Introduction

I am honored by your invitation and appreciate the opportunity to exchange ideas with you about agricultural marketing research for the future. My views on marketing research reflect many previous discussions. Especially pertinent to this paper has been a long participation in a national research project—The Organization and Performance of the U.S. Food Production and Distribution System, generally known as NC 117, research and consulting on food marketing in a number of developing countries conducted with a group of Michigan State colleagues and a group effort producing a book entitled Future Frontiers in Agricultural Marketing Research.

In the paper I suggest an approach to marketing research, identify some conceptual problems and suggest some studies and questions for the future research agenda. The title of my paper reveals something of my approach, which emphasizes understanding the production and distribution of food as a system, especially the relationships between organizational characteristics and performance of the system. The food system includes markets for inputs to farming, food processing and distribution as well as farm product markets. (It seems logical to me that agricultural marketing should deal with all the markets which coordinate activity in the food system.) By system organization I mean the structure of the opportunity sets for participants in the system. Among the important characteristics of a system organization are (1) the type of economic organizations; for example, corporations, cooperatives, parastatal

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1For those interested in this research program contact Dr. Bruce Marion, who is Executive Director, Food System Research Group, Department of Agricultural Economics, University of Wisconsin, Madison, WI 53706.

2Harrison et.al, Improving Food Marketing Systems In Developing Countries: Experiences From Latin America, Research Report #6, Latin American Studies Center, Michigan State University, 1974.

firms, marketing boards, etc., (2) industry structure i.e., the horizontal competitive relationships among firms producing similar products, (3) the vertical relationships among firms and (4) laws, regulations, government programs and other institutional arrangements.

By performance I mean the consequences or outcomes which result from alternative ways of organizing a food system. The important characteristic of performance make a long list: reliability of the food supply, nutrition, productivity, efficiency, distribution of costs and benefits, employment, environmental quality, resource depletion and so on. When I use the term performance it has the broad meaning not just efficiency.

Since the link between system organization and performance is the behavior of participants and generally participants act as members of firms, households, or other groups, understanding behavioral responses of organizations to alternative system constraints and incentives is an important topic on the research agenda.

I assume we are interested in research to contribute to public policy, to institutional changes in food system organization, and to individual and firm decision making. This requires description and analysis to help understand existing systems and the consequences or alternative ways of instituting systems.

Research on Organizations and Industries

We have neither an adequate theory of system organization and behavior nor of the behavior of the components of a system, such as firms, consumers and government regulators. The theory of the firm in standard economic theory does not deal adequately with firm behavior. We do not have an adequate theory to explain the aggregation of economic activities within firms as contrasted to coordination of activities across markets; nor do we have adequate explanations of firm growth and innovation or the influence of different organizations on system performance. The characteristics of the food system are certainly influenced by transaction costs, externalities, incomplete contracts, scale economies, uncertainty, power and bureaucratic organization but
how these interact in shaping the system which coordinates economic activity is unclear. I would put a very high priority on contributing to this theoretical development.

The dominant economic organization in the developed enterprise economies is the large corporation. We know that management and ownership of large corporations are separated, but we do not understand how this affects performance. The structural organization of the firm and competition among individuals and units within the firm affects performance. In order to economize on internal transactions costs all large organizations develop standard operating procedures (SOPs) or decision rules which have a major impact on performance. For example, the procurement and selling practices of firms using farm products can significantly influence prices, product characteristics, the location of production and the size of farms. SOPs are important in the adoption of new technologies, assistance given to supplying and buying firms, food safety, environmental quality, etc. We need to understand how organization behavior affects food system performance.

Cooperatives. Because of the current and potential role of cooperatives in food systems of both industrialized countries and LDCs, special attention needs to be paid to these organizations. What is the difference in performance between investor and member owned firms? Do members of cooperatives impose a different set of objectives and constraints on management than stockholders? Members of cooperatives can express their preferences three ways—through internal political pressure, by patronage decisions and by resigning. How are these options combined to influence management decisions? A particularly promising line of research is the study of the relationship between commonly used decision rules and the distribution of benefits and costs among participants in a cooperative. A cooperative has the potential to create substantial cross subsidies. This involves pooling arrangements, the allocation of overhead costs, definitions of "profit" centers, pricing of inputs and

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outputs etc. This may be the central phenomena in determining the viability, growth and performance of a cooperative. The larger and more diverse the functions of a cooperative the more important the issues become. An intriguing question is—why have farmer cooperatives been so successful in Northern Europe and relatively unsuccessful in less developed countries?

**Conglomerate Firms.** Large conglomerate firms are important participants in agricultural input and product markets. We lack an adequate understanding of their behavior and impact on market performance. On the positive side these firms have financial and management resources to enter new markets and perhaps more importantly to be a credible threat to entry. However, these firms also have the capacity to engage in substantial cross subsidies among products and markets, permitting predatory and market restricting behavior. Also where conglomerate firms have their suppliers or customers as competitors, reciprocity and foreclosure of markets can influence competitive performance.

**Transnational Firms.** The very large transnational firms operating in agricultural input and product markets require special attention. While a good deal has been written about the multinational firms, their actual and potential effects on food system performance is unclear. These firms dominate world markets in a number of commodities. Much of the literature emphasizes their potential for exploiting less developed countries. Their potential for developing world markets, the dissemination of technical knowledge, financing and rationalizing development of food systems needs fuller study. Since they seem to be beyond the effective regulation of any one country, research on the need and feasibility of some system of international monitoring and regulation is especially urgent. Case studies of some of the largest of these firms could be valuable.

**Marketing Boards and the Like.** Many countries, at all stages of development, have adopted marketing boards or similar organizations, such as marketing orders in the U.S., to manage the marketing of farm products. Governments grant some degree of monopoly power to these organizations. Objectives vary but in general are stated in terms of more orderly marketing, better coordination of supply with demand or enhancement of development. In some cases they are means of taxing farmers and in others a means of improving farm prices. Research on marketing boards needs to go beyond simple description of their operations or evaluation of their current performance. The research needs to
deal with the ways they operate and possible changes in the way they are instituted, relating these to market performance. Because there is great variety in the design of these institutions some may enhance system performance while others have negative consequences.

The arguments favoring marketing boards and similar organizations frequently emphasize their contribution to orderly marketing. Opponents argue that they are inconsistent with an efficient market and that the concept of orderly marketing has little or no content. Assumptions about transaction costs, uncertainty and market power seem to be at the heart of the difference. Improving the conceptual and empirical content of the notion of orderly marketing is an important task for marketing economists.

**Labor Unions.** Payment for labor is by far the largest cost in any food system. Organized labor may significantly influence food system performance yet agricultural economists have done relatively little research on labor in general or labor organizations in particular. How do labor practices and labor-management agreements influence costs and productivity of food systems? How does the interaction of organized labor and large scale firms influence industry structure and performance?

**Industry Studies.** Industry studies emphasize competitive relationships among firms producing a similar set of products and services. Basic questions are: (1) how does the organization of the industry affect behavior and performance, (2) what determines how an industry is organized and how it changes? Important aspects of industry organization include the degree of market concentration, barriers to entry, the types of competing organizations and regulations that affect competitive behavior. In setting priorities for specific industry studies it is useful to start with the description of value added by the industries of the food system. I would put highest priority for industry

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studies on food retailing-wholesaling, then food processing followed by system input industries—chemicals, equipment, packaging materials and credit.

Pricing, Vertical Coordination and Subsector Research

In the modern industrialized food system thousands of people contribute to the production and distribution of a single loaf of bread. This is a marvel of economic coordination. Broadly conceived, specialization is a primary source of economic development and the benefits of specialization are a function of the coordinating institutions. The problem in vertical coordination is to have properly specified inputs available at the proper time and place for the sequences of transformation in production and distribution, consistent with preferences and the underlying opportunity set. The problem is complicated by the uncertainty of both supply and demand for these inputs and the difficulty and costs of transactions required to arrange the inputs. Coordination is governed by a combination of markets, decisions internal to firms and political processes. Improving the coordinating mechanisms is a major mission of marketing research, as I see it.

Subsector Studies. It is, of course, not feasible to trace all of the contributions to the production and distribution of even a loaf of bread in the industrial system. It would involve much of the economy. But it is practical and useful to do subsector studies; studies of the coordination of activity in the vertical chain of production and distribution of a related set of products. This research requires a fairly detailed understanding of the subsector. It is a search for missing or malfunctioning coordinating institutions, barriers to improved performance and unexploited economic opportunities. Let me elaborate on aspects of this search.

Social Traps. A class of phenomena which deserves special attention is what I will call social traps. This is similar to the ideas of market failure but a more general concept. Social traps are of two general types: (1) where short-run responses to benefits or costs to the individual lead to undesirable

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1 The NC 117 project has completed several subsector studies including ones for Dairy, Citrus, Cherries, and Eggs.

long-run consequences and (2) where individual response to benefits and costs lead to undesirable group consequences. This directs our attention to the problems of planning and the relationships of micro motives to macro or system consequences. Most familiar to economists are the concepts of externalities and public goods. A problem arises when a firm could produce benefits which it cannot capture or produces costs which it does not have to pay. This results in system costs which are higher than necessary and the loss of products or services which could be economically produced if institutions were redesigned to allow the capture of benefits. Several examples will illustrate.

There is substantial evidence that a standardized system of shipping containers, if adopted by all participants in the U.S. food system, could significantly reduce distribution costs. No individual firm can, acting on its own, capture the benefits. Individual firms often gain strategic advantage through package differentiation rather than standardization. Those not adopting impose costs on the system as a whole. The institution for collective action or compensation of losers is missing.

Large retail food chains develop SOPs in procurement and pricing which reduce the responsiveness of retail prices to changes in farm level supplies and prices. For several reasons merchandisers do not find it to their individual advantage to adjust retail prices frequently. The cost of this behavior is imposed upon suppliers and consumers. Vertical coordination is less effective than it could be.1

Small farmers in less developed countries often lack predictable and reliable markets for their products. Because of this uncertainty, they diversify production. The result is that they have very small lots of any one product to sell, which increases both costs of production and assembly. Because supplies are uncertain and expensive to collect it is not profitable for traders to invest in developing either markets or supplies for small farmers. Each participant works hard in his own interest but the aggregate consequence is much less production than the resources could produce with greater specialization. Research is needed to find ways to break this trap.

If important costs and benefits are neglected in pricing products, production and distribution are misguided. Let me illustrate with a current issue. The U.S. exports the output of about one-third of its farm land. Those concerned with conservation, however, argue that this results from a failure to properly price energy, water and soil depletion. Considerable production comes from irrigated land drawing from ground water which is not priced and is being depleted (the problem of the commons) or from subsidized water projects. We have pushed production to marginal land which is subject to erosion. When we export feed grain rather than meat, we export soil fertility which may not be taken into account by the current generation of owners.

These illustrations are simplified and are mentioned to suggest a line of research to diagnose social trap situations and to prescribe changes in the way the market is instituted to alter what is taken into account by the participants to achieve more desired system performance. They each represent problems of coordination.

Contracting. The potential for improved coordination through contracting and especially through systems of contracts that coordinate several links in the vertical chain seems to be very substantial. However, there are significant problems with contracting. Enforcement is a problem. Information may be impacted. The process of determining terms of trade is often one-sided and exploitation is alleged. It is possible for processing firms to entice farmers to over-invest in fixed facilities and then to extract much of the value of these fixed assets of captive farmers. I would put high priority on research investigating design of the contract relationship as a means of improving subsector performance. This applies to LDCs as well as the more developed economies. I do not accept the argument that contracting cannot work for small farmers. It would appear that it could reduce uncertainty, promote larger and more specialized farms, reduce costs to the system and increase returns to farmers. The design and implementation is difficult. This is a challenge to market economists working in LDCs.

Pricing Mechanisms. Agricultural marketing research has focused considerable attention on prices and the processes of price formation. This is proper since prices are the central phenomena in market coordination. I would put high priority on research to examine the consequences of alternative specific
institutional and physical arrangements involved in structuring transactions in arriving at prices. I have in mind studies of administered pricing, pricing by formula, pricing under collective bargaining, pricing in different types of auction markets, pricing under marketing orders, etc. My interest in this area was stimulated by an OECD seminar, which showed a great variety of pricing mechanisms used in agricultural markets among the OECD countries.\footnote{OECD, Price Formation Processes and the Changing Nature of Food Systems, Documentation assembled for the seminar organized by the OECD in Paris, 30 June-2 July 1980.}

The development of computer and communications technology provides the opportunity for new pricing mechanisms. Considerable research in the U.S. has focused on the potential of electronic auction markets\footnote{Henderson, D. R., "Electronic Markets for Agricultural Commodities: Potentials and Pitfalls", Working Paper #62, April 1982, NC 117, Wisconsin.}. These studies have indicated significant potential advantages over direct or central markets, but demonstration electronic exchanges have generally not attracted sufficient volume to be economically viable. Why not? Further research on design and implementation is needed.

Farm product prices are especially volatile in the absence of stabilizing institutions. This adds to the risks of participants in the food system and makes planning difficult. Futures markets are a pricing mechanism to provide a means of shifting some price risk through hedging and to provide some indication of future prices. We need to do more research on their potential. A related mechanism, which has been illegal in the U.S., is markets in options to buy agricultural commodities or commodity futures contracts. Those who advocate commodity options trading argue that it would provide farmers and processors a less expensive means of obtaining guaranteed minimum prices than is possible with futures markets. Considerable research is needed to design trading rules and evaluate this possible market.

Another institutional innovation in pricing and vertical coordination I believe offers considerable promise and deserves research attention is what I call a forward delivered contract market system (FDCMS). The basic concept of the FDCMS is quite simple. Its design, implementation and evaluation would be complex. The basic idea is to establish transparent electronic auction
markets in contracts with transactions to take place prior to critical production decisions. In contrast to futures markets the contracts would be for delivery and would specify a variety of product characteristics. Prices, product characteristics, quantities, time of delivery and other terms of trade would be determined through an iterative process via an electronic exchange. In contrast to the usual contract production, transactions would be by open auction over a wide geographic area rather than by private negotiation for supplies to a single plant. Since in agriculture the quantities and qualities which will be produced cannot be predicted with complete certainty, contingency clauses would have to be included. While a FDCM for a single stage in the vertical chain has promise the more interesting possibility is a series of related FDCMs coordinating a subsector. The attractive characteristic of this system is that planning and coordination takes place based upon the decisions of those in the best position to have the relevant information. Risk is shifted to those in the best position to deal with it.

Vertical Integration. An alternative to coordination across markets, with or without contracting, is control through ownership of additional links in the vertical chain. We need research to better understand the benefits and costs associated with the extent of vertical integration. Vertical integration may be a response to high transaction costs, uncertainty and difficulty in contracting. Improved information and contracting reduce the incentive to integrate.

Of special importance is the study of vertical integration through farmer cooperatives. While farmer cooperatives technically integrate farm production with input supply and marketing, the cooperative frequently behaves like an independent firm, failing to exploit what seems to be an inherent advantage. Why? What changes in SOPs or organization would result in their improved performance in vertical coordination? How would performance be influenced by extending their scope of integration?

Information. Effective economic coordination requires information, especially information about current and future market conditions. To estimate future market conditions we need the means to predict future supply and demand. Information about future supply is especially difficult to obtain. Information about intentions may change decisions which void original predictions. Agricultural economists have produced a great deal of outlook information and
it has been valuable, but we have not designed information systems which provide the longer-run projections needed for investment decisions. An especially important type of outlook information has to do with predicting the adoption and consequence of technological change. We also need research to develop an information system to monitor the performance of a food system including a systematic set of performance accounts.

Several policy issues require attention. One is the public vs. private production and distribution of market information. Much information has public good characteristics. But if provided by the government what are the criteria for determining what is provided? Another issue is the property rights in information. Should firms be required to report what they consider to be their private information? Although major system benefits result from full information, firms can gain strategic advantages from withholding information.

We have a global food system. A difficult and important problem is the projection of future supply and demand world-wide. The lack of such information has had serious consequences for many LDCs when several countries have simultaneously expanded production of crops for export, only to find their combined production greatly exceeds demand at acceptable prices. A step beyond usual outlook information is indicative planning. We need research on the design and feasibility of national and world-wide indicative planning for major agricultural commodities.

Advertising and Merchandising. We need a better understanding of the relationship of advertising and merchandising to food system performance. Food retailers and manufacturers have significant capacity to influence purchases of specific commodities through advertising and merchandising. They could use this capacity to moderate the effects of variations in farm product supplies. However, they frequently do not promote products in long supply. Why not? What incentives could be used by farm groups to induce promotion of commodities in long supply? Food manufacturers use promotion tactics to gain access to limited grocery shelves. How does this affect the characteristics of products available to consumers and influence the structure of the food system? There are major economies of scale in mass advertising. How does this effect
system structure? Are their policy implications? Because of economies associated with increased volume in food manufacturing and retailing, promotion gimmicks such as coupons are introduced, which may impose unnecessary costs on the system. How important are these and what can be done about them?

Logistical Systems. We need research contributing to the design and implementation of more cost effective systems of physical distribution. Emphasis, again to repeat a theme, should be on systems rather than problems of individual firms. I have in mind the potentials for city or regional food distribution centers, intermodel transportation facilities, containerization, compatible automatic warehouses, codes for inventory control and billing, quality monitoring systems and the like. These system changes are such that individual firms acting independently cannot economically bring them about. The research requires a combination of technical and institutional innovation. Labor productivity has increased much more in farming and manufacturing than in distribution. The implication has been that distribution, especially retailing, is simply labor intensive. I would suggest another possibility: that increased labor productivity in distribution is much more dependent upon system changes than is true of production. The increase in energy costs creates an added incentive for adoption of cost reducing systems. This is especially true for intermodal transportation.

Preference Articulation and Regulation. One of the fundamental questions of economic organization is the mix of markets and political processes for preference articulation. As market economists one of our tasks is to identify problems with markets as mechanisms for preference articulation. Regulation represents a political expression of preference which influences what is taken into account in markets. Both political and market processes have serious limitations as mechanisms of preference articulation. The transaction costs in political decision making are very high. The market is a wonderful device for registering a limited range of preferences at a low cost. Prices summarize an enormous amount of information about both preferences and the production opportunity set. But prices always also reflect preferences embedded in the property rights and other institutions regulating market behavior. The market is in a real sense an instrument of regulation. The rules which institute the market become obsolete. One of the general functions of market research must be to contribute to the process involved in the expression of
preferences through regulation. Changes in technology often create the need for regulatory reform. Several current examples in the food system involve food safety and genetic engineering. There are many complex trade-offs involved in the use of chemicals in the modern food system. We need both conceptual and empirical research to improve the regulatory procedures to effectively reflect preferences involved in these trade-offs. The consequences of genetic engineering are uncertain but look like they will be very great in the long run. We need to understand the implications of allowing new life forms to be patented and the need to regulate their introduction.

Food Assistance Programs

Food assistance programs can be a major component of food policy and of food distribution. For example, in the U.S. one person in ten currently receives food stamps and 23 million children participate in a subsidized school lunch program. The objectives of these programs are (1) to distribute income to lower income people, (2) to expand the demand for farm products and (3) to improve the adequacy of food and nutrition. While determining the objectives is a political matter, there are important research questions. How can programs be designed to best achieve these objectives? What are the consequences of existing and alternative programs? What are the trade-offs among related policy objectives? This gets us into basic questions about income distribution and the role of markets and government but also involves important research in addition to these basic issues.

Stagflation and Other Macro Relationships

Research is needed to understand the causes of increased food prices, the effects of food prices on general inflation, the effects of inflation on food system performance, the effects of possible anti-inflation policies on the food system and of agricultural policies on inflation. These questions are important in most economies but are critical for many LDCs where food prices are a major factor in the cost of living, national income and political stability.

I would suggest the organization of markets is an important factor affecting both inflation and employment. Author Okum⁠¹ argues that a small

part of the economy operates with auction markets, where prices are flexible and change rapidly in response to changes in supply and demand, and a larger portion operates with what he calls customer or price tag markets, where prices are inflexible, slow to adjust and are cost oriented. In these markets the invisible handshake is more important than the invisible hand. I would add that a firm's costs tend to rise to the level made possible by prices. The result is a systematic bias toward inflation and underemployment. The nature of markets and pricing mechanisms has significant macro implications. The food system has the same dichotomy between auction markets and price tag markets with the trend toward the nonauction markets as industrialization progresses. Thus our research on food system markets and pricing should contribute to understanding the micro-macro connection.

Ethics and Corruption

I am sure of the importance of ethics and corruption to the performance of agricultural markets but uncertain of our capacity to effectively research the phenomena. Collecting data is difficult. Honesty and truthfulness can greatly reduce transaction costs and greatly facilitate the use of contracts, formal or informal. In economics we usually assume self-interest and even argue its virtue. But self-interest with guile is a different matter. There is a hypothesis that the relative success of overseas Chinese and some other minorities is due at least in part to an ethical system within the group which reduces transaction costs. This may be a major factor in development. It may also be a factor in the relative success of farmer cooperatives in northern Europe compared with most LDCs.

In the U.S. the evidence is that the cost of petty theft, embezzlement and protective services greatly exceed profits in food retailing. The allocation of research effort does not reflect this fact. The nature of competition is altered when competitors operate from different ethical standards. Apparently organized crime has produced large amounts of money, especially from the drug trade, and some of this seems to have been invested in the U.S. food system. Competing with such firms is difficult because of the difference in capital costs. Also, there is no reason to believe such firms operate with the same regard for law and ethics as the competition. Describing the extent
of crime and the consequences of unethical behavior should encourage collective action to deal more effectively with the problem. This may not be a problem in Germany but I can testify it is a problem in the U.S. and in many LDCs.

Comparative Studies

Since economists cannot set up controlled experiments it is important that we take advantage of the natural experiments in the environment. I am impressed with the variety in economic organization among food systems of different countries, at different times and among commodity subsectors. Systematic comparisons of performance associated with different organizational characteristics should help develop some useful generalizations. Surely comparative studies would enrich the subject matter of agricultural economics. I recognize the difficulty of comparative analysis because of the idiosyncratic characteristics of each situation and problems of measurement. Such studies are also difficult because we lack a good taxonomy of characteristics of organization and indicators of performance. Also it is not a one scholar or one research institute job. I believe the international organizations such as OECD and FAO should take the lead in fostering such studies. I am particularly interested in your meeting which focuses on agricultural marketing in industrialized countries and LDCs and will be especially interested to see if you have reports of comparative studies. In any case, I believe as a profession we need to do much more in building the cumulative record.

A Final Comment

My time and space are spent. Allow me a final comment. I have suggested many questions which I believe deserve attention in a discussion of agricultural marketing research priorities. I will be very interested in your research questions. The selection of questions for research is the first and an important step in research. Their selection deserves tough professional debate. My orientation emphasizes comparative institutional analysis. This reflects my view that the greatest pay off from applied economics research is from the contribution it can make to institutional innovation as a society seeks to improve the performance of its political economy. We need not agree. It is probably best if we do not. Creative tension which springs from these differences should enrich our professional output. Again, I thank you for the opportunity to participate in your discussions.