Public Policy Demands and Statistical Measures of Agriculture*

by

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Information, its generation, communication, and implementation has become the lifeblood of the highly-refined, market-oriented economy in which we live. The intelligence-generating sector has become the source through which that information is generated, evaluated, and communicated to a market of final users. Information, in this sense, is a commodity, subject to supply and demand conditions like any other commodity. The forces affecting these conditions are open to analytical effort as with any economic phenomenon. The focus of this paper is toward examining one particular part of the demand side of that market--public policymakers--and their particular needs for information.

Given an economy where information production and distribution was organized through an open market, a price system would pass signals between the suppliers of information and those demanding information. These signals would indicate, with varying degrees of accuracy, the amounts and types of information desired by different categories of users.

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Under a system where these activities are generally organized and supported by the public sector, the quantity and nature of information supplied respond to nonprice indicators, often with considerable lag to changes in informational requirements. The lags show up in various forms: There is, for example, a strong tendency for the informational system to concentrate on known problems, rather than to anticipate potential problems. This arises because the system operates in an environment where the cost of misjudgment, in terms of future effectiveness may be quite high. Consequently, the system tends to focus on past problems. There is, under these conditions, a continuous flow of information explaining past events. Under conditions where history repeats itself, that is, where economic cycles exist, such a system provides information for future decisionmaking. 1/

An information crisis arises, however, when events occur that differ substantially from past behavior. Their explanation and understanding require the initiation of new areas of inquiry, a slow and costly process as demonstrated by the length of the Great Depression, the vast expenditures on the Manhattan Project of World War II, the space program of the last decade, or the solving of the inflation problem of the present decade.

1/ Cf. (3) This article exemplifies the usefulness of anticipating the impact of potential problems. Publication prior to devaluation of the dollar might have assisted in a more rapid understanding of the sharp runup in food prices of 1972 and 1973.

Information for Public Policy

Our examination of the role of statistical measures of agriculture begins in a broad context because our experience in policymaking convinces us that the value of accurate measures of economic activity depends heavily on their form, manner, and ease of communication to busy policymakers. We recognize that national policymakers are but one source of demand for information. Further, their demands for information do not differ necessarily in content but rather in the type, form, and quantity of information provided. That implies that statistical measures for policymaking must not only be accurate but also must be organized to meet the special requirements of policymaking.

Policymaking requires three extremely and equally important informational systems: (1) Statistical measures to provide an "early alert" system for problem identification. The system to be useful in policymaking must provide adequate time to allow the Government to organize its response to a particular problem. (2) Measures to provide adequate description of the problem to allow formulation of policy options. Unless the problem is adequately identified so that policy options can be developed, the whole process of data generation and interpretation becomes a sterile exercise in futility. (3) Statistical measures that are communicated in a form to allow ready interpretation and understanding by busy policymakers and administrators who may handle the specific problem only once or perhaps only occasionally. Unless data and factual measures can be readily understood, there is a tendency to base decisions on preconceived notions or

earlier experience in other sectors where the decisionmaker is more comfortable. Thus, beef price control programs may be based on the assumption that fed cattle move through feedlots like new cars off assembly lines, or soybean export embargoes are assumed to have the same impact on foreign and domestic markets as embargoes on scrap metal or lumber and hides, and pricing of agricultural products is assumed to occur like pricing of industrial products and thus may be subjected to the same control programs.

The "market" for statistical information formed by national policy-makers is a different market, we are saying, not in desirable degrees of accuracy but in terms of its organization and presentation. Whether we like it or not, today's national policy "market" is not composed primarily of agriculturalists but rather of decisionmakers who may be unsure, for example, whether farmer intentions to increase hog farrowings mean more hogs for slaughter or more baby pigs for future expansion. Placed in a format more familiar to them, perhaps an "index" of expected hog production, related decisions on adequacy of feed supplies, export quantities, and grain plantings becomes more comprehendible.

This example is meant to overstress the new problems that occur when food policy becomes of such widespread importance to government that its formulation becomes a combined effort of several major agencies, many of whom do not have specialists in food policy. So long as food policy remains the pasture of former Land Grant University administrators or even former farm State governors, the specialized nature of its statistical measures is of little hindrance to rapid policy decisions.

Also, as long as change in these measures is relatively modest so that decisions can be planned weeks in advance, peculiarities like carry-in, carry-out, and carry-over, or specialized terms like vealers, heifers, feeders, and stags do not pose communication barriers on decisions affecting national food supplies. But when these decisions must be made overnight and solutions are required within hours, the differentiation of agricultural data from other types becomes a constraint to swift and accurate action.

Even in the context of more normal conditions, the optimal organization of economic measures may change with changing market conditions. For example, as markets tighten and increase the substitutability of commodities, (as general equilibrium theory specifies), measures of individual commodities may be misleading in attempting to describe market conditions. Using data on corn instead of all feed grains, or wheat as opposed to food grains, or beef instead of red meat, may inadequately describe true supply and demand conditions. Moreover, focusing on individual commodity statistics may lead to inaccurate description of the actual market choices faced by consumers. In the past year a lack of appreciation of consumer substitution possibilities may have led to the decisions for keeping the price freeze on beef while removing it from pork and lamb, or placing an embargo on soybeans but not on cottonseed, flax, peanuts, or other fats and oil products. Such decisions later required supplementary actions in an almost never ending process of correcting for inadequately framing the scope of the problem, the descriptive statistical measures, and the option available to policymakers.

We are aware of course, that a number of aggregate agricultural statistics have a long history among the profession. These include prices received and paid indexes; farm income statistics; indexes of farm output, inputs, and agricultural productivity; and the market basket series to name a few. Of a lessor fame, but none the less useful, are the indexes of per capita food consumption; gross farm product; and the supply-utilization index. In addition, there are many other dollar aggregates and indexes that are prepared regularly by various agencies within the U.S. Department of Agriculture as well as some of the Land Grant Universities and State agriculture departments either for publication or for internal use. Most of these series that we are familiar with provide useful functions and even play a role in helping formulate policy decisions. However, for the most part they fall short of individually providing aggregate coverage or they are simply too untimely to be useful in current decisionmaking.

One promising area for developing a comprehensive, easily understandable framework of aggregate agricultural activity probably lies in USDA's little known supply-utilization indexes. These measures combine annual agricultural commodity supply and use data into constant dollar value aggregates based on farm level prices.1/ The supply-utilization index contains the advantages of combining all commodities into a manageable aggregate, as well as specified subaggregates, while at the same time providing

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1/ The system is used internally at USDA to cross check related aggregates and is published regularly in the National Food Situation and Agricultural Statistics in index number form. The value aggregates (which are most useful for analytical purposes) are not published.

analysis of functional behavior (i.e. production, imports, stock change, etc.). Moreover, because of the simplicity of the system, it is easily manageable for analytical purposes.2/

Beyond meeting the needs of busy policymakers, these economic data systems appear to have substantial secondary benefits. In general, we agricultural economists spend little time communicating with our counterparts in the nonfarm sector. It would seem that work in the area of activity aggregates would stimulate efforts to link agricultural activity with the rest of the economy. A more easily understood macro-system would seem especially conclusive to analyzing price linkages--a much needed area of work in a period of strong inflation. Moreover, explorations into macro-agricultural accounts would facilitate the development of frameworks for appraising the relationships between agriculture, food, and energy, a situation now primarily limited to static input-output analysis.

2/ For example, analysts are able to estimate aggregate supply-demand and price estimates and check these against the results of commodity aggregations. Unfortunately little effort for further refinement and development has gone into this system in recent years. This lack of attention primarily reflects the agricultural community desire for commodity detail as outlined earlier. However, if serious attention were to be devoted to time disaggregation (e.g. breaking the series into quarterly estimates) and in improving the price weighted conversions, this system would in our opinion go a long way in filling the gap for a much needed comprehensive short term measure of the agricultural sector. The possibilities of seasonal adjustment in this context are obvious (despite the distaste for this technique by many agricultural workers).

Policy Changes and Statistical Measures

The implication of the argument to this point is that recent changes in policymaking and market conditions have altered the form if not the substance of the required statistical measures. Of course, an argument could be raised at this point that food decisions are of interest to the Departments of State, Treasury, Justice, Commerce, and Defense only during periods of food scarcity. Once these are gone, policy will again return to the halls of the Department of Agriculture. Further, an argument could be made that food policy is the appropriate activity of agriculturalists, its accurate development requiring a knowledge of the specialized nature of the economics of agricultural production. In this line of reasoning, statistical measures of agricultural output in their traditional form may tend to assure that control is retained over this important activity.

Each of these arguments has some merit and likely appeals to some groups. These are, however, only surface arguments. Decisions regarding agriculture are also of concern to other government agencies when farm prices are low. The Office of Management and Budget expresses much interest when low farm prices create a need for direct payments to farmers or when purchase and storage programs become necessary. Also, the United States has undergone several periods in the past 3 decades when food markets have tightened to a degree that food policy became a national issue as opposed to a sectoral issue. The probability is high that we will face similar periods in the future. The accuracy of decisions during such periods is

dependent on accurate and understandable measures of activity in food production. Even the belief that the economics of agriculture differ substantially from the economics of other sectors has largely disappeared with the general elimination of agricultural fundamentalism in our scientific communities, the consolidation of graduate training programs for economists, and the formation of a consistent sequence of economic theory. Support for the arguments of keeping agricultural statistics in forms understandable only to agriculturalists largely disappears in the process.

There are other forces at work, however, that are more substantive and hence argue even more strongly for changing or at least adding other forms of published statistical measures of agriculture. Some of these changes have received widespread attention of the agricultural fraternity in recent years 1/ as ongoing structural change in agriculture has resulted in intensive examination of data formulation to ensure that these measures reflect as accurately as possible actual shifts in agricultural production, marketing, and management. Improving statistical measures has been essential as the structure of the agricultural economy reshaped itself in terms of numbers of farms, farm operators, sizes of operations, and degrees of specialization. It now appears, however, (using traditional measures) that the most rapid part of that restructuring is now over although the industry will continue to change as the aging process releases the more tightly held resources to the forces of the marketplace, specialization

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1/ Cf. (1) for the concern expressed by the Economic Statistics Committee of the American Agricultural Economics Association.

continues to proceed in production areas so far only nominally affected, and the ripple effects of new technology continue to reshape the nonfarm portions of rural areas.

The major portion of this change has occurred although the published statistics on the industry still largely reflect the former structure because of the definition of a farm. As an accurate accounting system on the number and classification of farms is developed, it is likely to drastically change the concepts of relative income standings of full-time farmers. It is likely true, for example, that publication of quarterly earning reports as published by the industrial sector would have caused agriculture as much consternation in 1973 as it did for petroleum companies in early 1974. This kind of public impact may well be the side effects of revising the system of statistical measures of agriculture to coordinate them more closely with nonfarm and modern accounting systems.

This kind of change will not, however, fulfill the need for a more aggregate system of data to measure the sectoral operation of agriculture rather than commodity by commodity statistics. Just as the changing structure of agriculture implies changes in statistics, changes in agricultural markets and policies also create a need for revising the form of statistics for the use of national policymakers. Organizing statistics to accurately reflect the aggregate supply and demand conditions is essential if the market place is to rapidly establish equilibrium prices. It is also necessary if the consumer sector is to understand the market conditions it will face at the grocery counter.

The general focus of today's published statistics reflects two major facts: First, they were developed to assist agriculture in making decisions at the producer and commodity handler and processor level--that is, they were generally oriented toward micro decisions. Second, they were developed in a period when surplus production and marketing conditions led to the formulation of individual commodity programs to control production, and large amounts of information were required on the economic situation of each commodity. In turn, our public system of generating information responded over time to this need.

The changes in both policy and marketing during the past decade have clearly moved policy decisions away from a commodity by commodity approach. Starting as far back as 1965, public farm programs were amended to allow for substitution between crops. This "loosening up" of control programs continued with the legislation passed in 1970 and again in 1973. Further, with the upward thrust of farm and food prices beginning in 1972, the market assumed much greater importance in allocation decisions. As support levels of prices faded into the background, the secondary sectors of agriculture began to search for ways to hold down production costs and consumers began a more intensive search for ways of holding down costs for foods. In general, all these efforts increased the substitutability of inputs and final products and eliminated the individuality of inputs and commodities in price considerations.

Further, the determination to increase the market orientation of agricultural programs means that there will be greater dependence in

the future on interdependent market prices to allocate individual commodities. In essence, a major question then becomes whether measures of total production of all grains or of all oilseeds crops will be adequate to meet national and international needs. In turn, examining statistical measures of individual commodities becomes an inadequate means of determining supply and demand situations in agriculture. Even if the supply situation in agriculture causes a substantial return of over production, the importance of aggregate measures of commodities will still exist. The vast network of agricultural outlook information, policy formulation, and administration will necessarily have to reflect this new reality if it is to accurately portray market conditions to its customers. The statistical measures required to facilitate accurate and prompt market and policy movements will differ at least in form if not in substance from presently published statistics.

Reflections on an Information System

We began this inquiry with a review of the broad role of information in facilitating the functions of government policymaking. We close with some reflections on the economic conditions affecting the generation and implementation of information from the intelligence sector.

One characteristic of the economic environment of our information system is that it insulates those who provide information from those who use it. The system was organized in this manner for useful reasons. It does cause problems however, when there are no hard signals to indicate

directions for expanding or contracting production of information. In recent years we have seen a great proliferation of contract research which is one indication of the desire by demanders of information for a product different from that traditionally produced. Of course, the information sector is not alone in missing signals on demand for its products. The airlines with 747 Boeing jets parked in storage in Arizona, New Mexico, and the auto manufacturing companies with stocks of the wrong sized cars have also misread trends in demand for their product. Even Playboy Enterprises apparently failed to carry out adequate market evaluation before purchasing Florida hotels and establishing playboy clubs. The market for these clubs is apparently among young, single age groups but mid-Florida vacationers were mostly middle aged or older married couples. The result was empty hotel rooms that began to affect overall operation of the Playboy enterprises, most of which are incidentally engaged in providing the public with new and rewarding information of a statistical nature.

The Playboy example reminds one that simply providing a product or service is not adequate, no matter how valuable or necessary it is to the public. Of course most economists no longer accept the great Jean Batiste Say's celebrated theory of markets, "supply creates its own demand." Economists who followed Say found that not all markets expanded automatically to absorb new services or commodities. However, it sometimes appears that activities that generate statistical information operate on somewhat that same theory of markets. There is substantial and continuing

concern expressed over the technology used to create the supply of information but only the most elementary thought given to the market for such information.

In the beginning, we referred to the three phases of a successful information system: generation, communication, and implementation of information. The third phase of the process is as essential as the first two, although it is often assumed that publication of information will have usefulness to some implementating group. One has only to pick up and read any one of the large number of publicly oriented academic publications to realize that information is directed to such general audiences as to lack use to any particular user. It is likely that a good portion of today's published information was aptly described by one agricultural economist who recently wrote in his review of a book that "it is another book by agricultural economists for agricultural economists." At one time that might have been a compliment; today it reflects the nepotistic nature of economic literature.

Perhaps we have gone far enough, or even too far in the minds of many, in commenting on the marketing aspects of information and economic indicators of agricultural activity. Generating statistical measures is a time consuming and largely thankless task. We are convinced, however, that what happens to these measures after their initial development is at least as important as their initial development. Truly we have an overload of information as a result of the modern day computers that is producing

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1/ Cf. (2) p. 932.

"brownouts" among users. The process of discriminating between useful and useless information is becoming more difficult, particularly under the pressures like existed at a national policymaking level in the past 2 years. Improving on the substance of statistical measures is a justifiable goal but there is more required than this one step if policymaking is to be improved.

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