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Author's Note

This paper is a switch from writings describing operations, processes, and current problems to a generalized theorectical discussion. It was one of the several presentations in a general program, "Welfare Implications in Marketing Research and Extension," at the 1995 annual meeting of the American Farm Economics Association. That I was invited was a fluke. The bias of the program was in the direction of governmental responsibility in the welfare of family farms and rural America and the role of research and extension in developing, evaluating, and directing welfare programs. My biases and those of the audience were substantially incompatible. Needless to say, a vigorous discussion ensued. I do not know to this day why I was chosen for the topic.

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Welfare Implications of Market Prices

Definitions, Limitations, and Hypothesis

To describe the area of discussion under this broad title, a definition of terms, limitations of the area considered, and statement of a hypothesis are in order.

Definitions

In this context, welfare may be defined as a level of prosperity. The title of this paper can be stated as a question: What is the relative level of prosperity resulting from an economic system in which there are market prices?

Market prices are prices established by a free interplay of economic forces. Market prices are established by various kinds of pricing mechanisms. The term market prices does not imply a particular institutional structure. Specifically, it is possible to develop a system of pricing in which government plays a role and still have market prices.

In contrast, administered prices are prices established by something other than the free interplay of economic forces. Prices may be administered by governments or by individuals or firms. The establishment of prices by governments is usually undertaken in the interest of social justice, i.e., income distribution. The administration of prices by individuals or firms is undertaken to obtain monopoly revenue. The administration of prices involves (1) the control of supplies and (2) product differentiation, which is based on buyer ignorance of quality or on control of the marketing mechanism.

Limitations

This paper is limited to the welfare of farmers and to prices of agricultural products. It is also limited to publicly administered prices.

Hypothesis

The aggregate welfare of agriculture and of individual farmers is maximized by pricing agricultural products at their market values. Conversely, systems of pricing agri-

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cultural products that seek some goal of income distribution that is determined by nonmarket considerations are detrimental to agricultural welfare.

Functions of Prices

Guiding production

Prices have certain functions to perform in the production of goods and services. Presumably this is known and understood by agricultural economists. It appears to be amazingly little understood by nonprofessionals and amazingly ignored by agricultural economists when matters of agricultural price policy are discussed. By way of quick review, I list three such functions.

1. Allocate productive resources. The pricing system should allocate productive resources in such a way as to maximize the marginal returns from each unit. This applies to both the allocation of resources between agricultural and nonagricultural production and the guiding of production within agriculture. Relative prices are the means by which the market tells producers what kinds, qualities, and quantities of products to produce.
2. Move products into consumption. The pricing system should operate in such a way that products move into consumption at the highest net returns. Each different combination of uses of a product will yield a different return, and only one combination will yield the highest return.

Obviously, it is impossible to consume more of a product than is produced. But it is possible to consume less by building up stocks. A function of the pricing system is to eventually move all of every product into consumption. If prices are to serve as an adequate guide to production, they must find the level at which all of the supply can be used.

The pricing system must guide products through the market processes. They must establish the uses, users, places, and amounts of marketing services.

3. Regulate the rate of consumption. Agricultural commodities are produced at varying rates during the different seasons of the year and in different amounts in different years.

Supplies must be made to last until the next harvest or flush production season. At the same time they must be used up. Prices must be such that this is accomplished. Reserves of farm products must be carried from year to year to provide against short crops and to allow livestock numbers to adjust to changing feed supplies. Establishing the size of reserves is a function of prices.

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Division of the economic product

Prices determine who gets what. How much farmers get to consume and save depends upon the prices they receive for the products they sell and the prices they pay for the things they buy. The wages paid for labor in relation to the cost of living establish the level of consumption of workers, etc.

This is the function of prices that people clearly understand. From the point of view of an individual, the division of product is the single important thing that prices do.

In the thinking of individuals and in discussion of public policy, judgments are made of the "fairness" or "unfairness" of prices. Market prices, i.e., prices obtained in competitive markets, are said to be too high or too low. Accordingly, attempts are made to modify them. Minimum wage laws are one such attempt. Our system of agricultural price supports is another; it is built upon a "fair" price concept.

Obviously, the guiding functions of prices do not get done or get done differently under a system of administered prices than would be the case under market prices. This leads to the difficulties with which we are all so familiar from our observations of existing price-support programs. It seems to be extremely difficult to devise substitutes for market prices in performing the production functions of prices if at the same time we are to have "'justice" in our economic system. It does not appear necessary to enlarge upon the difficulties that have been encountered in attempting to support agricultural prices above market levels. Current literature in the field of agricultural price policy is primarily concerned with methods of resolving the conflict resulting from (1) the necessity to perform the functions of guiding production and (2) the alleged injustice of market prices.

This conflict is resolved in classical economic theory by stating that market prices reward each in the amount of his production and that this is a just amount except insofar as incomes are affected by charity. It further states that the welfare of individuals and the aggregate welfare are compatible and that the incomes of both are maximized when productivity is maximized.

Welfare Effectiveness of Support Programs

Underlying assumptions

The basic assumption on which price-support programs are based is an inelastic demand for farm products. These programs are of three kinds: (1) storage programs designed to stabilize year-to-year variations in prices and incomes; (2) production control programs designed to limit supplies to amounts for which satisfactory prices can be obtained and which presumably result in greater total revenue; and (3) surplus disposal programs.

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Storage programs can be income-stabilizing only if variations in market prices are greater than variation in market supplies. Otherwise changes in the quantity factor in the income equation will more than offset the price factor. There appears to be sufficient empirical evidence of the inelasticity of demand when annual average prices and quantities are related to justify the contention that storage programs are income-stabilizing.

To be effective, public storage programs must not be tied to an arbitrary price or prices. The prices must be equal to market prices averaged over a period long enough for random production variations to work themselves out. Our storage programs have never met this requirement.

Why do public storage programs result in greater price stability than market storage operations? First, the cost of storage is not taken into account in the price, and second, the storer, being motivated by things other than profit, does not take risk into account.

Although it appears that storage programs stabilize prices and incomes, their effects on average income are obscure. Is there a loss of revenue if scarcities are not allowed to develop? The answers depend upon which segments of demand schedules are relatively least elastic. Empirical evidence on this point is limited, but most theoretical demand schedules are drawn with the most inelastic segments to the left. Commodity people discuss this as the chronically depressing influence of overhanging supplies. Farmers are fully aware of the short-run merit of scarcity. It may well be that storage programs result in more stable income from individual commodities but at a lower level of total income.

Production control programs for individual products involve protracted time spans. Presumably they are a permanent part of production. An inelastic demand *after short-run effects of changing supplies are worked out* is essential to their success in increasing income. Most studies of the elasticity of demand use annual average prices and quantities. The coefficients thus determined do not necessarily hold true when periods of several years are taken into account. Likely, the greater the time span, the relatively more elastic the demand schedule. The important point here is that programs have been undertaken without any clear knowledge of the possibilities of their success.

However, it is likely that control programs can be made to increase total revenue from an individual product if certain conditions are met. First, the demand for the product in its domestic uses must be inelastic—that is, in the long run synthetic fibers will not replace cotton, etc.

Second, if exports are an important segment of the market, provision must be made for realistic pricing of the export fraction. This includes a multiple price system or direct public subsidy.

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Third, some provision must be made for use of resources diverted from production of the supported commodity. Currently, such diversion is made to other agricultural commodities. The big increases in soybean acreage in 1950, 1954, and 1955 are illustrative of the effects of production controls for selected commodities. Although measurement is difficult, losses to producers of substitute commodities may be as great as gains to producers of restricted commodities; specifically, wheat and cotton production limitation programs may or may not have increased revenue from these crops, but they have clearly reduced incomes of farmers who are not wheat or cotton producers. Lands taken out of wheat and cotton have been diverted in the main to feed grains and soybeans. Obviously, producers of feed grains who are not also producers of wheat or cotton have a smaller revenue as a result of the limitation programs. The question, as far as aggregate agricultural welfare is concerned, is whether the losses to feed grain producers are smaller, the same, or greater than the gains to wheat and cotton producers.

Control programs for total agricultural production can succeed in increasing total revenue only if the demand for the aggregate of agricultural production is inelastic. This demand must be long-run inelastic. It must be inelastic after adjustments are made for kinds, quantities, and qualities of products demanded in consumption. Our price-support programs are not short-run emergency operations. It is difficult to demonstrate that any agricultural emergency has existed since 1940. Price-support operations have been designed to gain a "fair" share of the national income for farmers. They must be considered in their long-run aspects.

So far as I know there are no conclusive studies of the long-run demand for agricultural products. One fragment of evidence is the rate of consumer expenditure for food. Agricultural production has increased much more since 1939 than has population. At the same time, the proportion of consumer incomes spent for food has increased. A much smaller proportion of consumer income would be required to support the 1939 dietary level than is now spent. Changes in the demand for food have been positively associated with changes in real income. Whether or not there is a causal relation is not clear.

American agriculture is an advanced livestock economy. We use much of our crop lands in the production of food grains as are needed and use the balance for feed grains, which, in turn, go into the making of livestock products. These are the marginal products of agriculture. It is at this margin that the long-run elasticity of demand must be measured.

If we can use meat as typical of these products, then some light can be shed on elasticity. E. J. Working says, "From the standpoint of national policy concerning livestock production, the most significant result of the study is the evidence developed to show that there is a difference between the short-run and the long-run elasticity

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of the demand for meat. Year-to-year changes of meat supplies result in somewhat larger percentage changes of retail prices in the opposite direction. In other words, in the short run the demand for meat at retail is somewhat inelastic. However, if the supply of meat is decreased and the supply is maintained at that lower level over a period of years, the price will, after its initial rise, gradually fall until it stabilizes at a point where the increase in price is less than proportional to the decrease in supplies. In other words, the long-run demand for meat at retail is elastic, and a decrease in supplies will result in a smaller aggregate retail value than will the larger supply."[1]

These retail prices must be translated into farm prices and production adjustments made. In the long run under a system of market prices, production will adjust to consumer demand and the demand for agricultural products will be the same at the farm level as at the retail level. The observed difference in elasticity at the two levels, when annual average prices and quantities are compared, is the result of the slow rate of change of marketing margins. In the long run, marketing margins are, of course, perfectly flexible. It appears reasonable to conclude that the long-run elasticity of demand for farm products may be greater than one.

Surplus disposal programs, both domestic and foreign, are systems for taking inventory losses on commodities that have been purchased at higher than market prices. They can increase farm income only by the amount of the subsidy. They reduce farm income insofar as they result in misallocations of productive resources that decrease the size of the nonsubsidized market.

Welfare effectiveness

If we conclude that the demand for farm products is elastic, the only way that publicly administered price-support programs can increase the level of prosperity of agriculture is through subsidies.

Welfare Effectiveness of Market Prices

If, on the other hand, we conclude that the demand for farm products is elastic and that there is an expanding demand for livestock products, then we must conclude that the aggregate agricultural welfare is maximized by a system of market prices. Under this condition the problem becomes one of developing markets and producing for them. In the main this is a problem of improving quality and expand-

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[1] E. J. Working, *Demand for Meat*, University of Chicago Press, 1954, p. xi.

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ing high-value uses. Farmers are in the business of producing luxury products for luxury markets the population of the United States may be malnourished, but it is not undernourished. It is necessary to select the pricing system that will most effectively guide production and marketing.

It takes but a cursory comparison of market and administered prices to reach a conclusion about their relative effectiveness in this regard. A case in point is the most recent milk-support program. As soon as purchases were commenced, the proportion of milk going into fluid use declined, and the amounts of dried milk consumed in all uses but one decreased.

Two of the most rapidly expanding segments of agriculture have been broilers and soybeans. The broiler industry has expanded because of a rapidly improving technology that reduced costs and because of improvements in quality. Broiler production is a notably risky business. How large would this industry be now if the first time it took losses a support program had been initiated?

The soybean industry has grown because of rapid improvements in the quality of oil, an expanding foreign market for oil, and an increasing real demand for soybean meal. Both products have had to buy their way into their respective markets with low prices. How large would be current soybean production had support prices not been relatively low? The outlook for peanuts in 1945 was quite as promising as that for soybeans. This industry became involved in an administered price program and has declined. There have also been other factors in the decline of peanuts.

The aggregate welfare of agriculture will be maximized if production of the kinds and qualities of products that the market wants is maximized. Administered price programs have resulted in the misallocation of productive resources. Sufficient correction of them to prevent further waste appears unlikely. Waste of resources cannot possibly maximize the long-run agricultural welfare.

Allocation of Agricultural Income

Granted that market prices maximize aggregate agricultural welfare, we must yet treat the problem of allocation of income within agriculture. There is great disparity of incomes within agriculture. There is said to be a problem of poverty in agriculture.

One criticism of existing price-support programs is that they do not alleviate and in some cases actually aggravate existing disparity.

It is clear that producers are paid in proportion to their productivity under a system of market prices. Is the resultant disparity socially desirable? What pattern of

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income distribution is the optimum one? These are questions that I do not presume to answer. They are beside the point in issues of market prices.

In considering income distribution in agriculture, the deceptiveness of existing statistics should be kept in mind. Not all rural residents who are counted as farmers are farmers in any real sense. Nor is income of people who reside on farms limited to income from agricultural production. There is much part-time farming in the United States.

There is a decreasing agricultural population. It is decreasing because relative opportunities are greater off farms than on farms. A system of market prices for productive resources is allocating them between agricultural and nonagricultural segments of the economy. To hamper this process by income reallocation programs would be to reduce total productivity. The problem of disparity of incomes among farmers is a problem in poor relief; of underproductivity of individuals. Its treatment should not interfere with the workability of a system of market prices.

Summary

The success of price-support programs in increasing agricultural income rests upon the assumption of an inelastic demand for farm products. Such evidence as is available indicates that this assumption is not valid.

A system of market prices is more effective in performing the functions of prices in guiding production than is a system of administered prices. Market prices are especially more effective in increasing quality, and quality in turn is important in stimulating higher levels of consumer expenditures for food.

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