A FORWARD LOOK AT TECHNOLOGY AND INSTITUTIONS

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To understand today's intricate food-fiber economy, we must understand the forces at work and the direction in which they are moving. The truth is that our food-fiber economy is in the midst of an accelerating technological revolution—a revolution whose impact is so great and so sudden that it best can be described as an explosion.

IMPACT OF TECHNOLOGICAL REVOLUTION

On balance, this technological explosion is beneficial to the nation in terms of better food, better health, and the release of workers for other types of enterprise, all of which helps to lay the basis for a higher standard of living. But it also has left in its wake some serious economic and human problems—problems generally referred to as farm problems. These maladjustments are real and serious, make no mistake about that. They are not just farm problems—they are agribusiness problems that affect the whole economy. In large measure, these situations are the backlash of uneven progress on the food-fiber front. They are eddies where change has been too slow—change that in the end will be inevitable. This lack of progress not only weakens the nation on the economic front but adds to human suffering on the part of those persons who do not or cannot quickly adapt to change.

The changes wrought by technology are forcing us in the direction of:

1. Larger farms.
2. Fewer farm families and farm workers.
3. More capital per farm for both land and other assets.
4. Greater technological know-how on the part of the farmer as a plant and animal expert, mechanic, electrician, construction engineer, nutritionist, chemist, etc.
5. Greater managerial ability in terms of handling a larger farm plant, with more varied activities.
6. A higher ratio of purchased farm supplies to total farm supplies, which in turn means a relatively more rigid cost structure.
7. More extensive facilities for processing foods, including packaging, freezing, dehydrating, freezer storage, etc.

8. The adding of more convenience factors to food in order to satisfy consumer desires.

9. More rigid buying requirements on the part of retailers as to continuity of supply, quality and uniformity of farm products.

10. Increased competition for land for nonfarm uses such as roads, suburban housing, industrial plants, airports, and recreation.

These forces, and others like them, are the type of factors with which we must reckon when taking "a forward look at technology and institutions affecting agriculture." Whether we like it or not, technology is with us and it is here to stay. It is transforming the food-fiber phase of our economy from agriculture to agribusiness. Should we be so short-sighted as to attempt to combat change that is inevitable, we shall merely be creating new problems and adding to human suffering. Therefore, the important task for the agricultural economist is to carefully assess the forces at work and the direction in which they are moving, and then try to guide farm and business leaders in an effort to take advantage of technology in terms of economic progress and stability.

FARMER, PROCESSOR, AND DISTRIBUTOR MOVE CLOSER TOGETHER

On balance, the forces of technology are pushing hard towards a closer structural relationship between farm production and the processing-distribution of farm products. I predict an accelerated trend in this direction in the future.

Two forces, particularly, are moving us in this direction:

1. The greater efficiency resulting from the closer scheduling and timing of on-farm and off-farm operations.

2. The urge for greater economic stability in the food-fiber phase of our economy—stability to offset the vulnerability of agriculture to a cost-price squeeze, resulting from the combination of relatively rigid costs and fluctuating commodity prices.

In the past the trend toward vertically linking together farm production and the functions of processing-distribution has taken numerous forms such as cooperative purchasing and marketing; large farm units which own their own processing facilities; and business-producer contracts—both of the earlier grower-canner type and of the more complicated broiler type—which tie together by contract the functions of hatching, finance, feed manufacturing, medication, management, processing, and selling; marketing agreements and market orders; and government price-support programs.

Also there has emerged within agribusiness certain types of vertical structures for linking related functions which do not constitute vertical integration in a strict sense of the term. Important among these are marketing agreements and market orders (which hereafter will be referred to as agreement-orders) and farm price-support programs.

MARKETING AGREEMENTS AND FEDERAL ORDERS

A marketing agreement-order is a sort of hybrid between a private venture and a government program. It exists by virtue of special legislation that imposes compliance on minority farmer interests, who may oppose them, and upon commercial handlers of the product. Also, an agreement-order exists by virtue of special latitude granted by Congress under the anti-trust laws. The federal orders impose no direct control measures over farm production. However, in the case of certain specialty crops, grown largely in a single state, the state laws in some instances authorize production control over commodities regulated by a state-sponsored agreement-order.

Agreement-orders do not carry with them the right to use Commodity Credit Corporation funds to acquire or hold stocks from the market. They do not seek to change the organizational structure, corporate or noncorporate, of the farm and business units that are subject to their provisions.

While they are supervised by the Office of the Secretary of Agriculture, they are governed by a control board composed of representatives of producers, business, and the public.

Marketing agreements for a few commodities have now been in operation for more than 20 years and currently are in force in some 70 milk sheds and on 30 fruit and vegetable crops. The number of agreements in force has almost tripled since World War II. However, to date none have been attempted for any commodity on a national basis.

ROLE OF GOVERNMENT PRICE-SUPPORT PROGRAMS

Supplementary to the several types of vertical structures already discussed, has been the evolution of government price-support programs. Inherent in such programs are certain characteristics of vertical linkage with respect to on-farm and off-farm phases of agribusiness.

These programs have the effect of reducing the flow of commodities on the free market by giving farmers the alternative of committing their stocks to the Commodity Credit Corporation at the support level. The net result is that during periods of surplus supplies such programs tend to increase the price of supported commodities, both for the

farmer and to the buyer of his product. In this respect they have had considerable influence on farm prices during the postwar period.

If a government support program is continued year after year for a given commodity, not only do farm operations become conditioned by it, but so, too, do the operations of off-farm business firms which handle and store the stocks held by the Commodity Credit Corporation.

Unlike the several types of vertical integration which have emerged with technology and unlike marketing agreement-orders, government price-support programs are administered and operated by public officials, entail the accumulation of commodity stocks in the hands of the government, and involve the use of a sizable quantity of public funds. In general, such programs provide incentive for high volume production rather than high quality output which is in line with market demand.

Regardless of side effects on adjustments in agriculture, it seems fair to state that price-support programs have constituted a major vertical structure for relating supply and demand in commodity markets during the past 25 years.

INTEGRATION OF OFF-FARM OPERATIONS

Not all vertical integration within agribusiness has had the effect of organically tying on-farm and off-farm operations more closely together. This particularly has been true of the development of chain store merchandising in the food field. Here, in most instances the integration of the firm has been in two directions: vertically to combine such functions as wholesaling, warehousing, financing, transporting; and horizontally to include multiple-unit operation.

Similarly, certain processors have expanded horizontally as well as vertically to encompass a number of commodities, some of which are highly competitive, as in the case of margarine and butter.

The effect of this type of development depends on the policies followed. Without doubt, a large integrated firm possesses certain advantages for market development, particularly with respect to quality control and promotion. However, it also has a stronger bargaining position with respect to procurement—bargaining power which could weaken the farmer's relative strength in the market.

WHY THESE MARKETING TRENDS?

We need to understand the reasons why these trends have developed. These trends are the result of forces generated by technology. In a real sense they are the counterpart of the vertical integration which

characterizes such major industries as steel, automobile, farm equipment, and petroleum.

Currently, evidence indicates that public support is declining for the existing government price-support programs for agriculture. Should this be true, then it probably will follow that added pressure will build up for other types of stabilizing mechanisms—particularly for marketing agreements and orders; contract integration of the broiler industry type; and cooperative marketing.

A NEW LOOK AT RESEARCH

Looking to the future, the success with which the food-fiber phase of our economy makes the transition from agriculture to agribusiness will depend in large measure on the quality and adequacy of research in this field. Research, too, must be integrated—both horizontally to cover all major commodity areas and vertically down through related operations pertaining to a single commodity. This means that colleges of agriculture must join hands with schools of business; that federal and state departments of agriculture must cooperate with departments of industry and commerce; and that farm and business organizations must work more closely together.

Obviously, such an undertaking will be complicated, difficult, and tedious. But have we any logical alternative? As mentioned earlier, resistance to change that is inevitable merely serves to build up problems and add to human suffering.

On the other hand, if we act in harmony with technology, problems will be alleviated and ultimately resolved. While technology cannot be stopped, it may be guided. For example, we may adapt technology to serve the needs of efficient sized family-operated farms. Thus, technology offers us opportunities as well as problems.

As adequate research findings are uncovered and published, policy makers, using such information, should make sounder decisions. In this way progress will be made—progress that places heavy responsibility on the component sectors of agribusiness.

Now a word to those of us who bear the title *agricultural economist* —we too must adapt to the dictates of technology. In practice, even if not in name, we must become *agribusiness economists.*