A WORKING PAPER

# CONCERNING PUBLICLY SUPPORTED ECONOMIC RESEARCH IN AGRICULTURAL MARKETING

Economic Research Service

U.S. Department of Agriculture

# PREFACE



The following is an essay about publicly supported agricultural marketing research. The purpose of the essay is to articulate positions about the proper role of marketing research in the kind of society we can anticipate in the next several decades. It is hoped that the positions I have taken will stimulate further discussions among the participants in marketing research enterprise and that the resulting interaction will contribute to our improved performance.

The essay is a search for a relevant professional role in a radically changing and troubled world. The role of the social scientist is critical in our day because, for the first time in history, we seem to have the technical capacity to control the physical environment to the benefit of all men but we lack the capacity to construct the necessary social institutions to take full advantage of this capacity. We live in a paradise lost.

The crisis in professional identity is especially acute for the agricultural social scientist in the U.S.A. who finds himself in a society where what were once the cornerstones of his professional identity--the concepts of rural and agriculture--seem to be losing their uniqueness. 1/ It is clear we must search for professional identity elsewhere than among the problem areas of the past.

The search for a professional role raises, most of all, the question of relevance and worth of alternative activities. Judgment in this respect is colored by experience. The events of the summer and fall of 1967 stand in relief as I write. There is the war and the conflict about the war. The picture of the big city riots remains as an indelible image. Strikes and " withholding of services" by teachers, policemen, firemen, auto workers, steel haulers and farmers all have been close to my personal experience. In broadest perspective all of these actions involve differences of opinion about how the market has performed as a social institution. The domestic issues center on the distribution of the increases in productivity of the economy. One has to ask if it is relevant to worry about the efficiency of an already fairly efficient pea packing plant, in view of the many unresolved social problems, particularly in urban centers. Is not the urban problem, at least in some respect, a dimension of the performance of the agricultural labor market? Would a full benefit-cost analysis of our market policy, which had the effect of stimulating a rapid out-migration of people from agriculture, have proven a net benefit? After the summer of 1967, I will not be able to view market performance in a narrow sense. The broader consequences must be evaluated.

Let me also set forth at the beginning my basic attitude toward the role of the social scientist in society. I take as an article of faith that it is within the capacity of the members of a society to improve the social system of which they are a

1/ C. E. Bishop, "The Urbanization of Rural America: Implications for Agricultural Economists," Presidential Address before the American Farm Economic Association, 1967.

part through the application of knowledge obtained from social science studies. This faith rejects social determinism, be it of the economic, cultural or technological variety. Such faith imposes a special responsibility on those who would be social scientists. The responsibility is not limited to description of the factors influencing the course of events that take place in the society, although an understanding of such factors is essential, but includes as well the search for knowledge useful in transforming the institutions of society to more nearly accommodate the needs of its members as they strive to relate to a changing environment. This faith and attitude are reflected in the essay.

It might be argued that marketing research as discussed in this essay is too broadly defined. My orientation is toward problem solving and problems do not come neatly differentiated by academic disciplines. The problems which will be discussed are those which I believe agricultural economists who understand the market system should come to grips with. I will argue that agricultural economists have overspecialized, thus reducing their capacity to deal with the important problems. The assumption is that the major characteristic of an agricultural social scientist is an orientation toward problem solving.

More specifically the essay will attempt to deal with the following questions:

What is the nature and significance of agricultural marketing research?

How can we improve the organization and performance of the marketing research enterprise?

What are the emerging problems that relate to the economic organization and functioning of the food and fiber sector of the U.S. economy?

As indicated by these questions, the essay is future oriented. No attempt is made to evaluate past marketing research or present projects. The past is used only for perspective. The fact that the needs of the future differ from the activities of the past does not necessarily reflect on the research of the past. Times have changed and the profession must adapt to a new situation.

Although the paper is limited to consideration of research involving domestic commercial agriculture, I do not mean to imply that such problems are necessarily more important than others considered by agricultural economists. The problems of rural poverty, of international marketing and trade, of economic development in poor nations, among others, may be more important than those of domestic commercial agriculture. But the scope of the paper had to be limited, and I accepted the task of the assignment considering research needs of the U.S. food and fiber sector of the economy.

In preparing to write this essay, I discussed agricultural marketing research with more than 200 people who are either producers or users of such research. Among those interviewed were marketing research professionals employed by universities, government and industry; public and private decision-makers in a position to use marketing research; extension workers and trade association executives. I thank each and every one for the time they gave and insights they provided. I acknowledge my debt to them.

However, this is not a report of my discussions with these people. The discussions were a learning experience and a valuable one for me. But those interviewed did not speak for the organizations with which they were affiliated and no attempt was made to systematically tabulate their responses.

I would like to acknowledge special assistance from Dr. M. L. Upchurch, Administrator, and Dr. Linley E. Juers, Deputy Administrator, of the Economic Research Service, for their sponsorship 2/ and counsel and to Dr. R. J. Hildreth of the Farm Foundation for his encouragement of the project.

2/ I was employed by the Economic Research Service for the purpose of examining agricultural marketing research for U.S. commercial agriculture while on leave from Michigan State University.

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Washington, D.C. March 1968

# HIGHLIGHTS

1. The essay will attempt to deal with the following questions:

What is the nature and significance of research in agricultural marketing economics?

How can we improve the organization and performance of the marketing research enterprise?

What are the emerging problems related to the organization and functioning of the food and fiber sector of the U.S. economy?

2. I take the objective of publicly supported agricultural marketing economic research to be to increase the understanding, and aid in the evaluation, of the system of markets and related institutions which organize economic activity of the food and fiber sector of the economy, and to make recommendations to improve the performance of the system.

3. The ultimate research question is how markets can be instituted to achieve the purposes of the community.

4. Efficiency models are useful as an aid in diagnosis of market and sector problems, but it cannot be argued that society would be well served by instituting a market like the model or even by moving in that direction.

5. The term agricultural marketing as it has been used in the past has not defined a very meaningful area of research. It has excluded too much which is indispensable if one is to understand the organization of the food and fiber sector and included too much of the inquiry into physical transformations.

6. Publicly supported economic research has a very special responsibility to evaluate the relationship between current market rules and performance, and to invent new rules to stimulate desired market performance.

7. The public researcher should put emphasis on those activities which stand to significantly improve the coordination of the economy and which cannot be done economically by private firms.

8. We have invested, relatively, too little of our marketing research resources on system-wide problems. It would be desirable to shift activities from firm management problems to those of the subsector level. I would restrict studies of marketing firm management to situations where the research (1) ties directly to an extension program and competitive firms can make immediate use of the results, (2) ties to a broad subsector problem and thus has a public significance, (3) involves the development or test of a new methodology, or (4) is primarily a training exercise.

9. Basic premises of this essay are that significant benefits are available from improved organization and coordination of economic activity; that the market economy does not automatically coordinate activity in a beneficial manner; that the performance of the system can be improved through the application of social science research.

10. A radical transformation of the food and fiber sector of the U.S. economy is in process. The key to this transformation is industrialization. The implications of the transformation for the full range of institutions related to food and fiber are very inadequately understood. Such understanding is the first order of research priority.

11. The value added by farming as a proportion of food expenditures is now about 15 percent and will continue to decline.

12. Anyone who even casually reviews the work in marketing research since the Research and Marketing Acts of 1946 cannot help but ask why it has not produced more significant results. Most of the research has dealt with safe descriptions of marketing situations. The most common evaluative comment is that such research is not additive. A more telling criticism is that the research has not been applicable to the making of significant public and private decisions.

13. Marketing research has been organized in atomistic units usually consisting of less than one full man-equivalent per project per year. And the timely nature and scope of the more significant marketing problems have been beyond the scope of one man's research capacity.

14. I suggest we develop administrative procedures to facilitate the formation of interstate and interagency consortiums. This would involve a commitment from professionals in several states or from states and ERS to engage in a coordinated program of research. p. I would substitute the interagency consortium for present regional research. I would, however, retain the regional seminar-type committees to initiate research.

15. We have too many projects. If in place of 766 projects in marketing economics there were 50 to 100 programs of research, we might have some chance of coordinating research activity.

16. A program of research is proposed to systematically examine and contrast the performance of what is, with what might be, in the way of organizing the food and fiber sector of the economy. The objective is to understand the present system, to assess what it is becoming in the process of industrialization and to understand different ways of instituting various parts of the system in order that intelligent choices can be made among the alternatives in public policy and private decisions. Evaluation of a number of alternative methods of organizing transactions--including individual bargaining, vertical integration, contracting, collective bargaining and a variety of market rules modifying each of these--is suggested.

17. It is suggested that a complementary set of studies be undertaken focusing on particular subsectors of the economy with the intent of discovering the barriers to improved performance and the problems faced by participants in identifying the means of removing the barriers. Possible barriers to improved performance include: laws and regulations; trade practices; pricing practices; application of taxes, grades and standards; institutions which are inadequate to deal with risk; competitive structure; vertical relationships; attitudes and knowledge of participants. It is suggested that the subsector studies be coordinated by national interagency consortiums.

18. Coordinated research which would provide an understanding of the complex system of the food and fiber sector of the economy is needed and the major payoff is in understanding the interfirm and intermarket relationships of the system. It is proposed that an attempt be made to build a behavioral systems model of the food and fiber sector.

# A Working Paper Concerning Publicly Supported Economic Research In Agricultural Marketing 3/

By

James Duncan Shaffer

## Part I

## On the Nature and Significance of Marketing Research

### 1

### The Goals of Marketing Research

I believe little is to be gained by building fences to separate areas of research. Applied research must be problem oriented and not too restricted by disciplinary jurisdictions. Yet for the purposes of discussion and administration some classification of problem areas is necessary. Perhaps an area of inquiry can best be defined by its objective. I take the objective of publicly supported agricultural marketing economic research to be: To understand and evaluate the system of markets and related institutions which organize the economic activity of the food and fiber sector of the economy and to make recommendations to improve the performance of the system; and to contribute to the accumulated knowledge of marketing economics through generalization from applied studies.

The definition is similar to the one approved by the 1966 Agricultural Economics Research Advisory Committee to the USDA which was: "The goal of economic research in marketing is to evaluate the performance of a changing marketing system--where the performance refers to the flow of economic results as they affect farmers, marketers and consumers--and involves price, profits, and other dynamics of marketing." The committee's purpose was to expand the scope of economic research in marketing, believing the previous goal of "improving the efficiency of the marketing system" was too narrow. It is not clear how broadly the committee would define the "marketing system." The Committee considered the goal of research to be merely an evaluation of performance while I want the goal to include development of recommendations for policy. I want to eliminate the "so what" question so often asked about marketing research.

### 2

### Levels of Aggregation In Market Organization

Several terms in my definition require elaboration. Organize is one. By organization I mean the way factors and activities are put together. The differentiation of seven levels of organization may be useful as we look at research specialization and performance criteria. These levels of aggregation are to some extent arbitrary and overlapping. The names are not particularly appropriate but nonetheless offer some utility. Seven levels of organization can be identified as (1) the process, (2) the enterprise, (3) the plant, (4) the firm, (5) the subsector, (6) the sector, and (7) the economy.

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3/ Opinions, conclusions, and recommendations in this report are those of the author and do not necessarily reflect the views of the Economic Research Service, U.S. Department of Agriculture.

By a process I mean the immediate control imposed upon a physical transformation. A machine or a biological mechanism may control a process. An enterprise is an organization of processes. The plant is the organization of one or more enterprises and would be controlled by a manager. The firm may include one or more plants and is the basic economic decision-making organization in our economy. The subsector is a meaningful grouping of firms related vertically and horizontally by market relationships. I use the term subsector rather than industry because the term industry has come to refer to a group of firms producing similar products and does not take into account some important market interrelationships, especially those involved in vertical coordination. 4/ Thus the dairy subsector includes the dairy farmer, his suppliers for milk production and the processors and distributors of dairy products. While a subsector represents a more or less arbitrary organization, it is a most important unit of analysis. The major organizing mechanisms of a subsector are markets. To complete the levels of aggregation the sector is the sum of the subsectors and the economy is made up of sectors.

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## Research Specialization and Levels of Aggregation

It is possible, and perhaps useful, to relate research specialization to these levels of organization. Improving physical processes is clearly the domain of the physical and biological scientists and the engineers. Research at this level has of course greatly improved the performance of agriculture. Research designed to improve the organization of economic activity above the levels of the process and internal to the firm can be classified as firm management and industrial engineering. The tools are those of management science including production economics, operations research and personnel relations.

The evaluation of organization at the subsector and sector level of aggregation I want to call marketing economics. Perhaps it should be referred to as agricultural organization or the political economy of agriculture. The research in this area is concerned with performance of the system. Much information concerning firm behavior is required in marketing economics research and the skills required to obtain the information are important. However, this type of research is not the same as firm management research which is intended to improve the performance of the firm from an internal point of view. Just as the firm manager can evaluate the performance of alternative enterprises without doing research designed to improve the physical processes involved, so the economist can develop techniques for evaluating the performance of a subsector without making studies to improve firm management.

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## Evaluation of Performance

The usefulness of marketing economics research is tied to the evaluation of performance. How are we to evaluate the system? How do we measure and judge performance? At the process level, the performance criteria are physical standards or physical input/output ratios. These are measures of physical efficiency. At the enterprise and plant level, efficiency is the appropriate criterion. Accepting prices of inputs and products as given, the optimizing techniques of production economics and economic engineering are available to establish relative levels of efficiency. This single criterion, efficiency, is sufficient for evaluation.

4/ See F. Smith and D. Dahl, "Market Structure Research--How and For What?", Journal of Farm Economics, May 1965.

However, for the evaluation of markets and subsectors no single criterion prevails. This problem is complicated by the fact that the market is a value-discovering institution. In a sense, the ultimate research question is how markets can be instituted to achieve the purposes of the community, whatever they may be.

Evaluation may be made by contrasting an existing situation with an ideal type or by simply contrasting several alternative possible situations none of which can be identified as ideal. The model of pure competition is sometimes taken as an ideal type and performance of a market or subsector is judged by its deviation from this ideal. 5/ Efficiency (pure competition) models are useful as an aid in diagnosis of market and industry problems. But it cannot be argued that society would be well served by instituting a market like the model or even necessarily by moving in that direction. Even our language implies the competitive models as a norm, for deviations from the expected performance of the models are often called imperfections. 6/

By market performance we mean those attributes of a subsector which directly affect the well-being of the participants. Sosnick argues that "evaluation of the attributes of a market that directly influence welfare" involves consideration of at least the following factors: (1) production efficiency, (2) technological progressiveness, (3) product suitability, (4) profit rates, (5) level of output, (6) exchange efficiency, (7) cost of sales promotion, (8) unethical practices, (9) participant rationality, (10) conservation, (11) external effects and (12) labor relations. 7/ Many of these factors relate to the competitive model as an ideal type and most are difficult to measure and judge. They do suggest the complexity of the evaluation problem. In addition, some of the characteristics of the structure of the market have inherent value to the participants. For example, many would put a high value on the market as a fair game. The distribution of income and effect on the distribution of power resulting from market structure are also relevant to an evaluation of a market.

The marketing system is a communicating and a conflict resolving institution. Through transactions, information is transmitted which regulates the characteristics and quantity of economic output. The first we can call quality coordination and the second a measure of economic growth. In the same process, the market determines the distribution of output and the related disposition of incentives. These functions cannot be separated. Each is an aspect of market performance.

Since the criteria for judging a sector are so multi-dimensional and are in some respects subject to change as the sector itself changes, the search for the ideal criteria is likely to be fruitless. The best approach seems to be to contrast the potential performance of several real alternatives in respect to a variety of normative dimensions and to examine present systems to identify incremental changes which would be judged to be improvements by the participants. The major job of the economist then becomes one of predicting the effect of expected or possible changes in a sector on a variety of aspects of participant well-being.

Marketing economic theory needs to provide improved specification and identification of the criteria relevant in evaluating market systems in the process of change. And the estimation or measurement of the indicators of these criteria is the major challenge of marketing research.

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5/ See E. S. Mason, "Comment on Standards for Antitrust Policy" in Monopoly Power and Economic Performance, E. Mansfield, ed., W. W. Norton, New York, 1964.

6/ See W. F. Finner and R. G. Bressler, "Summary Remarks" in Market Structure Research, P. L. Farris, ed., Iowa State University Press, 1944.

7/ S. H. Sosnick, "Operational Criteria for Evaluating Market Performance," in P. H. Ferris, op. cit.

5

## The Meaning of Market

The market is an organizing or coordinating institution. By a market I do not mean a place but rather a system of relationships involved in a group of transactions. Characteristics of markets include the rules governing the participants, the commodities or services involved in transactions, the number and size of participants, the location, etc.

Usually we think of a market as involving transactions between individuals and firms and would exclude transactions internal to a firm. However, since the development of the large and complex vertically integrated and conglomerate firm, groups of transactions within the firm become similar to a market. At any rate, since our concern is with alternative ways of organizing economic activity, intrafirm interplant transactions will be considered as part of the subject matter of marketing economics.

The market is further defined to include the institutions which modify the outcome of the exchange process. Thus there remain a market and a marketing problem under price supports or price control. These are considered to be rules of the market restricting the behavior of participants in the market. Similarly, the development of contract farming does not eliminate marketing. It only changes the form of marketing.

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## The Changing Definition of Marketing

The traditional definition of marketing as used in respect to agriculture has generally included all of the activities of firms handling farm products from the farm gate through the retail store. 8/ Marketing research has dealt with problems at every level of organization including physical processes, but the definition has excluded study of a subsector or the relationship between markets for factors and products. Thus marketing research has included how to pack watermelons in a freight car, how to cut up a chicken, and how to organize a retail store. All of these may be important, but are clearly not what I am identifying as marketing economics.

The 1966 Marketing Research Advisory Committee to the USDA "expressed concern over the farm-gate concept of marketing as applied to modern or future agricultural systems." They pointed out that processing and manufacturing of food off the farm and farm cost of farm products are about equivalent. They wondered why creation of form utility is treated differently when done on the farm.

The traditional definition excludes from marketing the study of the markets for land, labor, credit, and other purchased inputs of farming. In modern agriculture it is the relationship among these input markets and the various product markets and the factor markets of the processors and distributors of agriculture which represent some of the most important issues. The traditional definition does not fit an industrialized food and fiber system.

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8/ See for example O. V. Wells, "Marketing: What is it? Why is it?" in Marketing, The Year Book of Agriculture 1954, USDA, p. 3, or R. L. Kohls, Marketing of Agricultural Products, The MacMillan Co., New York, 1961, p. 6.

Much of the research which came from the Research and Marketing Act of 1946 seems to have been based upon the assumption that by improving the efficiency of performance of any task in the handling of food from the farmer to the consumer, the farmer would benefit. The problems of economic organization were seldom considered in research sponsored by this act. Whether or not the assumption is correct depends largely on the structure of the market. And the almost complete emphasis on the one aspect of market performance--efficiency--limited the scope and usefulness of the research.

As it has been used, the term agricultural marketing does not define a very meaningful area for research. It excludes too much which is indispensable for an understanding of the organization of the food and fiber sector of the economy and includes too much of the inquiry into physical transformations--two important, but quite different, kinds of research. I believe it would be desirable to differentiate research designed to improve the coordination of economic activity from that designed to improve the physical transformations, even though in many specific problems some combination of the two types of research would be involved. And, if there is to be specialization within agricultural economics, differentiation between firm management and system coordination problems would be meaningful.

## 7

## Allocating Research Resources

Theoretically, resources for research should be allocated in the same way as for all other productive activities. Each research activity should be allocated resources to the level where the marginal value of the last input just equals its marginal cost. This, of course, simply begs the question. There is no market test. The marginal social benefit from an alternative research expenditure must be judged both in terms of the probability of success in achieving the research objective and in terms of the social value of achieving it. 9/ The expected payoff from alternative research is thus a judgment of value and an assessment of success probabilities, which are not unrelated to the particular skills of the scientists involved. Because of the risks involved in attacking any particular problem and the marginal nature of potential contribution, it is desirable to deal with changes in relative emphasis rather than to attempt to establish lists of strict priority. Nonetheless, some problems are more important than others and it is desirable to get judgments about relative importance into the research decision process.

I have argued that the purpose of marketing economic research is to understand, evaluate and thereby improve the performance of the marketing systems of the food and fiber sector. In the following sections I will attempt to answer in a general way the question--How can research improve the performance of the food and fiber sector? And, since many activities could improve the performance, some general notions of priorities are introduced. Economic research can contribute to improved performance by producing three types of information: (1) Information concerning the relationship of market rules to performance; (2) information and projections concerning the economic environment external to the firm; and (3) information to improve internal firm management.

9/ See D. R. Kaldor, "A Framework for Establishing Research Priorities," Journal of Farm Economics, Dec. 1966, p.1629 ff for a discussion of the problem.

## Relating Market Rules to Performance

The first area of research to improve economic performance is the production of knowledge about the relationship of market rules to performance. A market might well be described by the rules which circumscribe its structure and the conduct or behavior of its participants. By a market rule I mean the set of rights and obligations established by law, custom and covenant which define the relations among members of a community in respect to the exchange of goods and services. Some have attempted to classify the rules and customs as restrictive or facilitative. However, this is difficult since the rules relate to interpersonal and interfirm relations, and what is to one member a restriction is to another a privilege. Market rules include the laws of property and contract (and customs of honesty), rules of entry and exit, licenses, grades and standards, collective bargaining rights, patents, brands, franchises, dealerships, restrictive covenants, tariffs, price regulations, etc.[10/]

Publicly supported economic research, it seems to me, has a very special responsibility to evaluate the relationship between current market rules and performance; and to invent new rules to stimulate desired market performance.

The community imposes rules upon the market with the expectation of particular performance. However, the economy is complex and a variety of unanticipated consequences--both desirable and undesirable--may occur. Also, as the economy changes, rules which may have been desirable in a previous period become barriers to desirable performance in the new situation. The firm is unable to cope with this type of marketing research. The firm directs its effort to adapting to or avoiding the rules. The job is left, essentially, to public research.

The market rule is one of the most important points of leverage in the market system. Research relating performance and factors which are beyond the communities' capacity to manipulate are of little immediate value. The payoff comes in the possibility of providing firms with better decision-making information or in changing the rules which control the coordinating system.

The 1966 Agricultural Economics Research Advisory Committee to the USDA had three levels of priority for marketing research. Trading codes and regulations were in the lowest of these priority groups while studies of measures of market performance and concentration in food distribution were in the top priority. It is, of course, important to measure performance and to relate concentration to performance but the policy question of what regulations ought to be instituted remains. The committee perhaps had a narrower view of regulation than is suggested here as market rules.

It is especially important to evaluate the relationship of the market rules to market performance, rather than to limit investigation to the relationship of a structural factor and a single performance characteristic, for a rule may have very significant positive and negative side effects.

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10/ See H. B. Arthur, "Impact of Government Agricultural Programs Upon Market Structure and Functions," Future Trading Seminar, Chicago Board of Trade, 1962.

9

## Information About the Economic Environment

The second method of improving performance is by providing improved information for private decision-making. Here I have in mind information about the environment external to the firm which is important to the transactions and planning decisions of the firm. Similar information is needed by public agencies actively engaged as market participants. (Commodity purchase and storage activities are examples.)

Providing such information is a legitimate public activity. However, considerable research seems to be needed to evaluate the quality and relevance of the information currently being produced. Information is not costless and it cannot be assumed that the more information the better. And unreliable or biased information may be of negative value. Of special importance is a reevaluation of the price information system in integrated markets. We do not know if a new system of price reporting would pay off or if in fact the reporting system now operating is superfluous. We need to ask if the information system might not be commercialized, thus providing a better test of its value. Not all planning information is a legitimate function of government. Where the firm can finance the research and capture the benefits of it, as is often the case, for example, for evaluating the market potential for a particular product, it had best be left to private initiative. The public researcher should put emphasis on those activities which stand to significantly improve the coordination of the economy and which cannot be done economically by private firms.

John Kenneth Galbraith makes the case in The New Industrial State that the advantage and stimulus for very large firm size is the need for long-range planning for production which involves complex technology. This hypothesis needs to be tested. Also, to what extent can publicly funded planning information substitute for large size? And are there alternative institutional arrangements for achieving the advantage of size for planning?

It is clear that long range planning information that affects decisions that relate to the capacity of a sector is very important. Overcapacity in the food and fiber sector seems to be a continual problem. An improvement in the reporting system relative to the creation of new capacity may deserve a high priority.

One of the problems of research in this area is that it tends to be repetitive and not very glamorous professionally. And it is very difficult to evaluate. Undoubtedly, too much research which is useless is justified on the basis that it contributes to private decisions. Some very carefully done benefit-cost analysis, under the Planning-Programming-Budgeting System of our market information functions would be useful. Included in such analysis should be evaluation of alternative institutional possibilities for producing the information.

10

## Firm Management Research

The third area of potential for improving performance is by improving the efficiency of the individual firms. It is difficult to make a direct assessment, but a large portion of the research identified with traditional marketing research has been devoted to firm management or firm cost and efficiency studies. It is easy to see why marketing research has concentrated on either providing economic information for private decision-makers or on firm management studies. It is relatively less difficult to do acceptable research in the area of obtaining information for decision-makers. And firm

management problems are so much easier to define than those of industry coordination and performance. The single dimension of performance and the relative smallness and neatness of the research project would be enough to explain this emphasis by independent researchers. Here is something one man working by himself can get his teeth into. It provides a good opportunity to apply an analytical technique. And, such studies are seldom controversial while those dealing with changes in market rules almost inevitably involve public conflict.

As a result, we have invested relatively too little of our marketing research resources on system-wide problems. It would be desirable to shift activities from firm management problems to those of the subsector level.

Discussions with firm managers indicate that most of their problems are highly specific to the firm. The research has to be directly within the context of the firms' decisions. Most of the research on firm efficiency has been either directly applicable to a very few firms--those used in the research--or has been so general as to be applicable to none. The large firms have technical personnel more capable of using the research. If anything, it gives them an advantage over their smaller competitors. Yet even with their technical staffs they find most of the firm efficiency studies difficult if not impossible to use.

I would restrict studies of efficiency at the firm level or below to the following:

(1) Where the research is directly tied to an extension program and immediate use of results by competitive firms unable to finance their own research is highly likely.

(2) Where the research ties to a broader subsector problem or study and thus has a public significance.

(3) Where new methodology is being developed or tested.

(4) Where the research is primarily a training exercise.

It is very important that well qualified firm managers are trained, and research connected with such training is desirable. This means that such studies are more likely to find justification in a graduate school of a university than in the USDA.

However, my main argument is in terms of opportunity costs. Today, most firms can finance the solution of most firm management problems for their own firms. Even the small firm can hire highly qualified professional help. However, the firm cannot deal with interfirm problems. Each firm of a subsector may be internally efficient while the subsector suffers from coordination problems. If the public does not support research in the areas of system-coordination and industry performance, the research will not be done. Here there is a substantial public interest.

## 11

## Three Approaches to Marketing Research

There are three potentially complementary approaches to marketing research. I call these the pure science, the economic engineering and clinical attitudes.11/ The

11/ See J. Shaffer, "Some Conceptual Problems in Research on Market Regulations," in North Central Regional Research Committee Bulletin No. 455, N. Dakota Agricultural Experiment Station, September 1965.

pure science approach sees the role of the market economist to be the detached and objective search for regularities and generalizations through the process of theory construction and test. This approach offers significant contributions in the long run. It is the "in" attitude. Yet for the social sciences the payoff has been relatively small because the theory has related to statics and equilibrium while the problems tend to involve change. And the policy applications derived from this approach have too often failed to define the relevant problems. Relevant critical hypotheses for policy have gone untested.

The second approach is that of economic engineering where the role of the researcher is seen as searching for a solution for an optimizing problem, accepting the problem and goal as given. This has been, I believe, the dominant attitude of marketing economic research. And it has served us well in the restricted problems where production efficiency was the sole criterion of performance. And these are important, let there be no doubt. Yet the economist who restricts himself to the engineering approach severely restricts his capacity to deal with the applied problems of market regulation or with the subsector level problems of coordination and performance. For here the criteria are multiple and normative judgments concerning both problems and ends are involved.

The third approach I have identified as the clinical. The clinician researches individual cases to arrive at diagnoses and then uses such facts, principles, and experience as are available to him to prescribe what he hopes will serve as a remedy. He uses the results of pure science research and the tools of economic engineering where applicable. But he works beyond that restrictive frame of reference.

An example of a clinical study in marketing would be a broad based subsector analysis to identify the barriers to improved performance. In the initial analysis, the problems or bottlenecks would be defined. The job is to properly diagnose the obstacles to improved performance and to identify a course of action which would lead to the various dimensions of improved performance.

The problem of coordination and subsector performance must be considered within the context of change. Increases in productivity--increases in our capacity to obtain our multiplicity of ends--derive from change. Equilibrium is of little consequence in the dynamic economy. As the economy changes, bottlenecks and barriers develop. The adjustment of the economy to the changing situation is a continuous process. The social science research job is to identify bottlenecks or barriers and to facilitate adjustment so that improved production capacity is directed to community needs.

To some extent, this has been the practice in marketing research. And it may be one of the reasons marketing research has not seemed additive. As it deals with the solution of real, immediate problems the phenomena under study changes. Here the test of usefulness of research is not the development of an abstract theory, but the solution of problems. Perhaps our failure has been in not developing a useful taxonomy of problems and potentially useful prescriptions. A variety of coordination problems which appear different may be similar in form. Also, good clinical practice requires the development of methodology useful in the solution of real problems and the understanding of those basic empirical relationships which do exist.

It seems to me that marketing research requires the use of all three of these approaches, but that the future need is for relatively much greater emphasis on the clinical approach.

12

Market Policy Research and Value Judgments

Among economists, there are those who argue that the economist as scientist should not make value judgments and thus should avoid policy recommendations. Yet the clinical approach and the emphasis on market rules and market performance suggest an involvement in market policy. And I do believe the social scientist is acting responsibly when he draws policy conclusions from his research (assuming the research to be relevant to the conclusion) and irresponsibly when he refuses to do so.

Policy statements require value assumptions. But this does not mean that there is nothing empirical or scientific about normative economics. People, and thus communities, have heirarchies of values. An operative or instrumental value will be derived from a combination of value assumptions and empirical propositions which are at issue. For example, the majority and minority members of the National Commission on Food Marketing took opposing positions on a number of policy issues. However, if their arguments were honest, they did not differ so much on basic values as on judgments about basic empirical propositions about consumer, retailer and workers' behavior. They did not have the same view of how the system works or about the impact of alternative changes in market rules. Thus in marketing research it is important to be extremely careful to separate out the empirical propositions and, to the extent possible, subject them to test.

The relationship between the public policy maker (including the voter) and the social scientist in a complex society needs to be understood. Like it or not (and I don't), the issues are often too complex or too detailed or too time consuming for those ordinarily identified as policy makers to deal with effectively. It may be that in at least some aspects only the research group and its peers are technically competent to draw policy conclusions from the research. For example, conclusions of medical research concerning safety of foods and drugs are instrumental in policy making. It is seldom that the non-specialist can evaluate the policy conclusion of such research. The same is clearly true of the social scientist, not certainly for all levels of policy, but for much of the details of it.

Galbraith 12/ coined the term technostructure to identify the group of technical-management personnel in a large organization who in effect make the operating policy and planning decisions for the organization. The top management accepts most of these group decisions because of the complexity of the decisions. The market economist has a role to play in the making of complex decisions related to the organization of the economy. And while he is not and clearly should not be on top, he has a responsible position and should recognize that responsibility.

13

Limitations of Agricultural Firm Orientation

Does "agricultural" in agricultural marketing economics research limit an effective attack on problems? Bishop 13/ has argued that the farm and city dichotomy is no longer useful and that the U.S. has become an urban society and those of us who work in the rural social sciences have not perceived the significance of the fact. He adds

12/ The New Industrial State
13/ Op. cit.

that we have continued to focus on the narrow problems of the firm and that to continue on the road we have been traveling will lead us into the role of publicly subsidized consultants to the corporate farms and marketing firms of the future. I agree. To a significant extent, the agricultural firm orientation limits the usefulness of the marketing social scientist. We need to be people oriented, not sector oriented. Best we become applied social scientists! Yet in a transitional period--and we are in one--the problems of the food and fiber sector of the economy are both interesting and very significant in terms of the well-being of large numbers of people.

14

### A Basic Premise

A basic premise of this essay is that significant benefits are available from improved organization and coordination of economic activity; that the market economy does not automatically coordinate activity in a beneficent manner; that the market is instituted for man's purposes and in our dynamic world often requires modification if it is to serve his purposes best; and, finally, that the performance of the system can be improved through the application of social science research.

## PART II

## On What's Happening--The Industrialization of Agriculture In An Industrialized Economy

1

### Meaning and Extent of Industrialization

The food and fiber sector of the U.S. economy is in the process of a radical transformation. The key to this transformation is industrialization. By industrialization, I mean the dynamic process involving:

1. The specialization of work and the integration of efforts of workers with different skills in a common enterprise.

2. The application of science and technology as contrasted to traditional skills.

3. The substitution of equipment for labor.

4. The standardization of production.

5. Adaptation of sizes of enterprises to take advantage of specialization and technology.

Agriculture has been in a continuous transition from traditional subsistence farming to the present level of industrialization. The radical transformation is to a new level of industrialization and a change in the existing and potential economic organization of food production. Individual characteristics of this transformation are well recognized, but the implications of the transformation for the full range of institutions and market rules related to food and fiber are very inadequately understood. Such understanding is the first order of research priority.

What are the signs of the current stage of industrialization and trend toward increased industrialization of the food and fiber sector of the economy?

An appropriate way to start looking at the extent of and trend toward industrialization would be to look at the value added at each step of the marketing chain and then look at the industrialization characteristics of each link. These data are not easily available. However, a rough estimate would be the following:

| | | |
|---|---|---|
| 1. | Farm supply..... | 23% |
| 2. | Farming..... | 15% |
| 3. | Food Processing and Manufacturing..... | 35% |
| 4. | Transportation..... | 6% |
| 5. | Retail-Wholesale and other..... | 21% |

Modern food retailing is partly industrialized. Certainly the food chains represent industrialization. Of particular importance is the imposition of standardization or specification on the foods they handle. This, among other things, leads them to vertical integration into food processing. It also gets them involved in the coordination of the system of food production, making them part of the industrialized system.

Until recently restaurants were not industrialized. However, the development of the restaurant chain and the application of technology and specialization with large scale operations bring industrialization in this area also. The purchase of restaurant chains by firms in the food business is another step in the industrialization process.

Transportation is an important factor in the industrialization of food and fiber. In general, the lower the cost of transportation the larger the scale of the optimum size of food processing plant. The huge public investment in highways contributed to the increase in size of plants. And, inexpensive transportation fosters specialization and thus large scale production in farming. Much of the modern transportation itself has the characteristics of industrialization. And the recent developments in integrated handling and transportation systems are an advance in industrialization.

Food processing and manufacturing are well along in meeting the characteristics of industrialization. While many small plants using traditional methods operate in many areas of food processing, large manufacturers applying science and technology, using organized labor, and with very large investments, process and manufacture a large percentage of our food. And the industrialization continues with advanced technology and increases in scale of operations. "The total number of plants processing food has declined more than a fifth since 1947." 14/

The production of food analogs is an industrial process. The theoretical potential for analogs is very great. Food technologists can or will soon be able to manipulate the chemical and physical characteristics of foods so that low cost raw materials can be used to make a variety of foods. The loss in the transformation of calories in animal production is something like 80%. 15/

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14/ Food and Fiber for the Future, Report of the National Commission on Food and Fiber, July 1967, p. 169.

15/ W. E. Hartman, "Meat Like Products From Plant Sources," Speeches Presented at the Cornell Conference on New Foods, Flavors and Analogs, April 1967, p. 19.

As of 1965, synthetics had 33% of the fiber market, 80% of the soap and detergent market, and 6% of the sweetener market.16/ So far, manufactured food analogs have been most successful as dairy substitutes. Butter has lost about two-thirds of its market to margarine. Coffee whiteners have about 35% of the "coffee cream market." Non-dairy whipped toppings are said to have about 60% of the "whipped cream market." Mellorine has about 5% of the frozen dessert market.17/ And recently, filled milk is reported to have taken 4% of several western markets shortly after being introduced. Fruit juice analogs have been developed and as they are improved will have major implications for fruit production.

Perhaps as important is the attitudes of food processors towards analogs. The American Meat Institute has adopted a policy not to fight the introduction of meat substitutes nor to support legislation restricting the introduction of mixtures of manufactured protein into processed meats. They have agreed they are in the food business--not the meat business. A number of large traditional food processors have changed their idea of their role. Many are merging and expanding their lines and as a result have none of the negative attitudes of the traditional processor towards producing food analogs. Even a farmer cooperative has produced a non-dairy coffee whitener under contract. A number of large firms, some with government support, are researching the development of low cost production of protein. This is now done with the intent to help feed the hungry world but could lead to some substantial breakthroughs.

These are only some of the examples of the development of synthetics and analogs reflecting one of the trends toward industrialization of food and fiber production.

Farm supplies consist primarily of chemicals, petroleum, rubber, iron and steel, machinery, motor vehicles and parts, feed and seed. Commercial fertilizers are produced by about 50 large companies; pesticides and petroleum products are dominated by large companies as is true of rubber, steel and motor vehicles. While there are about 1,500 manufacturers of farm machinery and equipment, the seven full line manufacturers sell most of the equipment. The mixed feed business includes thousands of firms, but the characteristics of industrialization are evident for a large portion of the output. Typically, only a small portion of the production of firms manufacturing farm inputs is devoted to agriculture. There is little doubt that most of the farm supplies production is industrialized.18/

We currently have about 3,000,000 places defined as farms. About 500,000 are economic units currently producing returns to labor and investment equal to those obtainable in alternative employment. The minimum investment of the smallest of these 500,000 units is about $100,000. The average investment would be much more. The continuation of the forces presently shaping farm organizations could lead to most of the products of farming being produced by 200,000 or fewer units by 1987, when minimum investment will exceed $250,000, clearly a large investment in terms of an individual's capacity to accumulate capital.19/

Agricultural labor is in the process of being organized. It appears to be only a matter of time until unionization of much of agricultural labor will be accomplished. At the same time, legislation is being extended to cover farm labor as it presently covers industrial labor. This includes workmen's compensation and minimum wages.

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16/ See R.S. Corkern, "Synthetic Substitutes in Agricultural Markets," Marketing and Transportation Situation, USDA, August 1967.

17/ G. G. Quackenbush, "Dairy Products--Modifications or Substitutes," Cornell Conference, op. cit., pp. 7-8.

18/ See Food and Fiber for the Future, op. cit., pp. 171-176.

19/ See Implication of Changes on Farm Management and Marketing Research, Report 29, Center for Agriculture and Economic Adjustment, Ames, 1967, especially papers by L. S. Kellogg and T. T. Stout.

This will tend to stimulate continued industrialization of farming. The higher labor costs will accelerate the substitution of capital equipment and other technology for labor. This seems to increase the scale of farms and thus increase the size of entry investments. At the same time, the union is itself an additional large scale organization, a characteristic of industrialization. Some large firms have not entered farming because they are unionized and could not compete with non-union labor hired by farmers. However, if all labor is unionized this differential labor cost will no longer be as significant a barrier to entry for the large firm.

Sophisticated equipment and plant breeding are combining to stimulate industrialization of farming. Science and technology are being substituted for traditional skills. The potential for new electronic harvesting and cultivating equipment, along with plant breeding, puts us at a new threshold of technology. The result again is likely to be higher investment requirements, more specialization of skills and scale economies leading to much larger units.

Activities which were, until recently, part of traditional farming are already highly industrialized. In Michigan, one firm controls the production and processing of more than 500,000 turkeys. It also manufactures the feed and operates a hatchery. It is an industrialized operation. Many similar examples are available for broilers and eggs. Large beef feed lots represent industrialization. A large packer and a large feed manufacturer each argue that hogs will soon be produced on a factory basis providing standardization of production. They say if traditional agriculture does not adjust to this type of large scale specification production it will be done by others. The integration of these operations by feed manufacturers is an aspect of industrialization. "Currently more than half of fluid milk, broilers, turkeys, vegetable seeds, hybrid seed corn, sugar crops, citrus fruits and vegetables for processing are transferred under integrated and contractual arrangements".20/ And a major trend in livestock contracting seems evident. These developments are closely related to the industrialization of food production, for industrialized production demands specification which is obtained through integration and contracting.

The development of technology and the organization of supply and processing firms is resulting in the development of specialized services for farming. For example, fertilizer firms will apply the fertilizer, chemical firms will determine the time and formula for the application of pesticides and apply them, specialized harvesting is available, etc. In many operations, it is difficult to identify the farmer. Industrial specialization is in process.

As it stands today, less than one-fourth of the value added in the domestic production in the U.S. can be attributed to farming. And clearly farming is being industrialized. Even agricultural economists and farm leaders who know the data seem to fail to recognize what has happened. They talk of one farmer feeding 40 other people, for example, but never talk of one fertilizer plant worker feeding 40 people.

The following can be summarized and inferred from this brief (and inadequate) examination of the process of industrialization of the food and fiber sector of the economy:

1. The trend is for more and more of the contribution to production to be provided by manufacturers in the form of farm supplies.

2. More specialized on-farm production services are provided by supply manufacturers.

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20/ Food and Fiber, op. cit., p. 177.

3. Sophisticated equipment and plant breeding stimulates large scale crop farming with specialization and quality control.

4. The trend is toward factory organization of animal production.

5. Increased capacity to manipulate food characteristics make it possible to create high value foods from lower valued farm commodities, which moves more of the food production to off-farm factories.

6. Improvements in transportation are stimulating increased specialization and scale.

7. Large scale retail and restaurant operations are demanding increased specification and certainty in food production.

8. Farming as a distinct identifiable activity becomes more and more difficult to identify. The value added by farming as a portion of food expenditures will continue to decline.

9. Farm supply manufacturers, firms owning and controlling farming operations, food manufacturers, transport firms, and food retailing firms are very often engaged predominantly in economic activity related to other sectors of the economy. Agriculture cannot be understood independently of the industrialized economy as a whole. It is only a part of it.

10. Atomistic competition is uncharacteristic of industrialized agriculture. Typically, firms are highly interdependent, facing sloping demand curves. They produce a variety of products, attempt to reduce uncertainty and to control the characteristics of their inputs.

## 2

## The New Industrial State

Economic development cannot be understood apart from the industrialization process. Development takes place largely through the advancement of industrialization. Unfortunately, our understanding of the process of industrialization is very inadequate. We need to develop a theory of industrialization. Of course, economics has always been concerned with this process. But we have not managed to interpret the essentially dynamic character of industrialization. Indistrialization involves the development and application of technology within a continuously changing economic organization. It is because of the impact the process has on the organization of the economy--the market institutions and functions--that it is a central concept in the discussion of marketing research.

Professor Galbraith in The New Industrial State suggests some important implications of industrialization, as it has developed in the United States. In view of the industrialization of the food and fiber sector, agricultural marketing research must consider the implications of his argument. The central theme runs something like this:

Large scale organizations have an advantage over small firms in the production of a wide range of commodities. This is due especially to the complicated nature of modern technology, the long lead times required from investment to production, and the greater capacity large firms have in planning and financing. Thus the dominant firm in manufacturing is the giant corporation, not the small independent firm. They are well adapted to high levels of output.

The decisions of the giant corporation are too complex and too technical for any one individual to understand. Thus decisions are made by groups which Galbraith labels the technostructure. This bureaucracy runs the large corporation and is substantially independent of the owners of the corporation.

The corporate bureaucracy needs to avoid risk. The nature of highly capitalized long term ventures requires it. Large size makes it possible (and the potentials of controlling risk may be a major incentive to size). It gains certainty through four devices: (1) Certainty of supply of materials is insured through backward integration and contracts, (2) uncertainty in the capital market is avoided by assuring financing from retained earnings (note this assumes a capacity to manage earnings, which is an incentive to large size), (3) it reduces uncertainty through contracts with large unions, (4) it reduces uncertainty in selling by (a) contracts with buyers, especially the government and (b) by managing consumer demand through advertising, promotion and product design. This Galbraith identifies as the reverse process, that is, in place of consumers' preferences influencing what is produced, producers influence consumers' preferences so they will want to buy what is produced.

Galbraith argues that in effect the corporation is able to "supersede" the market.

Because of large scale--ability to control prices and thus to generate substantial earnings available to the corporate bureaucracy for investment--funds and incentives are available for investing in research and development. This becomes a major function of the firm and stimulates economic growth. (However, since it is cheaper to have the government pay for the research, about 2/3 of the $23 billion or so spent on research is supported by the government.)

The goal of the corporate bureaucracy, Galbraith reminds us, is its own survival and growth and the exercise of its highly developed skills. The firm must meet minimum dividend requirements, but this is usually easily done for a large firm capable of "planning" profits. The bureaucracy must meet minimum profit goals but profit maximization is not a goal. Lacking the profit maximization motive the firm is still less subject to the discipline of the market.

The corporate bureaucracy has a very great influence in the society. The goals of the corporation and the state tend to converge. The state trains technicians needed by corporations, it reduces risks by providing programs for economic stabilization (deflation is not good for planning) and growth and spends large sums on technical research valuable to the expansion of the firm and the economy.

There is, of course, much more to Galbraith's thesis. Most important for our purposes is the argument that the market has lost its significance as a disciplining and allocating device in the highly industrialized sector of the economy.

There is considerable evidence for much of what Galbraith describes.21/ However, the significant questions for this discussion are: To what extent are the observations relating to the market and performance descriptive of the economy? And to what extent is the model Galbraith describes a necessary result of industrialization?

Few would question Galbraith's general description of large scale enterprise in the U.S., even allowing for substantial overstatement. Very large corporations do

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21/ For a careful discussion of the issues of the general thesis see Planning, Regulating and Competition, hearings, Select Committee on Small Business, U.S. Senate, June 29, 1967. This is a seminar involving W. Adams, J. K. Galbraith, W. F. Mueller, and D. F. Turner.

exist; they are run by a bureaucracy; they do have the capacity to influence their prices. The corporate bureaucracy is somewhat independent of stockholders and the capital markets; they do attempt to avoid risk; they do have influence with government; they do advertise and promote and thus influence consumers' purchases; they do plan; they do have goals other than profit maximization; and they do finance much expansion out of retained earnings. The questions concerning these "facts" relate to the implications they have for performance and policy.

It is hard to believe that Galbraith is serious when he argues that the corporation can insulate itself from the market or that the market becomes irrelevant. It seems to me he really misses the issue. It is possible to institute the market in many different ways. The real questions have to do with the performance arising from the various ways of instituting the market given the potential technology. It seems evident that industrialization precludes atomistic competition in many areas of the economy. The necessary size required to take advantage of specialization and technology results in firms so large that they are interdependent. But there are many possible modes of economic organization between atomistic competition and the dominating and unresponsive organization Galbraith describes and apparently is ready to settle for. These are the questions which must be dealt with by agricultural marketing research it if is to play a relevant role in the organization of a partially industrialized and changing agriculture within a largely industrialized economy.

## PART III

## ON ORGANIZING RESEARCH EFFORT

### 1

### Assessment

I believe there has been good and useful marketing research. Information has been produced which has been used by private and public decision-makers. Farmers and consumers have benefited from the research. We know more about the way the marketing system works than we would have without the research. Yet anyone who even casually reviews the work in marketing research since the Research and Marketing Act of 1946 cannot help but ask why it has not produced more significant results. Most of the research dealt with safe description of marketing situations. The most common evaluative comment is that it is not additive. The more telling criticism is that the research has not been relevant to the making of significant public and private decisions. And this is not because the research was risky and simply failed, for there was no conceivable outcome which would have made the results either additive or relevant to the making of significant decisions. In addition there has been a problem of timeliness. Information which would have been useful if available while current often loses its value if published years after the data were collected. 22/ This is particularly true of market information. And timeliness has not been the hallmark of publicly supported market research.

I believe the below-potential contribution of marketing research can be traced to the following:

(1) A considerable amount of new money was made available for activities and the profession was not prepared to handle it. Some just plain poorly conceived and executed research was undertaken. (And I did some of it.) The answer to this problem is improved training for marketing research, and this is being accomplished.

22/ Data are, of course, often available to decision-makers before they are published.

(2) The nature of market research 23/ is that it is of momentary value. It is dealing with a changing phenomenon. The problem has been that too often the research was too late or not directly relevant to decision-makers. In those cases where research is to provide information for firm managers, it should perhaps be designed with their participation to assure its relevance to them. The researcher should be able to write the tentative results, i.e., what he expects to find out, and test the relevance with people he believes will use the results. This would be much more significant as a research management device than the current project statements with the inevitable statement that the research should be helpful to a certain class of people.

This criticism, of course, applies only to a limited class of marketing research. Here I believe the project funding procedures are inhibiting effective research. Considerable effort should go into developing the plan, writing-up expected results and testing them for usefulness before it is decided to undertake the research. Thus the development of the research is a process involving considerable expense and is not easily dealt with by project requests. The justification itself is a research project.

(3) We have lacked an adequate theoretical or taxonomic system to organize and direct independent research activity in building a general retrievable fund of knowledge. (It is a young profession, after all.) I will discuss this further in Part IV.

(4) The research has been organized in atomistic units, many consisting of less than one full man-equivalent per project per year. And the timely nature and scope of the more significant problems have often been beyond the scope of one man's research capacity. This deserves elaboration.

(5) There have been political reasons for avoiding some of the important issues. More about this later.

Let me quote from Bressler 24/ on the problem of additivity of research: "Some years ago the agricultrual Economics Committee of the Social Science Research Council pointed to the 'nonadditive' or 'noncumulative' nature of our research--a complaint still valid. This stems from at least two aspects of our work: the constant repetition of preliminary and descriptive phases of the work, with little or no follow-up into the promised sequence of analysis and synthesis; and a failure to visualize and plan research so that component and preliminary phases can in fact be joined together into useful analyses of complex problems . . . This is, I believe, the major challenge for agricultural economics--to develop programs of research that are truly additive and cumulative and so to move above the fragments of analysis now all too familiar . . . . Research projects should be organized on broad bases . . . because this broad formulation provides the framework within which small, contributing subprojects can be efficiently organized."

The evidence seems clear to me that improved coordinating institutions are needed for organizing research effort to improve performance. The form of the coordinating institutions is less clear. If our experience in economic organization gives any insight, it is that complete centralization of authority and completely atomistic and unregulated organization are both likely to fail to provide the desired performance.

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23/ I use market research to mean research designed to identify characteristics of a potential market. For example, the characteristics of people buying apples in Lansing in April of 1966. It is one class of marketing research.

24/ R. G. Bressler, "Agricultural Economics in the Decade Ahead," Journal of Farm Economics, August 1965, p. 521.

The problem is to concentrate enough resources to do meaningful units of research without imposing restrictions which dampen creativity or fail to make full use of the collective intelligence of researchers in the area of problem identification.

2

## Anti-Anti-Coordination

There is a strongly held belief (or myth?) that only independent research can be creative and productive. Miklius and Gerald 25/ have recently done an excellent job of presenting this case against coordinated marketing research. The argument includes the following points:

(1) No decision-making authority can do a better job in selecting important projects than the individual researcher. The outcome of research is essentially uncertain and if anyone has an advantage in predicting expected values of research it is the men who will do it. Research is highly specialized, making it difficult for anyone but the specialist to evaluate proposals.

(2) The specialization of researchers results in high opportunity costs of shifting researchers among projects.

(3) Outstanding researchers have personality traits which are basically inconsistent with the requirements of teamwork.

(4) Coordinated programs have problems due to turnover of personnel.

(5) Coordinated research adds to overhead costs.

They conclude that since there is no basis for assuming improved problem selection and since costs are added, coordination of research is likely to be an unproductive effort.

I want to examine their position in more detail. I would not engage in this prolonged discussion of attitude toward organized research, but for the fact that it may well be the single most important barrier to effective marketing research. It is commonly held both at the colleges and in ERS.

It may be that applied social studies and pure science should be organized differently. Certainly one cannot conceive of assigning Einstein the task of producing the theory of relativity. However, problem oriented marketing research is something quite different. For some problems, unless a minimum critical effort is expended, the results will not be available in time to be useful. The model of research in developing technology as contrasted to pure science is appropriate. How many years of uncoordinated research would be required to produce the technical system which is the design of a modern airplane? It would never happen. Actually most of the research on technology in the U.S. involves teams of specialists. It could not be done otherwise.

Many of the problems we face are not only too big for one man but beyond one man's technical competence. Just as specialization in the economy requires vertical coordination so it is with research specialization. While the market coordinates economic activity, there is no similar institution coordinating publicly supported research.

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25/ W. Miklius and J. Gerald, "Problems in Implementing Coordinated Marketing Research," paper presented at the Association of Southern Agricultural Workers' Conference, New Orleans, Louisiana, January 30, 1967.

Where marketing research meets a market test--where it is paid for by the user--it has frequently been team research. A company wants an answer. The commercial research firm organizes to get the job done. Agricultural economists have been working on problems of scale in farm enterprises for years. Yet when a large firm wanted to know the possibilities of operating 1,000 head dairy herds it could not find the answers. It put two teams of specialists to work on the question and got its answer (using some information generated from the public research system, to be sure).

Physical science seems to have a better coordinating structure in the application of a discipline than is true for marketing economics. Where in economics can you duplicate the following description of a very successful research enterprise? "On any given morning at the Laboratory of Molecular Biology in Cambridge, England, the blackboards of Francis Crick or Sidney Brenner will commonly be found covered with logical trees. On the top line will be the hot new result just up from the laboratory or just in by letter or rumor. On the next line will be two or three alternative explanations, or a little list of 'what we did wrong.' Underneath will be a series of suggested experiments or controls that can reduce the number of possibilities. And so on. The tree grows during the day as one man or another comes in and argues about why one of the experiments wouldn't work, or how it should be changed." 26/

There are potentially beneficial side effects of team or cooperative research. One of the important products of research is the learning experience of the research workers. The opportunity to work with and learn from other researchers in the actual practice of research offers considerable possibility for upgrading the quality of the profession. Researchers do have different talents which suggests the potential for complementarity among members of a research team. Some have much greater talent than others for defining researchable questions, for example. And let's face the facts. A significant number of the profession would benefit by some peer supervision--they would benefit by the stimulation and control on quality of work imposed by a group. We also have a number of the profession who are great with specific techniques or methods, who gain their satisfaction from practicing their skills and care little to what problem they apply their skill. This resource could be better utilized than now seems to be the case.

I am convinced that a large proportion of agricultural economists are flexible with respect to the problems about which they can be enthusiastic. The Commission on Food Marketing, the National Advisory Commission on Food and Fiber and the Commission on Rural Poverty all attracted high quality professional participation. When money became available in marketing many agricultural economists became interested just as new money in resource development discovered great interest in that field.

The present incentive system does not encourage coordination of research. A single authored publication tends to get more "points" for the author than multi-authored studies. This is true in respect to promotion and in judging of research by the professional association. The esoteric and novel receives more attention than the problem solving work within the profession. Even publication procedures of the journals and agencies make it difficult to publish large comprehensive studies. And peer group attitudes make individual research efforts more respectable. However, most important are the funding procedures. There is little in the funding procedures of ERS or the experiment stations which encourages coordinated efforts. Small projects have seemed to have an advantage. The strategy employed by many individual researchers is to try for multiple projects rather than one larger one. Interstate and interagency project funding is difficult. Even the regional research funds offer no real incentive for coordinated research. The fact that projects have to be planned well in advance of funding makes it difficult to deal with an immediate problem involving several researchers.

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26/ J. R. Platt, "Strong Inference," Science, October 16, 1964, p. 348.

The difficulties and failures of the colleges to organize coordinated research are greater than for ERS. Hildreth observes that "With the increase in the number of graduate students relative to the number of professors, more and more research is done by graduate students under the direction of professors. It appears that only young or unique professors do their own research. This has impacts on problem selection in at least two ways. First, problems are selected which a graduate student can complete in an acceptable length of time. Second, in many cases graduate students choose their major professor and problems. Thus, problems, areas for research, and priorities tend to be set by graduate students." 27/ This is something of an exaggeration. Professors do influence student choices as does the amount of allocated funds. However, the fact remains that little coordiantion of research takes place within a campus, between states, or between the states and ERS.

The extent of fragmentation in marketing economics is shown by the high ratio of projects to professional man years. Hildreth 28/ reported in 1965-66 there were about 740 projects identified as marketing economics and about 366 professional man years devoted to the projects. (Other areas of agricultural economics are not significantly different in this respect.) It is no wonder that the results of the research are difficult to aggregate to the level of meaningful public or private policy.

During the past several months I have had an opportunity to visit with several people who currently, or in the recent past, have had important decision-making roles in the Department of Agriculture. Without exception they have expressed concern over their inability to get meaningful help on policy problems from marketing research. I have gained the impression that the major difficulty has been the narrowness of the scope of most research and the fact that too many significant gaps exist when an attempt is made to put the information together to deal with meaningful problems. The phrase in most projects that "the results should be helpful to decision-makers" is often a whistle in the dark.

## 3
## On the Politics of Research

To some extent, almost any research which turns out to be useful will affect some member of the community adversely. The plant breeding research, making mechanical harvesting of tomatoes possible for California irrigated tomatoes, will very likely make it uneconomical for Ohio farmers to grow processing tomatoes. Some will lose substantial investments because of this. The plant breeding which is making soybeans a profitable crop in the South and Southwest will adversely affect Midwestern farmers. The improved control of disease in hogs may make factory production of hogs practical and result in the loss of large investments by traditional hog farmers. The research leading to mechanical harvesting of cotton deprived thousands of poor Negroes of employment, forcing migration and unmeasurable costs. All of this research and research in thousands of other areas was publicly supported. And, except for a few farmers who have complained of the aggregate effect, it has not been controversial.

The same cannot be said for research related to market policy. It becomes controversial and political. The politics of market research must be understood for it is relevant to the most effective organization of the research enterprise.

Charles Hardin, who has for many years been a student of political pressures on agricultural economics research, recently summarized his observations about agricultural research on controversial issues: "If agricultural science comes to grips with social problems . . . it will have to be prepared to press--and risk--research on controversial issues. There are adverse judgments on accomplishments to date. A

27/ R. J. Hildreth, "Issue and Implications in Current Procedures for Establishing Research Priorities," Journal of Farm Economics, Dec. 1966.

28/ Op. cit.

recent conference evaluating agricultural science asked: 'Why has agricultural research virtually ignored its social and political responsibilities in a fast moving world of manifold social challenges?' . . . " 29/

Bishop believes the agricultural social scientist has responded to political pressure by avoiding important issues. In talking of the effects of national programs affecting rural people, he states, "A small group of economists in the Bureau of Agricultural Economics understood the developments and set about to improve the lot of those who were being by-passed. However, after the organization was purged by Congress, research on the welfare problems of farm people was displaced with relatively noncontroversial studies of farm management, commodity marketing and farm commodity price policy.

"After the purge, agricultural economists placed heavy stress upon improvement in technology as a means of decreasing production costs and increasing efficiency of the operation of farms and marketing firms. Meanwhile, agricultural technology was improving so rapidly that, with the high price supports, ridiculously large stocks of commodities were accumulated. Perhaps in no instance was our extreme preoccupation with micro-level problems more clearly demonstrated than in the increased allocation of scarce research resources to the study of commodity production function problems during the last two decades. At a time when stocks of farm commodities had become unbearably large, agricultural economists were worried about measuring the marginal productivity of another unit of nitrogen in the production of corn. We had become so inbred with micro problems that we were indeed on the verge of becoming totally separated from the important problems of our time." 30/

Cochrane 31/ gives us an insight to the political pressures on economic research in the USDA and the current pattern of organization to deal with these pressures. He concludes that "If the Director of Agricultural Economics is prudent and works diligently in support of his services, Secretaries of Agriculture come along who understand, or learn in time, the worth of good economic staff work based in turn upon reliable and relevant economic analysis and statistics, and this profession supports the Agricultural Economic grouping in the USDA with vigor and wisdom, then it will survive. But it will not survive unless it is carefully tended and cared for; like a rose garden in Minnesota, without wise and loving care, the elements and predators will kill it."

The discussion of the politics of economic research is important because it relates to my position that emphasis of publicly supported marketing research should be on problems of the subsector or sector. And I have argued for first priority to be placed on market policy or the rules of the market. Microeconomic research is seldom highly controversial. The firm using the research is benefited and if, through competition, others are harmed it is seldom related to the research or is the research support threatened. However, research dealing with market organization and performance is often threatening to some vested interest. And research about the rules of the market is political by definition.

Administrators of these programs may feel threatened by research dealing with their activities. The trick is to get them actively in support of unbiased research in the interest of improving their service.

It is not only the USDA which has political difficulties. The colleges are under pressure through control of appropriations. In the past two months professors in four agricultural economics departments have mentioned to me economic research they considered in the public interest to do, but which would be unwise politically for them to undertake. For the colleges, the internal politics are important. It is not infrequent that external political pressure can be traced to sources within the university who feel they have been wronged by the economist. (In my own university, the trustees once passed a resolution intended to restrict statements by agricultural economists which were undermining support for research on horses.)

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29/ C. M. Hardin, Food and Fiber in the Nation's Politics, Vol. III, Technical Papers, National Advisory Commission on Food and Fiber, August 1967, pp. 226-230.

30/ Bishop, op. cit.

31/ W. W. Cochrane, "Some Observations of an Ex Economic Advisor," Journal of Farm Economics, May 1965.

The political problem is real. Yet it offers no excuse for failing to exercise professional responsibility. As social scientists, we should be able to deal with a political problem involving the integrity of our own profession. What can we do?

Basic economic data are appreciated by the legislature, but such research remains hard to sell. Congressman Whitten raises a valid point: "All farm legislation, labor legislation and various and sundry things that go on in the political life and in the governmental activities, tie back to figures. The accuracy of those figures and the soundness of the projections is the dominating influence in most everything the Congress or the State legislatures, or farm organizations and others do. Your figures, I am sure, are used by many, many people. At the same time this is a difficult thing to sell. It is pretty hard to get your hands on it." 32/

Part of the politics of research is to make it easier "to get your hands on" our research. This means we have to make it relevant and push more of it to the point where the payoff is clear. Most of us in economic research have almost completely neglected this aspect of the political problem faced by those who have to sell our programs.

My impression from recent appropriation hearings is that the problem of relevance is much more important than the issue of controversial studies. Congressman Whitten again expresses the political question of relevance well. "All right, you get this extra money, and you have people in this area already. You bring together all these facts and use a computer to run them through to come out with a set of answers. Other than knowing what your findings are, what use do you expect to make of it?" 33/ It is good politics to answer this question well.

I am willing to have us do research which has political payoff even though I might consider it the best allocation of scarce research resources. I would include research on costs and margins and market potential studies in this category. The questions I have are: Do they really carry political payoff? And, can they be revised to be more relevant?

The social scientist dealing with controversial issues needs to be sufficiently sensitive to political pressures that he will not needlessly invoke the wrath of an interest group. There is usually more than one way to objectively present research results and the most threatening is not necessarily the most effective. At the same time, research should not be avoided because it is believed to be controversial. Most college administrators and USDA administrators are willing to take more heat than the scientist believes, if they are reasonably convinced of the merit of the research. We are undoubtedly much too timid in respect to choice of topics and much too demanding of our right to say what we want, any way we want to say it.

## 4
## On the Division of Work Among the States and ERS

Political realities need to be considered in the division of labor between USDA and university economists. Cochrane argues there is a natural division of labor. He believes "The USDA is best equipped by reason of budget and facilities to do the basic

32/House Hearings, Agricultural Appropriations, Fiscal 1967, part 2, p. 40.

33/Hearings, 1968, op. cit. pp. 753-754.

economic intelligence work of agriculture...The USDA is also best situated by reason of its large staff, familiarity with program operations and immediate access to the necessary data to formulate the many alternative program mechanics and crank through the quantitative results of these alternatives." He believes university economists have a comparative advantage in areas of work relating to national policy (I take it to include market policy) involving "Creative analyses and methodological studies that take time, involve new relationships and methods and lead to new and improved estimates... constructive criticism -- appraising and evaluating ongoing action programs, the research results of the USDA with respect to alternative program mechanics and the basic intelligence work of the USDA...assistance to farmers and general public in undertaking the important and relevant policy problems growing out of the developing farm economy, and the economic and social consequence of different general approaches to those problems."34/

Waugh 35/ replies that he objects to drawing a boundary line between USDA and the universities and setting out the creative analysis for the university economists. He believes the universities in fact do not have a monopoly on brains. He suggests that, if a division of labor is to be made, USDA economists specialize in national and international economic problems and state economists specialize in state and local problems. In fact, the tendency has been for USDA economists to focus on national and regional problems and for state economists to work on problems of their own states.36/

I agree with Cochrane that the USDA has the advantages he claims and should exploit them. I also agree that the state economist should do those things he suggests. But, with Waugh, I believe the USDA economists have and should continue to do research of the type Cochrane assigns to the university.

The traditional division of labor of state economists working on problems of their own state is not a realistic one. Almost no meaningful problems of marketing organization are confined to a single state. Only the special case of state imposed market rules falls in this category and the impact of state regulation can seldom be understood if observations are limited to the states. We live in an economy of interdependent markets that are unrelated to state boundaries. The subsector of the food and fiber economy is often the most meaningful unit for study in marketing and it is not coterminous with a state.

Political expedience also suggests a different specialization. State economists may be able to study the relationship of USDA regulatory actions to market performance with greater immunity from political pressure than can ERS. In some cases, USDA economists are under legal restraint for the USDA cannot legally develop a case against itself when involved in a court case. Where ERS is cooperating with the regulating agency, ERS economists can participate in evaluation of market regulation but the state economist had best take over where cooperation is not forthcoming. State economists should also participate with a cooperating agency.

Similarly, some problems of less than national scope can best be dealt with by USDA economists who do not have to look to local support. Perhaps most important,

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34/ Cochrane, op. cit.

35/ F. V. Waugh, "Should Universities Have a Monopoly on Brains?", Journal of Farm Economics, May 1965.

36/ Hardin, op. cit., p. 230.

means should be developed to spread the political heat. Groups of states and USDA should cooperate in research on national problems. Or several states could do it alone if USDA is particularly vulnerable. And states removed from particular problems might work on sensitive problems of another area, especially where their citizens are involved as consumers. Another state than Texas could better evaluate the market rules of the cotton program as it relates to the production of unmarketable Texas upland cotton. Perhaps another state than California could better evaluate the income effects of the new irrigation project in the San Joaquin valley. Perhaps Minnesota is not the state to evaluate the effects of restrictive trade practices of large millers. In these cases, the allocation of funds is critical. It is important to develop sources of funds which encourage--not discourage--work on problems where the data are to be collected in other states.

## 5
## Some Suggestions

There is no one best way of organizing to do marketing research. People differ in personality and the organizational requirement of problems differ.

1. Many factors must be considered in determining administrative organization. And a change in organization has costs. However, in order to stimulate discussion on the issues involved in administrative organization, I suggest the following as an example of possible administrative organization of that part of ERS devoted to domestic commercial agriculture. It may be that all the objectives of this example can be achieved within the present organization.

I see no reason to distinguish between marketing economics and production economics in administrative organization. I believe effectiveness could be improved by identifying all those with the mission of understanding and improving economic performance of commercial agriculture within a single unit. From the combined group I suggest three types of organization.

A. The subsector or function desk. This would be a group similar to the area desks of the State Department. All of the repetitive activities of ERS would be assigned to an appropriate desk. In addition, the personnel of an area desk would be responsible for knowing the subsector or function of the economy within their assigned area. Responsibility would include the maintenance of data and information about their area and the research being conducted in their area of responsibility. The desk staff would include specialists in farming and market institutions. The desk should then become a major coordinating center. The desk staff should be so good that no one in the U. S. would consider initiating research in the desk's area without consulting the staff. The staff could work with a national data bank to assist in storing and in gaining access to data in their area. I would think that eight area desks would be adequate. The desk could be called a branch if it provided administrative advantage within Civil Service.

B. The basic unit for most non-repetitive research would be the task force. In place of the task force being used occasionally, as is current practice, it would be the typical means of organizing to make studies. A task force could include from 1 to 50 professionals and extend from a month to 3 years. The task force would not necessarily be limited to ERS personnel--it could include recruits from the colleges and action agencies. It would require an initial study design, recruitment of professionals both interested in the study and with the required variety of skills, an executive director, etc. The study could be initiated either by a single professional, a committee or by administrative request. The specialists of an area desk would usually participate at least as consultants.

C. The independent scholarship group. An individual not participating in an active task force would be assigned for independent scholarship. From this group new ideas for effective research would be expected, and both long and short run independent research and scholarship would be fostered. Those who could not work effectively in a task force might find permanent assignment in this administrative unit. This would provide some time for USDA scholars which would be less restricted than currently and would complement the more directed task force activity.

D. ERS needs a small group to develop and maintain a systems model of the food and fiber sector of the economy. The systems model would help to organize our knowledge of the economy--it would show where we have the basic relationships and where we do not. The organization of knowledge might be the most important function. Hopefully, the model could be used to study effects of changes in technology and market rules.

A systems model would be a major undertaking and it involves some risk. Only ERS is in a position to construct a model of all of commercial agriculture and this would have to be built up over a period of years. The activities of the other organizations of ERS would be closely related to the modeling effort both in providing needed data and in using the model to test research hypotheses. The data for the model could come from successive task force effort, one subsector at a time. The basic data problems would be solved by a task force, leaving the area desk the task of maintaining necessary series of data.

If we were to identify 300 SMY (Scientist Man Years) with ERS for work on commercial agriculture, I would suggest a division by type of organization about as follows:

110 SMY for subsector and functional desks charged with maintaining basic statistical series, etc.

110 SMY for task force activities

70 SMY for independent scholarship within program areas

10 SMY for systems modeling

2. I suggest we develop administrative procedures to facilitate the formation of interstate and interagency consortiums. This would involve a commitment from professionals in several states or from states and ERS to engage in a coordinated program of research. The study could be originated in a variety of ways. One of these would be for a research scholar to send out a study plan showing needed areas of work. This could be circulated among economists known to have interest and competence relevant to the problem. They would then have the option of contributing to the study. This model has been used successfully in several nutrition studies. The consortium would be set up in such a way that resources could be obtained from more than one source and participation could involve either joining the consortium or providing already funded professional time, or the funding could be directly through the consortium director.

I would substitute the interstate consortium for present regional research. (To some extent, this is already being done.) And I suggest that cooperative research be stimulated by making some funds available only to interstate and interagency consortiums. The most advantageous grouping of professionals is not necessarily by region. I would, however, retain the regional seminar-type committees as a group to initiate research projects.

It is especially important to stimulate a fuller interchange between ERS and the college economist. The consortium could provide the administrative organization, for

such consortiums would be formed only when a problem or study was of such magnitude that involvement of several professionals from different states was necessary to get the research done. It is a method of concentrating resources on a single well defined problem area.

The ERS personnel located in the states should provide for improved coordination between state and ERS research. The consortium might be an instrument through which this could be done. ERS employees would be assigned to the consortium.

3. I suggest we experiment with establishing professional commissions within the profession. Why do we have to wait for the President or Congress to identify major problem areas? Can we as a profession identify a problem area and seek to finance a coordinated study. Can we push the professional commission to the point of concerning itself with meaningful policy implications based upon the studies? I believe this can be done. In terms of financing, the commission would be similar to the consortium, but the problem identification would be more broadly based within the profession. The American Agricultural Economics Association might be utilized to identify problem areas to be studied by the professional commissions.

The consortium and commission may be excellent organizational devices to deal with politically sensitive subjects. They spread the heat. And no one is seriously hurt if they are axed. Publication could be planned to protect the most vulnerable researchers.

4. Why not, from time to time, specify a problem area as the area of study for the year? In several cases in the physical sciences, this pattern has been used to concentrate resources worldwide. The area could be identified perhaps as the central part of the program of the American Agricultural Economics Association annual meeting. Articles could be commissioned for the Journal of Farm Economics.

Even without a problem of the year designation, the stimulation of review articles would do much in coordinating research. And research is coordinated without the expense of administrative overhead.

5. We have many too many projects. We need to develop programs of research. These programs of research would then receive circulation. The research program should be specified in sufficient detail that other scholars could see how their own research relates to other programs. If in place of 766 projects in marketing economics there were 50 to 100 programs of research, we might have some chance of relating one activity to another.

6. It is clear we need to establish a national data bank.

7. We need incentives for coordinated research. How about a research award for the best study involving 10 or more cooperators?

While the above suggestions stress coordinated research, it should not be taken that all research needs to be administratively coordinated or cooperative in any administrative sense. It doesn't. But we do need to redress the present imbalance. The adoption of some of these suggestions would, I believe, improve the coordination of research and the performance of the economic research enterprise.

# PART IV

## TOWARD A PROGRAM OF RESEARCH--WHAT ARE THE RELEVANT RESEARCH QUESTIONS?

### 1
### Instituting A Program of Research

I propose a program of research to systematically examine and contrast the performance of what is with what might be in the way of organizing the food and fiber sector of the economy. The objective is to understand the present system, to assess what it is becoming in the process of industrialization and to understand different ways of instituting various parts of the system in order that intelligent choices can be made among the alternatives in public policy and private decisions.

By discussing this program of research, I can indicate what seem to me to be the most relevant research questions in marketing economics and something of the priorities. I will not deal with firm management research or with the research to provide private firms with economic intelligence, except insofar as such research relates to organization or performance.

The report A National Program of Research for Agriculture indicated in 1965 there were 1027 economist man years employed by the agricultural experiment stations and ERS. I assume the number has increased since then. It would seem reasonable to me that at least half--say 600--would work on research relating to commercial agriculture. And of these 600, about 400 would work on research to understand and improve the system while the remaining 200 would deal with firm management problems and specialized economic intelligence for firms. Thus, I have developed a program of research assuming approximately 400 professional man years would be available annually. In a flight of fancy, I have assumed that a five year coordinated program could be instituted.

I propose that a professional commission be established to attempt to coordinate such a program of research. I propose that the committee be composed of nine distinguished agricultural economists appointed by the Director of Agricultural Economics, the President of the American Agricultural Economics Association and the Executive Director of the Farm Foundation (and any other leaders who might lend support and know the profession). Each year one member of the commission would serve as executive director of the commission on a full-time basis. The responsibility of the Commission would be to coordinate research through exerting influence in various ways (some ways are suggested in part III of this paper) and to use the research to draw inferences and to make recommendations concerning potential changes in market organization. The research would be done by individuals working independently or as members of task forces or consortiums.

Why a commission to evaluate alternative organizations of the food and fiber sector when we have just had the Commission on Food and Fiber and the National Commission on Food Marketing? The professional staff of these commissions did some excellent work considering the limited time and resources available. However, they each took a relatively narrow focus and failed to come to grips with many of the major issues of the organization of an industrialized agriculture in an industrialized economy. They mentioned a number of alternatives, but few were explored in depth.

The organization of the food and fiber sector cannot be dictated or legislated. However, market rules may be established which facilitate or prohibit particular forms of conduct, structure and exchange. An understanding of the alternative organizational forms would assist the participant in choosing among alternatives. The research problem is to understand the relationship of the variety of market rules, government actions,

trade practices, and attitudes to economic organization and the relationship between alternative organizations and performances. Since laws and regulations have complex effects, the link between them and performance (results) is an essential question.

The food and fiber sector is complex. It is not to be expected that the same type of organization will be appropriate for each subsector or industry or for all time. Thus, separate studies by subsectors will be essential. It is important, however, to attempt to understand the organization of the sector as a whole and the dynamics of the alternatives.

Ultimately, the goal is to discover or create those market institutions which best direct private interest to serve the public purposes. It is, I assume, not necessary to point out that advocating the examination of a particular economic institution is not the same as advocating its adoption.

## 2
## Overview

An explanation of what follows may be useful. I am discussing the attempt to understand a system as it exists and as it might exist.

I first discuss some research and conceptual work which is relevant to a variety of market organization alternatives. Then I discuss a variety of broad alternative methods of organizing transactions--individual bargaining, vertical integration, contracting, collective bargaining, and some special cases or modifications of each. These are, of course, not mutually exclusive. Collective bargaining could be over terms of a contract, for example. And, they can be combined in various ways in the vertical coordination of production and distribution. Each method of organizing transactions has advantages and disadvantages. The research should provide the basis for contrasting performance in different situations.

Next, I raise some questions about market structure which are related to the organization of transactions, but I look at the problem from a different angle. Then I raise some research questions concerning the rules of the market, suggesting that study of the relationship of rules and regulations directly to performance may be productive. The rules, of course, are related to the organization of transactions, structure and conduct, so again we look at the same thing from a different vantage point. Next, I suggest organizing studies looking at particular subsectors and industries. Here I suggest a clinical approach attempting to identify the barriers to improved performance and methods of changing the barriers. Finally, I suggest a system modeling effort which would hopefully assist in organizing information and be useful as an analytical tool in a number of different phases of the research program.

## 3
## Measuring Performance

An essential input to the program of research is the development of improved measures of performance.37/ This is one of the hang-ups of economics. Present measures and criteria are too closely tied to the static concepts of the competitive model, which is inappropriate in evaluating alternatives in an industrialized economy. Too often, the measures are tied exclusively to the profit accounts of firms. Performance must be judged in terms of the next best alternative. It must relate to what is judged, by the

37/ See Sosnick, op. cit.

community, to be important, including stability of prices, low unemployment, low costs of production and distribution, the desired composition of output, progressiveness, and the rate of real economic growth. All of these desires must be considered in evaluating alternatives.

Ultimately, performance must be judged in terms of the quality of life produced. We need to develop a system of social accounting where social benefits and social cost can be accounted. One of the relevant observations from the Food and Fiber Report 38/ is that we need to get our income statistics in order.

One of the products of economic organization is the attitudes and beliefs of the participants. Erich Fromm in The Sane Society argues that industrialization as it has been organized produces an alienated personality (a man who is mentally unbalanced) with disastrous effects on the society. Can we afford to ignore this aspect of performance?

The organization of the economy has a profound effect on the environment. What are the costs in terms of the quality of environment of unrestricted pollution of air and water or of unregulated advertising? This too is an aspect of performance.

## 4
## Performance Preferences

It is important to understand the beliefs and values of the economic participants in regard to economic organization and performance. I suggest a survey of a highly stratified sample of market participants to determine their attitudes and beliefs about the various dimensions of structure, conduct and performance. What do they consider a fair game? What do they believe is equitable? What do they believe about consumer sovereignty? Would they choose to give up some increase in total product to change the distribution of income? How do they judge the performance of the food and fiber sector? Where do they believe it fails, etc.? It is important to know what changes in the system are politically feasible. The design of the questionnaire and analysis will be difficult. But, isn't it more important to know the preferences for economic organization than for applesauce?

## 5
## Comprehensive Base Report

An integrated status and trends report on the organization and industrialization of the food and fiber sector is a first requirement. Only ERS could do the comprehensive job required. It is not a one-man job. It requires an understanding of the data from all aspects of the sector. The desired report would show the inputs, products and value added by classes of firms stratified according to function, size and type of ownership. It would also show the volumes of transactions from stage to stage in the marketing chain by types of transaction--spot price, contract, market order, collective bargaining, integrated, etc.

Much of the data are now collected and have been reported. They are not integrated. Some new data would have to be collected. It is not likely that complete accounts are possible.

These data can be assembled in such a way as to be extremely valuable for an aggregate systems model of the food and fiber sector. A systems specialist should be

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38/ op. cit.

included on the task force responsible for the report. The systems model would contribute to an orderly organization of the data.

## 6
## Measuring Services

In connection with the measurement of value added, we need to develop measures of services performed. (W. Waldorf did some original work in the area for ERS.) These two measurements would add utility to the traditional costs and margins studies. Value added is the expenditure for services performed and as such is the sum of prices multiplied by quantities of services. To the extent that we can develop measures of services performed and can relate this to the expenditures for the services, we have the potential for a useful performance measure.

We must classify the measurement of services as a current hang-up. This research responsibility would be most appropriately assumed by an individual scholar.

## 7
## Technological Unemployment

The march of industrialization produces a cost in the form of technological unemployment (or underemployment). Workers with traditional skills are replaced. If industrialization is unfettered, several million additional farmers will find their traditional skills are no longer marketable. Many of the farm price and income programs are apparently intended to compensate for this adjustment. It is now clear they help not at all those most affected. It needs to be recognized that this is a cost of industrialization and applies throughout the industrial economy. Automation will replace large numbers of workers in food and fiber production in addition to farming.

We need a conceptual study to determine how to measure the benefits and costs associated with technological unemployment. And then we need empirical studies measuring the social costs and their incidence.

The social cost estimates would be a major input to the research program in terms of assessing the various alternative organizations of the food and fiber sector, for the alternatives will have differential effects on technological unemployment. Among the variations, institutions to compensate the "losers" should be considered to equitably spread the costs and benefits of technical advance in such a way as to avoid loss of the benefits. This calls for some institutional inventions.

For this study, I suggest a task force consisting of several sociologists, agricultural economists and labor economists. It is one of the major problems of our society.

## 8
## Individual Bargaining and Atomistic Competition (And the Computer)

To understand the economic organization of agriculture and the performance to be expected from modifications of the current system, we need to better understand atomistic competition and the various ways of organizing transactions involving individual bargaining. Markets involving atomistic competition play a very important role in linking some parts of the food and fiber system. What do we know of their performance?

We need to improve our understanding of the effect of different systems of transactions on the outcome. For example, do you get the same prices from an auction as from direct individual bargaining? What is the role of the central market in price

formulation? Is the price affected by the percentage of volume traded on the central market?

How do these atomistic markets fit into an industrialized system? How is the performance affected when part of the system is organized through individual bargaining transactions when most of it involves administered vertical coordination or other than atomistic structure?

The potential offered by the computer in facilitating market coordination of economic activity needs to be given careful study. The market brings buyers and sellers together. The computer, with the recent development of remote input-output, offers the technical means to relate buyers and sellers for many commodities throughout the entire country. The computer could keep track of and relate millions of bids and offers. And, complex delivery terms could be included. For example, the computer could be programmed to relate bids and offers with an adjustment for the cost of transportation. Sellers could quote f.o.b. prices, and a buyer could ask the computer for the best offer delivered at his door. The optimum transportation arrangement might even be made by computer.

The computer could also deal in future contracts which were in fact expected to be delivered. A market could be created for hogs to be delivered in 8 months by the computer matching offers to buy and sell. The system need not be limited to the farm product market but should be evaluated for all the markets of the food and fiber sector.

The computer could replace or supplement the market news services as now operated and perhaps the forecasting aspects of the crop reporting service.

For example, could reports of intentions to produce (and perhaps to buy) be reported to a computer and the computer be programmed to report expected prices, followed by an adjustment in intentions, and could such an iterative procedure be continued until an equilibrium was reached representing an optimum amount of production? This may be inconceivable with the present number of firms, but practical as industrialization progresses.

I suggest as part of the research program that a special task force of USDA specialists and outside consultants with expert knowledge of computer capability be organized to evaluate the potential role of the computer, and that the study include an evaluation of market news and crop reporting. Even without the computer, market news services may be poorly adapted to the industrialized agriculture of the future. The task force should also evaluate alternative institutions for the control of the system--should the control be by a governmental agency, a public utility or what? 39/

## 9
## Vertical Integration

Vertical integration is a method of coordination through ownership or control of several stages in the production-distribution system. The public policy issues involve rules which would facilitate or prohibit vertical integration and involve questions of equity, freedom of entry, changing independent entrepreneurs to employees, and concentration of power as well as questions of costs and coordination.

The status and trends report should give an idea of the extent of present vertical integration. Beyond that, a series of studies are needed to evaluate the differences

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39/ See P. Baran, "The Future Computer Utility," The Public Interest, Summer 1967.

in performance between integrated and non-integrated operations. We need also to understand the reasons why integration is used and why it is not. Are the advantages and disadvantages for the firms involved linked to superior performance or do they relate to incentives created by institutions unrelated to improved performance?

Why is milk processing integrated in some retail operations and not others? Is it due to restrictive labor practices of a union (as is alleged in Chicago, where it costs much more to have milk delivered from an independent dairy than from a dairy controlled by the retailer?) Is it due to pricing practices under an order, as is stated in some areas? If a two-price plan is in operation and a retailer can manage to put a larger percentage of the milk he processes into Class I, this may be the incentive for integration. Will this ultimately provide an incentive for processors to integrate into dairy farming? To what extent is the incentive to integrate due to tax regulations? The tax loss is clearly an incentive for some of the integration into farming. And the farm price policy, which is intended to help farmers, contributes to higher and higher land prices which may ultimately make entry into farming impossible for individual farmers.

To what extent is integration a result of anti-trust and anti-price-discrimination regulation? It is argued that some large firms, who require large quantities of a commodity, buy production facilities rather than take a chance on a suit under the Robinson-Patman Act. The quantities they purchase are sufficient to justify a lower price than is offered to other customers. The seller would grant the lower price and profit from the business. But cost justified price differentials are difficult to prove. It is more profitable for them to buy the production facilities. Similarly, in the application of anti-trust laws, the courts and FTC have been very strict on horizontal mergers and much less strict on vertical ones. With large retained earnings and the urge to grow, this policy has contributed to vertical integration.

One of the reasons for integrating is to reduce uncertainty. It is a method of diversifying investments. Such integration may or may not lead to improved performance. The fact that the incentive exists does not necessarily mean that performance in a social sense will be improved.

To what extent does the retail chain have an advantage as an integrator? A number of large food processors believe retail chains have a strategic advantage and that, unless something is done to prevent it, the retail chain will eliminate the food processor as an independent operator. If the advantage exists, is it related to improved performance? Would the performance be expected to change once the system was highly integrated?

These studies would need to develop estimates of benefits and costs involved in a variety of integrated systems. What are the sources of cost savings from integration? To what extent is the demand for an orderly supply of highly specified products a factor? The study needs to include analysis of alternatives which are radically different from any current pattern. We seldom look at the potentials of big changes. What would be the performance of the food and fiber sector if it were nearly fully integrated vertically with, say, the number of farms competing reduced to 15--each one an integrated farm supply-farming-processing-retailing unit? (A systems simulation model might be used in the analysis.) The proposal of the Ohio Farm Bureau to buy (integrate with) A & P is a move in that direction.40/ What savings could be expected? Would consumers get a more desired quality-product mix? What could be expected in the way of prices? We do not know!

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40/ Use of commercial firm names in this report is for identification only and does not imply endorsement of the firms by USDA.

## 10
## Cooperatives

The farm supply and the farm marketing cooperatives are a means of vertical integration with control theoretically in the hands of farmers. A special study of the cooperative as it relates to vertical coordination and industrialization is needed as an input to the program of research.

The study should consider the following questions, among others: Does an integrated cooperative have advantages and disadvantages compared with an integrated corporation? Are there benefits from integration which can be captured by a cooperative? Many cooperatives are vertically integrated (i.e. common ownership) but do not practice vertical coordination. What is the difference in performance between cooperatives practicing vertical coordination and those which do not? Why haven't most cooperatives attempted vertical coordination with their farm members? Is there a relationship between size and the ability to benefit from vertical integration? Do the voting rules for cooperatives result in effective control and management? How far forward can farm cooperatives integrate with profit? Can they compete with the large merchandizing corporations in consumer marketing? What are the social benefits and costs between agriculture controlled by farm cooperatives and corporations? Can the integrated cooperative be used to improve returns to farm people? Does cooperative management work in the interest of members? Should bargaining and marketing be combined in one cooperative? Should it be allowed? How do cooperatives have to change to survive? Is there a role for the farmer-owned cooperative in the future of industrialized agriculture?

Clearly the study of vertical integration will provide significant inputs to this study and vice versa. This study could be done with a multi-agency consortium including the Farmer Cooperative Service, ERS, and the States. (The North Central Region has a study of cooperatives underway.)

## 11
## Coordination by Contract

Contracting is a means of vertical coordination without ownership. There are, of course, a wide variety of contractual arrangements. The performance of a system coordinated by contracts needs to be contrasted with the alternatives. Apparently, a major motivation for contracting is to control the timing and specifications of inputs, a major advantage to an industrialized firm. (We need a measure of this.) Contracting may, just as vertical integration does, result in substantial savings in transfer costs, i.e., promotion, salesmen, buyers, etc. To what extent, if any, it changes the nature of competition and thus the discipline of the market is not understood. In some cases it is difficult to differentiate a contractual arrangement from ownership.

Vertical integration and contracting can be combined. Broiler production is often vertically integrated. The feed company controls the operation while the labor and land are contracted.

The extent of, the reasons for, and the performance of different types of contractual arrangements need to be analyzed. Of special importance is the study of the exchange relationship under contractual arrangements. How are prices determined? Are new institutions needed to improve the performance of contracting systems? Do we need a centralized open market for contracts? Do we need a contract reporting service? Do we need revisions in contract law--i.e., means of enforcing, etc. Are inadequate product quality standards or inspection facilities a barrier to improved performance under contracts?

Gale Johnson suggested some years ago that forward pricing would improve performance in farming. Planning is improved and commodities are usually produced at lower costs with reduced risk. Contracts can offer future prices. And the contractor in some cases can in turn shift the risk to the futures market. Thus the study of contract coordination must include consideration of the adequacy of the futures market for these purposes. Could the futures market be expanded to more commodities? Could it be improved by broadening participation?

It is possible to coordinate a complete vertical system by contracts. At least one group of grocery chains has developed a buying organization which coordinates the production of a large part of the foods sold by the group. The organization's specialists specify detailed characteristics of foods purchased from processors and growers. The specialists sometimes supervise production and offer technical assistance. Because of the special specifications, pricing is done without there being infractions of the Robinson-Patman Act. The organization has plans for coordinating some commodities from the seed to the checkout counter--all through contract. It would be instructive to do a case study of this organization. Such a study would be facilitated by the fact that the FTC has a large volume of documents on the operation.

The franchise, or turnkey, operation is a special type of contractual arrangement. It needs to be evaluated along with other alternatives. This system usually involves the transfer of technology and a tie-in on services and products without outright ownership. This institution probably has a major contribution to make in a developing economy. Turnkey operations offer an excellent method of spreading technical knowledge. Its potential role in our economy is unevaluated. Could hog production be set up on a franchised basis using environmental control systems, etc? Would a series of vertically related units organized under franchises provide superior performances? A company could consist primarily of highly skilled technical advisers and could coordinate a complete vertical system through franchises. It would disperse ownership and have other advantages. What would be the expected performance of a system consisting of a series of vertical-franchise systems in competition?

Would this be a superior method of transmitting technical information compared with a publicly supported extension service? This too should be evaluated.

## 12
## Marketing Boards and Orders

Consideration of marketing boards has a high priority. Congress is almost certain in the near future to consider the role they might play. The idea of a marketing board in general is to provide a group of competing firms with the opportunity to vote to grant a board broad powers over production and pricing of a particular commodity. The marketing board is essentially a publicly sanctioned and regulated cartel. It gains political appeal since it provides a means of stabilizing prices and making income transfers without direct active government participation. As applied to farmers, the Congress would be in a position of saying, in effect, we provide you with the means of protecting your incomes and stabilizing prices. If you don't choose to do it, don't blame us.

A very considerable variation in the rules and organization of boards is conceivable. And these variations would make very significant differences in performance. Rules would have to be established to determine entry, inclusion, representation, limits on powers of boards to restrict production or marketing, to buy, sell and store commodities, to engage in vertical coordinating activities, etc. Thus, boards with no power to regulate production or limit entry could be established with responsibility to bargain for improved prices. The board's monopoly would be in terms of control of whatever is produced.

In all cases, the range of commodities controlled by a board would affect its effectiveness. Competition from close substitutes could be used to limit the power of the board.

The marketing board as a means of regulating production, improving vertical coordination, providing the means for merchandising and promotion within an industrial economy needs to be considered. The likely performance needs to be contrasted, by classes of commodities, with the practical alternatives.

In doing the study, much could be learned from the experience of Canada and European countries, both in respect to the operation of farm commodity boards and in respect to the performance of cartels. It is very important that we evaluate the public cartel in terms of its relationship to the structure of the market in which it will be selling. Will buyers be able to organize to deal collectively with the board? Will a public representative have a role? It must also be evaluated in terms of the extent of industrialization of food production. A board for turkeys might be quite different than one for cherries because of the difference in organization and production. Is Galbraith correct in concluding that large scale organizations have great advantages in coordinating and planning complex economic activity? If correct, would a marketing board be an institution capable of achieving these benefits?

This study would call on our experience with marketing orders. In the case of milk, a national marketing board might offer a number of advantages over the complex set of federal and state orders, with the related bargaining associations, plus price supports. The two systems should be contrasted.

The marketing order is closely related to the marketing board and should be analyzed and evaluated in conjunction with the marketing board.

## 13
## The Public Utility

Closely related to the marketing board is the public utility. The regulated monopoly is a means of avoiding the waste of duplicate facilities or services where a single firm has a declining cost curve for the whole of a market. In the 1930's, agricultural economists made studies which showed that substantial savings would be possible by making milk delivery a publicly regulated monopoly. The regulated monopoly needs to be reexamined to see if there are situations in which it offers performance superior to alternatives. It may also contribute to an understanding of the potential of marketing boards in some special situations. Can a case be made that consumers are deprived of economical home delivery of milk (and other foods, too) because of the waste in competitive delivery? Assembly operations have similar cost characteristics. Is there an institutional invention which can get both the cost savings of monopoly and the progressiveness and service standards imposed by competitive discipline?

## 14
## Collective Bargaining

Examination of the role of collective bargaining in the food and fiber sector should receive a high priority. The market policy issue is: What facilitating rules and what restrictive rules should be imposed upon various groups in exercising collective demands for goods and services? Differential rules are in effect for farm workers, farm firms, workers in non-farm food industries and non-farm firms. Collective action by non-farm firms is, at least theoretically, illegal. Limited collective action by farm firms is sanctioned. The labor market rules facilitate collective action by employees of non-farm firms and seem to be fairly neutral in respect to collective bargaining by employees of farm firms.

The research questions include: What would be the result of providing farmers with National Labor Relations Act type legislation to facilitate gaining recognition and providing orderly collective bargaining procedures between farmers and processors? What would be the effect of adding the capacity to enforce exclusive contracts and to limit entry to the bargaining association? Would this apply to factory-type farming too, and if so, with what consequences? What would be the consequences of granting farm labor all the advantages of industrial labor under NLRB?

What would be the consequences of granting small non-farm food firms, such as apple packing plants, the same rights to collective action offered farm firms? What are the problems to be expected in farm collective bargaining with increased industrialization and vertical integration and contracting in farming?

What is the effect of labor cost differentials associated with collective bargaining on the location of production? How is this likely to change? What is the effect on performance and structure of the high cost of exit from an industry imposed by union contracts? (A meat packer recently decided not to close an obsolete packing plant because the union contract imposed more than $500,000 in exit costs.) What is the effect on structure and performance of differential wage costs between firms? For example, older firms face a substantially higher average wage cost than new ones because of the seniority-related fringe benefits.

The issue in collective bargaining is not simply the division of income, but also the significant effect the process has on the size and composition of output, i.e., on the coordination of production. Collective bargaining is used to protect workers from some of the costs of industrialization and it cannot be separated from the problem of technological unemployment. Individuals and firms seek to protect themselves from the harshness of competition through collective action. At the same time, we need good estimates of the costs added to food by restrictive labor practices and of the barrier to improved performance of the system imposed by such restrictive practices. The strike and the withholding action are expensive methods of settling conflict. Suggestions have been made for alternatives with lower costs to the public. These need to be further explored.

Collective bargaining by workers and farmers with large industrialized firms raises special questions about price stability and inflation. The management of large corporations, dealing with unions or bargaining associations capable of insuring that no competitor will pay a lower price, has less incentive to hold the line on wages or prices.

Collective action requires some type of administrative regulation. How can the community deal with these great aggregations of power? What are the checks and balances?

## 15
## Price Regulations

Price supports and import restrictions are alternatives to marketing boards, orders, and collective bargaining as institutions to alter the distribution of income and stabilize prices. They should be contrasted with the alternatives <u>in terms of total market performance</u>. While the price support program has received a considerable amount of research attention, it usually is not examined as one of a group of alternative sets of market rules. Unfortunately, policy discussions in agriculture have focused narrowly on the price support program, which has resulted in a failure to look at the market policy issues in a total context. We need to know much more about the consequences of price supports and import restrictions on the structure, conduct and performance of the total sector. These laws need to be examined as barriers to improved performance.

We need to understand price regulation within the context of planning and industrialization. Some type of price regulation, perhaps quite unlike present programs, may, under some conditions of industrial organization, result in desired performance.

In an industrialized economy, where supply can be adjusted through expenditures on research and development and demand can be adjusted through product variation and promotion (both within the control of the private sector), supply and demand can adjust to prices set by government without surpluses or deficits. Thus price regulation may be used as an instrument of planning to achieve differential growth among areas of the economy.

Galbraith[41] makes a case for price regulation to deal with inflation where strong unions deal with giant corporations. And Abba Learner makes a case for wage-price guidelines under the same market structure as a planning device contributing to full employment.[42] The role of price regulation in connection with various other organizational characteristics must be evaluated.

## 16
## The Graduated Income Guarantee

The graduated income guarantee is an alternative kind of institution to deal with income distribution and possibly technological unemployment problems. Does it have the potential to significantly improve the performance of the economy if used in conjunction with certain other rule changes? It should be evaluated as a meaningful alternative to private bargaining and monopoly practices in the food sector. Would a common income transfer policy for the whole economy have advantages over the specialized programs for agriculture?

How would the performance of the food sector be altered if a graduated income guarantee were to replace the price supports, import restrictions, specialized agricultural income transfer plans, and the rules permitting restrictive labor practices? The research required would have to devise alternative incentive-income-guarantee plans and estimate the cost. On the other side, estimates of savings from elimination of restrictive practices and subsidies would have to be made. A tax plan would have to be devised and its effect included in the evaluation of performance of the change in the system. The income guarantee or underemployment compensation should be devised to reward employment or production in the most productive activity for each individual. The problems of legitimizing the plan would be substantial and these problems would have to be considered in the research.[43]

## 17
## Firm Size and Market Concentration

Ideally we would like to develop empirical relationships between the complex of market structure variables and performance variables. The market rules could be devised to obtain the market structure identified with socially desired performance. The most

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41/ Op. cit.

42/ "Employment Theory and Employment Policy," American Economic Review, May 1967.

43/ See James Tobin, "The Case for an Income Guarantee," The Public Interest, Summer 1966.

common attempt at this type of research has associated concentration ratios with profits or margins. Attempts should continue to relate structure and performance. However, the studies relating concentration-ratios and profits would not have high priority in this program of study.

Firm size may have a very significant relationship to performance. And research should be undertaken to understand this relationship. The essential need is to develop the measurement of economies of scale, taking into consideration the less tangible factors of management, planning and risk. An understanding of firm growth is needed. What are the incentives and limitations on growth? Are the incentives linked to performance? What advantages do multi-plant firms have over single-plant firms? What effect is industrialization--new technology--having on optimum plant and optimum firm size? How is firm growth related to economic growth of the economy?

A number of units in the food and fiber sector are conglomerate firms. The conglomerate may become much more important. Two small studies are needed initially. We need a conceptual evaluation of the role of the conglomerate--why it develops and theoretical advantages and limitations. We need a related case study of several of the large conglomerates in the food sector.

Understanding firm growth and size has important policy implications, both public and private. For example, if a major reason for the growth of already large firms is the existence of large amounts of retained earnings, and no performance advantage is evident beyond a certain size, a tax on retained earnings should be evaluated. If the main incentive in conglomerate formation by large firms is related to capital gains in the stock market and no performance advantage is associated with the conglomerate, a change in the rules regulating the stock market might be in order.

A special study of farm firm growth and size is needed where attention would be given to the function of the capital and land markets.

## 18
## Supply Response

Hillman 44/ identified questions having to do with the responsiveness of supply in U. S. agriculture to changes in prices as the questions most at issue in the deliberations of the National Advisory Commission on Food and Fiber. The supply response question is fundamental to questions of feasibility and limitations of various market policies. The analysis of supply response needs to be formulated in the context of an industrialized food and fiber sector. The supply response of farm inputs is critical as are the responses of the factory produced foods. The limits of effective collective bargaining for milk are set by the supply response of dairy substitutes as well as milk. Of particular value would be studies indicating threshold points of entry of substitutes. New methods of analysis are needed. One potential technique would be a behavioral system model which would incorporate decision rules of classes of participants into the model. A major investment in understanding the complex supply interrelationships is appropriate.

## 19
## The Other Kind of Competition

A basic difference in belief concerning competition seemed to separate the majority and minority of the National Commission on Food Marketing. While the commission

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44/ "Food and Fiber Policy for a Changing Agriculture," paper presented at Guelph, Ontario, August 16, 1967.

members did not articulate their view of the market in the economist's language, their statements were generally consistent with the following two different beliefs about competition.

Neither believes the food market matches the perfectly competitive model. But the majority accepts the model as a norm, believing we would be better off if the market were more like the model. The minority does not accept the model as a norm and believes we now have high levels of competition. To the majority, high profits mean exploitation while to the minority they are a sign of superior performance. To the majority, promotion represents a waste while the minority sees it as a sign of competition and a benefit to consumers. The majority sees much of the great product variety and innovations produced by the large companies through research and development as expensive and trivial. The minority sees this as a sure sign of progress and performance. The majority believes consumers do not have perfect information but that it would be good if they did. The majority proposes that government should help consumers by information, grades and standards. The minority believes the consumer is bright, learns from mistakes and by this process disciplines the seller, thus special programs to protect the consumer are unnecessary. Private brands stimulate quality competition and the bright consumer, selecting among the brands in repeat purchases, compels the seller to improve his product. Under this view, compulsory grades and standards would have the effect of reducing competition and quality would even out at the minimum level set by the standards. The majority tends to be structure oriented while the minority is performance oriented. Thus the majority wants regulations to maintain competition among the many while the minority believes there are negative effects from regulation and the burden of proof of inferior performance should be on those who would regulate. The majority believes the food marketing system needs to be improved and the minority sees it as performing commendably. The majority believes that, because of the failure of competition in the distribution sector, farmers need countervailing power and consumers need protection. The minority believes competition exists and farmers and consumers can take care of themselves.

Much of the difference in views is a difference over the facts of the situation rather than over values. Both groups want consumers to get the products they prefer, want farmers to get their fair return, etc. While much of the research already proposed relates to these questions, I propose a special study of the food sector to gather the evidence relative to these two sets of beliefs. This is very important to future policy.

We need to know how much is spent on selling and what we get for it. To what extent is promotion a barrier to entry, and does this increase or decrease costs, i.e., are there major economies of scale? Are there economies of scale in promotion and national merchandising and does this result in large firms? How does promotion affect performance?

Grade labeling and standards require special study. We need a better understanding of quality coordination. Studies of consumer behavior and preferences directed specifically at the grades and standards issue should be made.

Retailers often view their pricing as a form of promotion and it needs to be understood in this context. We have little understanding of the effect of their promotion-pricing practices on performance. The effect of price specialing--the everyday low prices vs. deep price specials--on coordination of production needs to be examined. What effect do these practices have on farm price fluctuations, uncertainty, etc.?

Using pricing as promotion raises a special question concerning price discrimination under the Packers and Stockyards and Robinson-Patman Acts. In the Armour bacon case, the Packers and Stockyards Service (now Packers and Stockyards Administration)

claimed that Armour by offering a coupon which offered a 50¢ refund on the purchase of 2#lb. of thick sliced bacon engaged in price discrimination which had the effect of destroying competition. Armour considered the price offer as a promotion. Apparently P & SS would not have objected had the same amount of money been spent by Armour for advertising. And probably they would not have filed suit had trading stamps been offered rather than money. Research needs to answer the questions: (1) What is the differential effect on competition between price cuts and promotion? (2) Under what circumstance is one preferred to the other from the point of view of consumer welfare? (3) By what criteria do we distinguish predatory from legitimate pricing? 45/

Does the difference in structure and type of competition existing between farm and non-farm food production create the situation in which an inferior product would win out in the market? Farm products are generally sold by firms in atomistic competition on the basis of price. It does not pay the farmer to advertise, at least as an individual, since he cannot capture the benefits of such advertising. The analogs and synthetic foods are usually produced by firms in a position to profit from promotion expenditures. Thus the analog is likely to be promoted and the farm product not. Even if the farm product is superior, it is not certain it will win in this competition. Does this theoretical possibility in fact exist?

A very important aspect of non-price competition is research and development. Firms in atomistic competition seldom find R & D feasible while it is a major aspect of non-price competition among food manufacturers. The critics of economists claim that economists tend to judge performance only on the basis of efficiency and the static competitive model and that with this bias R & D and promotion are not dealt with objectively. They argue that affluent people do not want just nutrition at a low price but want variety and excitement in their food and that this comes from R & D. Research and development again puts firms in atomistic competition at a disadvantage if they come to compete as in the case of butter vs. the variety of substitutes.

Several important research questions are raised. How do you measure the value of variety and excitement in making evaluations of performance? Is enabling legislation facilitating the organization of groups of farmers to collectively promote their product and support R & D in the public interest? And, should the probability of success be improved by the state requiring all producers to participate, if the majority agree to participate? We need a better understanding of free rider problems.

Is it desirable to spend public funds for R & D and the related studies of market potentials? This research is highly controversial and needs careful analysis (perhaps as a PPBS study). It is especially important to see who in fact uses the research results. Does it actually help the small producer? Representatives of large food manufacturers argue that the large companies are most likely to use the public research and that they are capable of doing the job more efficiently themselves. If one of the functions of public expenditures is to help farmers, a careful assessment of how much help they are now receiving is in order.

## 20
## Transportation

I propose a major study of transportation policy as it relates to food. I do not believe we need many studies to show that changes in freight rates alter the location of production.--We know that. What we need to understand are the consequences of

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45/ See S. Sosnick, "Distinguishing Predatory From Legitimate Pricing," paper presented November 7, 1967, at Las Vegas meeting of Western Agricultural Research Council.

various possible future transportation policies (public and private) on the performance of the sector. Our methodology is well suited to minimization problems, and should be used to identify the rate structure which would minimize transportation costs. What would be the location and market structure consequences of moving from present rate structures to the minimum cost system? Do rate structures which give advantages to very large shippers, as the rent-a-train plan, lead to concentration among handlers of food and fiber? What kinds of subsidies are involved in the various competitive forms of transportation and how do they affect performance? Is there an adequate market and information service for trucking services? What is the consequence of the pattern of price discrimination in freight rates? Does the regulation of rail transportation inhibit the development of handling systems where the rail service could be integrated into a minimum cost transportation-handling system? What institutional changes might facilitate the development of such systems?

21
Patterns of Living

If we are to understand the system we must understand the relationship between economic activity and patters of living. The industrialization of agriculture is having a profound effect on the farm service towns. Whole towns have become obsolete. The location of farm service centers, food processing, market facilities, etc. must be evaluated as they affect and are affected by patterns of living. I would propose a study, as part of the program of research, which would attempt to integrate and interpret research related to community development and patterns of living as they relate to changes in the organization of the food and fiber sector.46/

22
Government in the Market

The federal government is the largest single purchaser of food. We need to understand government procurement policies and their actual and potential effects on the food and fiber sector. Could procurement policies be altered to improve coordination of the system? How are grades and standards influenced? Does procurement practice increase or reduce concentration? How does it affect location? Is the system fair? Is the procurement system efficient? (I take it for granted that agricultural economists of the USDA will do research to assist in the management of stocks involved in the price support program, including consideration of their side effects.)

The government is also a producer and seller of agricultural inputs. We need to develop improved methods for benefit-cost analysis, for example, of irrigation projects. Such projects need to be assessed in terms of their impact on other farm producers and in relationship to needed capacity in agriculture. Also very important is the development of pricing procedures for services provided by the government. How should water from a public project be priced?

23
Rules and Regulations

I argued earlier that the first responsibility of publicly supported marketing research was to understand the relationship of the rules of the market to the performance of the system. I propose a systematic evaluation of the rules and regulations as currently applied to the food and fiber sector.

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46/ See K. Fox, "Change and Community Adjustment: The Metamorphosis of Rural America," in Implications of Changes on Farm Management and Marketing Research, Center for Agriculture and Economic Adjustment Report 29, Ames, 1967.

In the previously discussed research we were concerned with the relationship of particular sets of rules as they affect the organization of the market system. In the subsector studies, the interest is in rules as they are identified as barriers or problems. In the systematic evaluation, the findings of the other phases of the research program would be fully utilized. But it is important to look at the regulations as they are being applied in terms of the total system of regulation.

The first task, and it is a major one, would be to classify the laws, administrative regulations and court interpretations in a meaningful way for economic analysis. We are interested in the rules which attempt to regulate structure, conduct and performance. For example, which rules limit access to markets? Which directly regulate prices? What are the differences in regulations between markets? How do we regulate collective action? How do we set standards of conduct and standards of performance?

We need to systematically identify the obsolete rule. We need to ask if the rule is relevant and if it applies to an industrialized agriculture. We need to develop methods of determining the impact of the rule on the decisions of the market participants. We need to develop objective analysis to help settle disputes over the rules and from this develop general principles. Seemingly minor decisions of regulatory agencies have economically important effects. For example, it is estimated that to comply with the rule to expose a full slice of bacon would require a vacuum pack and add 3 to 3 1/2¢ per pound of bacon in packer costs (mostly materials), plus added retailer markup--total costs are estimated at $50 million. Are these cost estimates correct? Can research be conducted to judge the desirability of the rule?

We need to ask the relevant role of government in the regulation of trade practice. How can it be a positive factor--facilitating rather than restricting useful economic activity?

We need studies to help understand the economics of enforcement and the economics of coercion. A market rule, for example, may be a means of establishing a monopoly or significant differential advantages for those who would work outside the law. The rules must be judged not by intent but by performance. The economist has tended to avoid this difficult empirical work. We need to know if a strict meat inspection law results in better quality meat, bribes, entry of firms less subject to inspection, new substitute foods, or what. We need to understand the relationship of regulation to vested interests and the effect this, in turn, has on the rule-making process.

## 24
## Subsector Studies

I now want to suggest a type of study with a different orientation. Previously I have discussed needed research which was issue oriented. The questions seemed to me to be important generally for the food and fiber sector. All these questions are also relevant for a particular subsector. The research from one focus would be an input to the other. The second focus is on a subsector of the economy with the intent of discovering the barriers to improved performance and the problems faced by the participants of identifying the means of removing the barriers or solving the problems. Possible barriers to improved performance include: laws and regulations as they apply to the subsector; trade practices; pricing practices; application of taxes, grades and standards; poor institutions to deal with risk; competitive structure; poor vertical relationships; attitudes and knowledge of participants. Problems include adjusting to changing economic conditions and gaining an equitable return.

I suggest about one half of the resources of the research program be devoted to the general issues as previously discussed and half to subsector and industry studies.

To be useful, it is important to do more than describe the situation. The research must push to meaningful conclusions in terms of points of leverage. The research should produce the following statements:

1. A description of the barrier or problem.

2. The hypothesized relationships of the barrier to relevant performance criteria, with evidence.

3. The proposed reform, providing the link to the barrier.

4. The necessary and sufficient conditions for the reform to succeed.

5. The conditions supporting the case for the reform and those obstructing its implementation. (This deals with the politics of the reform.)

I propose that the subsector and industry studies be done by national consortiums, which in turn would organize task forces. We should attempt major efforts in only two or three areas at one time, with small task forces in other areas tooling up for a major effort or following up on a previous major effort. Where necessary, specialists outside of agricultural economics should be included in the consortium organization.

The area demanding the greatest attention currently is the dairy subsector. The process of industrialization will impose very great pressures in the next few years. A full understanding of the dairy analogs--cost relationships and consumer preferences--is required. Other major questions include: How much would the cost of producing milk be reduced by eliminating the price supports on dairy inputs? Could vertical coordinating arrangements with input suppliers reduce costs (for example, full supply contracts and specifying timing of delivery)? What are the barriers to developing lower cost dairy farms? Are the capital and land markets facilitating the adjustment? What are the anticipated effects of labor costs? (If dairy farming is necessarily labor intensive, then there will be an upward trend in costs of dairy products relative to less labor intensive commodities.) What are the incentives, costs and limitations on vertical integration in the subsector? What provisions in the complex of state and federal orders are barriers to improved performance? How much do the provisions causing back-hauling of milk raise costs? What is the added cost of producing Class I milk in the East for manufacturing purposes? What are the consequences of the orders and bargaining agreements allowing bases to be sold? Would a market board be an improvement over the complex of orders and bargaining associations? What are the potential benefits and problems? How would market participants vote? What is the effect of the free-rider problem in current efforts to support promotion and R & D? What are the potentials for modified dairy products? Are the standardization regulations prohibiting useful R & D? What would happen if the price of butter fat were not supported? Are there better ways of pricing fat and nonfat components? What are the wholesale trade practices? Are they barriers? What are the extent and effect of restrictive labor practices? What has been the consequence of these practices for the total system of retailer-processor integration? Would total integration result in lower costs? (Since the retailer usually specializes in only the large volume items, he probably adds to the cost of producing the specialty items.) What is the effect of the court rule that offering the same evaporated milk under different labels is price discrimination and illegal? Can the delivery system for milk be rationalized? To what extent is delivery service losing in competition with stores because of dynamic externalities?

The list could be greatly expanded. I only want to illustrate the complexity of a subsector study and emphasize the need to study it as a total interrelated system.

I have suggested that the clinical attitude is most appropriate for the subsector studies. It is important that we improve our capacity to identify problems and potential solutions. One contribution to the studies would be an improved system of classifying problems. Thus, some effort should be invested in developing a taxonomy and in classifying the problems encountered in the studies according to the symptoms and underlying phenomena involved.

For example, a number of problems involve externalities. The group action issues usually are related to some aspect of the free rider problem. The market is unable to furnish that class of socially desirable services or products known as public goods because benefits accrue to those who do not pay as well as to those who do. The vertical coordination problems often involve situations where a firm cannot capture the benefit of a socially desired act. The pollution problems arise because the full cost of an act is not included in the profit accounts of the firm. Many of our environmental problems are related to the phenomena and are very much a part of marketing economics. For example, billboards pollute the landscape because the full costs are not imposed upon the firms which benefit.

W. J. Baumol 47/ introduces the concept of dynamic externalities in discussing the cumulative process that destroys the public transportation system of a city. Because of the cumulative effect of sequential decisions involving external costs, the market produces a result inconsistent with the preferences of all the participants. As we study the performance of the various subsectors in the dynamic process of industrialization, this phenomenon must be considered. For example, are there processes involving dynamic externalities in the shift from local stores to supermarkets or the failure of the farm service town or the trend from delivery to store-purchased milk? How do we develop our skills to deal with these phenomena?

## 25
## Understanding the System

I have argued for coordinated research which would provide an understanding of the complex system of the food and fiber sector of the economy. I have argued that the major payoff is in understanding the interfirm and intermarket relationships. I have suggested two related approaches--(1) examining anticipated behavior and performance under various systems of rules which regulate structure, conduct and performance, and (2) examining a subsector or industry from a clinical point of view--identifying problems and barriers and attempting to identify solutions.

In each case it is important to know as much about the system--about the complex relationships--as possible. This suggests the desirability of attempting to build a behavioral systems model. Components of the model could be developed from each of the subsector studies, building ultimately to a detailed model of the sector. The model would be both an output of the program and a valuable tool in the organization of our understanding of the sector.

I suggest the systems model with some reluctance. I believe the most useful knowledge of the economy is to be gained within an institutional context and I am not convinced the systems model can effectively reflect the interpersonal relations involved. I fear it will be too mechanistic, that it will be too mysterious, and that it will be misused and misinterpreted by those who fail to recognize the limitations. It

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47/ "Microeconomics of Unbalanced Growth," American Economic Review, June 1967, especially p. 425.

may also be a failure, since no model of this complexity has been developed and many problems are evident. Nevertheless, I would urge the attempt. The discipline and insights derived just from the effort may well be worth the cost.

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## Planning Information

I have not discussed research to develop planning information for the participants of the food and fiber sector. However, I believe such research is very much in the public interest. Anticipating market demand and supplies is a major problem for most firms in the sector. For each firm to develop the data independently would be very uneconomical. The proposed program of research was not designed specifically to provide improved planning information; however, I would expect it to make a major contribution in this respect. Understanding the system is the most important input to a planning decision. Nonetheless, there is considerable additional research which could be undertaken to provide information about the relevant future economic environment. Perhaps information about the potential demand in foreign markets for specific products is least developed relative to the possible payoff.

As I visited with farmers and food marketing firms, many expressed concern over the quality, timeliness, and relevance of the economic information provided by USDA and the colleges. It would be profitable to do a substantial survey to attempt to determine the use and evaluation of the information provided, and to attempt to determine the kind of planning information which would be most useful in the future.