although it is recommended that RR groups divide into two or three person teams during the field research, the teams should not work in isolation. The individual RR teams should meet periodically to discuss preliminary findings during the reconnaissance surveys. The meetings may be infrequent (weekly or perhaps biweekly) due to logistical difficulties. Nevertheless, it is important that the different teams discuss preliminary research findings, tentative conclusions and hypotheses inferred from the findings, information gaps, and needed data gathering emphases during the RR. In some cases there may be disagreement among the participants. In the ensuing debate, the researchers may uncover preconceptions, unstated assumptions, and unclear or unjustified inferences. Periodic meetings are also useful in helping the researchers to focus increasingly on key research issues, which typically emerge during the course of

the RR surveys, rather than to continue gathering information in a broader, less directed way.

X. PRESENTING RAPID RECONNAISSANCE FINDINGS

10.1 Writing up the Results of the Rapid Reconnaissance Survey

It is useful to outline the written report that will be prepared before initiating the survey research. The final organization of the report will probably be somewhat different, but outlining the report during the planning stage helps to identify key issues as well as who will be responsible for addressing these issues. When preparing the final report, separate papers along disciplinary lines are discouraged. It is the responsibility of the team leader to integrate different disciplinary findings into a summary report. In many cases it is desirable to write a concise (less than 10 pages) summary which discusses key findings and marketing system problems, while attaching the more detailed reports of subject matter specialists as annexes. If policy-makers are the principal audience for the document, it is recommended to prepare a cross-referenced summary that directs the interested reader to elaborations in technical annexes.

A suggested format for the summary paper is as follows :

1. Executive summary
2. State RR objectives
3. Briefly discuss research methodology and its limitations
4. Define policy objectives and performance goals

5. Food (or commodity) system overview
   a) Commodity characteristics
   b) Commodity consumption patterns
   c) Supply situation for the target commodity
   d) Price analysis
   e) Marketing system organization
   f) Marketing system operation
   g) Marketing infrastructure
   h) Institutions and policies affecting agricultural marketing

6. Identify and diagnose key problems and constraints, as well as untapped and underexploited opportunities to improve system performance

7. Suggest policy and program options
8. Identify further research needs

10.2 Presenting the Principal Findings of the Rapid Reconnaissance

In many cases RR investigators will be asked to brief any policy or decision makers who commissioned the RR about the principal findings of the investigation. Presentations should be kept relatively short (no more than one hour) and may need to be considerably shorter for senior policy-makers. Ample time should be left for discussion of the RR findings. The RR team should try to elicit discussion of the identified marketing problems and constraints. Do the policy-makers agree that these are key problem areas? If so, how would they rank order them? If not, which problems were missed, and why are these important? In addition, what areas do policy-makers view as most promising for further research? Do they support research in certain areas but appear reluctant to approve research in other areas? What are the reasons for the enthusiasm and/or hesitancy?

10.3 Follow-up to Rapid Reconnaissance

A rapid reconnaissance study may serve as a one-time, stand-alone effort which requires no further research. Some policy-makers may feel that a RR survey provides enough information on which to make informed policy choices. Others may wish to commission further studies, which follow guidelines laid out in the RR summary report.

RR surveys will identify food and marketing system problems and constraints which may be diagnosed in depth during later phases of marketing research. In moving from rapid reconnaissance to a longer term program of research, it is often difficult to reach a consensus as to the key problem areas and the most feasible and relevant research topics. It is very important to present the RR findings as clearly and lucidly as possible to help establish the rank ordering of research problems and priorities for further research agenda.

One tool for facilitating this process could be a two-dimensional array having perceived subsector problems as row headings and subsector participant groups and government agencies as column headings. Subsector problems could then be discussed and prioritized by the researchers in collaboration with policy-makers. It may be useful

to distinguish between system-wide and stage-specific problems. Criteria for prioritizing problems and constraints will have to be specified clearly. Another tool might be a marketing constraint matrix with constraints as rows and selection criteria such as system-wide effect of the constraint, feasibility of doing research on each constraint, likelihood that research findings will lead to policy change, and other factors as columns. Ordinal scales can be developed to rank order the potential payoff of doing further research on different constraints and taking action to relieve constraints.

XI. LIMITATIONS OF RAPID APPRAISAL

11.1 Time-Boundedness and Bias

Rapid reconnaissance should be used with caution as a tool for generating policy prescriptions because it has two fundamental limitations. First, it does not allow for observation of all the seasonal dimensions of agricultural production and marketing (see Chambers, Longhurst, Bradley and Peachem, 1979). It is not a substitute for longer term, more data-intensive studies in obtaining a comprehensive understanding of agricultural production and marketing systems. Rapid reconnaissance techniques are particularly unsuited for obtaining reliable information on flow variables, such as agricultural production, quantities and prices of inputs and outputs purchased and sold, commodity flows, and labor inputs, over long periods. Yet RR methods are often useful as a first step in the design of formal surveys with which flow data are collected. Second, rapid reconnaissance can be subject to bias, because informants and areas or facilities for visits are selected non-randomly. Predispositions of researchers may also introduce biases (Chambers, 1980, 1981; Carruthers and Chambers, 1981).

Policy prescriptions coming out of rapid appraisals may be premature. They may also fail to identify key marketing opportunities, or they may lead to the implementation of weak or invalid marketing strategies (Belshaw, 1981). Rapid reconnaissance is a very useful tool, however, for identifying food system problems, constraints and opportunities, and for informing longer term, focused studies of particular aspects of food systems. In some cases it may be useful to test on a pilot basis, during longer term research programs, technical or management innovations identified during RR. The International Livestock Centre for Africa (ILCA) has found this willingness to experiment and transfer known technologies to a new research environment to be an important dimension of a longer term program of applied research (personal communication, Stephen Sandford, 1984). Such a research strategy will help to satisfy client groups that clamor for action and that are not inclined to support long term research programs without demonstrable intermediate results.

11.2 Limitations of the Subsector Framework

An important strength of the subsector approach is its focus on how the system operates as a whole, and its emphasis on dynamic forces which drive and transform food

systems. Yet subsector performance is often evaluated with reference to concepts which have been criticized as elusive and difficult to quantify. Concepts such as workable competition and effective coordination have been attacked as imprecise and dependent upon researchers' judgement.

The subsector approach has also been criticized as being overly descriptive and unfocused. Since the subsector framework is a systems approach, albeit a partial one (i.e., a subsystems approach), researchers can become bogged down in describing and analyzing many different elements of the subsystem. The temptation is always to collect too much information without adequate focus. This is a very real problem. Proposing working hypotheses about the system at the outset and tailoring data gathering efforts to test, disprove and modify these hypotheses can help to focus data collection. This approach is at the heart of inductive methods of research (Platt, 1964).

At the same time, it is important to remember that rapid reconnaissance is essentially an empirical approach to initiating research. Overemphasis of formal hypothesis testing at an early stage of the research may effectively limit the scope and comprehensiveness of rapid reconnaissance. In particular, expatriate researchers who do applied research on food systems in developing countries may not know enough about these systems to formulate useful, relevant and testable hypotheses before they begin doing research. It is important to know in general how the system is organized and how it functions within its particular institutional, social, and macroeconomic environment before focusing research on gathering data to test a set of hypotheses. Acquiring this understanding requires an investment in analyzing secondary data, observing the system at different levels and locations, conducting informal interviews with system participants and knowledgeable observers, and identifying system constraints and opportunities before finalizing hypotheses that guide intensive data collection.

Another criticism of the subsector approach is that it is partial. In focusing on one or more related commodities, researchers may miss important interrelationships among commodities which are substitutes in production and consumption. Use of a broader partial equilibrium framework, such as the Food Policy Analysis approach developed by Timmer, Falcon and Pearson (1983), is often advanced. This approach focuses on several key staple crops simultaneously. Heavy emphasis is placed on price analysis broadly construed; that is, analysts examine input and output prices, and interest, wage and exchange rates, and their effects on incentives facing producers,

marketing agents and consumers. The effects of macroeconomic policies and international trade on agricultural production/marketing systems are analyzed.

There is much in the Food Policy Analysis perspective that can be usefully adapted to subsector studies. Clearly, the effects of macroeconomic policies and international trade on incentives facing subsector participants (including input suppliers, producers, first handlers, wholesalers, processors, retailers, importers and exporters) are often underestimated if the analysis takes a too partial view of production/marketing systems. Moreover, the subsector approach needs to be expanded to include examination of close substitutes of the commodity under examination in production and consumption. The challenge for researchers examining subsectors is to know when and how to broaden the approach to include important factors without making the research agenda unmanageable.

XII. CONCLUSION

Rapid reconnaissance surveys are often sponsored by donor agencies or developing country governments seeking information for policy formulation or justifications for developing and funding projects. The rapid reconnaissance guidelines presented in this paper are designed to be a tool for generating knowledge about food and commodity marketing systems in a short period of time that may be used in policy formulation and project development, but that are best suited to informing longer term programs of applied research. The fundamental strength of rapid reconnaissance is that applied researchers can obtain a broad understanding of commodity marketing systems in a relatively short time and that system constraints and opportunities can be identified. Through this process it is hoped that the design and policy relevance of follow-on applied research will be improved. By identifying promising areas of further research, rapid reconnaissance can help to improve the allocation of resources to programs of food and agricultural marketing research. Rapid appraisal can also play an important role in pointing out actual or proposed policies with adverse or potentially adverse consequences. This can help policy makers to reform counterproductive policies or to avoid poor decisions. Rapid appraisals can also be conducted intermittently and repeatedly in the policy and project formulation, monitoring and evaluation cycles. In this way rapid reconnaissance can inform the policy-making process and project design and implementation on an ongoing basis in a timely and cost effective way.

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