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MORPHOLOGY, MODES OF BEHAVIOR, AND MEASURES OF MARKET POWER:

A Framework for Evaluating the Impact of Industrialization of Southern Agriculture on Markets and Market Structure

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INTRODUCTION

In spite of the volume of literature produced over the years reflecting concern over the present state of the arts, the situation is likely to continue. However, there are several new ideas that offer some promise for improving our understanding and ability to project new relationships in the agribusiness sector of the Southern region.

Although the title of this article implies a one-way set of forces working from agricultural industrialization to market structure, some of our colleagues regard this relationship as a two way process with forces at work in each sector having strong impacts on the other. It is these interdependencies that make the task of model building so difficult and empirical analysis so complex.

A DECADE OF CHANGE

Briefly, recent changes in Southern farming are (1) a rapid rise in agricultural output in all except the Appalachian region of the South, (2) a decrease in land used for crops in all except the Delta States, (3) a dramatic reduction in manhours used in farming and (4) a gradual increase in the output of livestock and livestock products relative to crop production. Production per acre has risen more rapidly than the national average in the Southeast and in the Southern Plains and less rapidly in the Delta States and the Appalachian region. Output per manhour has risen more rapidly than the national average in the Delta States and the Southern Plains and less rapidly than the average in the Southeast and in the Appalachian region.

Although the family farm today differs dramatically from that of a decade or two ago, Nokolitch has shown that these units continue to co-exist with larger-than-family farms in about the same proportion,

nationally, in both numbers and proportions of farm marketings [8]. However, his findings and those of Harris indicate that important shifts in the entrepreneurial function are occurring as the separation of ownership, management and labor becomes more widespread [5]. It is in these changes that we find the most direct interrelationships between farm and marketing decision making, rather than in a major shift away from the family operated farm. It may, therefore, be more instructive to focus our attention on modes of behavior of firms than on the morphology of either the farming or marketing sectors.

THE DUAL ECONOMY

Those among you who have wrestled with the topic of changing market structure have been struck by the inadequacies of present day microeconomic theory as a theoretical foundation for dealing with the changes which are taking place in the South. The model of a single firm making adjustments in plant size in accordance with long-run equalization of marginal costs and prices and, in the short-run, making the choice of the desired level of output as a decision which is internal to the firm operated by the owner-manager, may, at some distant time in the past and at a few places, have provided results that correspond with observed behavior and have performed well as a predictive device. That time, it seems, has long since passed. Agriculture can no longer serve, if it ever did serve adequately, as a never-ending source of examples illustrating the operation of a purely competitive economic system.

Although the challenge to develop alternate economic models is still largely unmet, the recent book by Robert T. Averitt (1968), entitled "The Dual Economy," does offer some insight concerning possible methods of dealing with the dynamics of American industry structure and, for our purposes, the structure of the agribusiness complex of the South. One useful idea presented is the distinction between center firms

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and periphery firms [1, pp. 1-2].

The center firm is large in economic size as measured by number of employees, total assets, and yearly sales. It tends toward vertical integration, geographic dispersion, product diversification, and managerial decentralization. Center firms excel in managerial and technical talent; their financial resources are abundant. Their cash flows are large, particularly during prosperity; their credit ratings are excellent. Center managements combine a long-run with a short-run perspective. Short-run considerations are entertained at the lower levels of the managerial hierarchy, while long-run planning is the perquisite of top management. Their markets are commonly concentrated. Taken together, center firms make up the center economy.

Many center firms have expanded their interests into an enormous variety of new fields, many of them unrelated to the firm's industrial beginnings. Indeed, Averitt states, the drift of the future seems to be moving to pure conglomerates, center firms having no industrial base whatsoever. Center firms must follow the new technology, must move where technology flourishes, picking up new forms and products as they leave established short-run positions for the challenge of new products and new industries. Technology provides in the long-run no less of a mortal threat for center firms than competition provides for periphery firms in the here and now [1, p. 2].

The periphery firm is relatively small. It is not integrated vertically, and it may be an economic satellite of a center firm or cluster of center firms. Periphery firms are less geographically dispersed, both nationally and internationally. Typically, they produce only a small line of related products. Their management is centralized, often revolving around a single individual. Periphery management below the top executive is, on the whole, less able than its center counterparts. Financial limitations pose a major problem to periphery firms; their cash flow is smaller, their credit rating poorer, their interest rate on borrowed funds higher than that of center firms. Their emphasis is on short-run problems leaving little time for long-run planning.

What is the process by which a periphery firm may enter the center economy [1, p. 87]?

In the beginning, financial problems revolve around seed capital. The managers of the new enterprise seek money to start operations. If the enterprise succeeds, expansion may carry them into the threshold region where the firm ceases to be a pure periphery enterprise but is not yet a member of the center. It is this threshold phase that proves fatal for many successful periphery concerns. Financial requirements are too

large for noncommercial sources, but the firm is still sequestered from the center financial community. For the fortunate few firms which can, in time, emerge from the valley of corporate distintegration, the third phase of public stock and bond offerings, center commercial bank assets, and accumulating internal liquidity provide a welcome financial haven. When these become available, the fortunate business pilgrim has entered the center.

Managerial pitfalls are no less menacing than financial barriers to the periphery firm. The founder of the periphery firm governs in much the same way as a wise, tolerant, resourceful head of household manages family affairs [1, p. 88].

But once the firm expands into the managerial twilight zone, the threshold between periphery and center, the corporation must undergo reorganization. Dispersed and delegated, management responsibility is still coordinated at the top. Operating routine is closely supervised, but it must crowd out long-term planning. Traditional products must be produced and marketed efficiently to yield satisfactory profits, yet this yield from conventional sources must now be devoted in part to exploring new avenues of firm growth.

Averitt's comment that the overwhelming majority of periphery firms desires neither to grow into the center economy nor to compete with it certainly characterizes much of the agribusiness complex as we have known it. Farming has been characterized by periphery firms, that is firms of small size and limited potential. The dominance of the periphery firm in Southern agriculture may be beginning to wane, but the progress of this change will vary widely from product to product and from one part of the region to another. Firms in the center economy, combining both large size and unlimited potential, are clearly making inroads into the industries supplying Southern agriculture and strengthening their position in those industries processing the products of Southern farms. Let us use more of our research efforts in looking at the process of industrialization and attempt to evaluate alternative public policies and programs in the light of their impacts on all the parties concerned with this type of change.

Current theory of the firm has two weaknesses in dealing with dynamic economic systems: first and most obvious is that the hypothetical firm corresponds to real life enterprises only if a single product or its close substitutes is produced or if multi-product firms manage their pricing and output as if it were unrelated to all other firms. Thus, the theory of the firm is, in fact, a theory of the product. The second weakness observed when using this theory to analyze the center economy is that the long-run is assumed to be nothing

more than a series of consecutive short-runs. The center firm on the other hand recognizes the distinctness of their size and independence from their owners, industry, product mix and national origins. In addition, they are intensely aware of the total economy, their long-run destiny and the nature and drift of technical change. "The center's long-run power to influence the direction of technology and the organization of production creates a new territory for theoretical exploration" [1, p. 105], and a whole new field for empirical analysis of farming and the farm product marketing sector of the region.

MODES OF FIRM BEHAVIOR

Given the distinction between periphery and center firms, we are still in need of an operational model that will be somewhat more sensitive to differences in relationships. Schneider suggests that "only when we know that mode of behavior a firm is adopting to achieve its objective can we tell how its production, supply, sales and purchases are determined" [9, p. 49].

Next we look at the classification scheme proposed by Scheider and consider the possible application of this scheme to studies of changes in market structure. Schneider has rather surprising advice to offer [9, p. 58]. He says:

There can be no doubt that for the course of the economic process through time it is only the mode of behavior of the economic subject that is relevant. The morphological structure of an economic area or the number of sellers and buyers in it, . . . can only be of significance if particular modes of behavior are bound to particular forms of supply and demand. Such a relationship does not necessarily hold . . . This fact, . . . justifies us in treating the morphology of the supply and demand in a particular geographical area as being of secondary importance. This, of course, is not to say that it is not of great interest to classify demand and supply according to the number and size of the particular suppliers and demanders as well as according to the nature of the goods offered by the individual sellers and demanded by the individual buyers. But what is always decisive for the course of the economic process is simply the mode of behavior of the individual economic subject.

The first and most common mode of behavior is that of the quantity adjuster. In terms of the firm selling its product, these are firms that take the prices of the goods they sell as given and make choices concerning the quantities they will sell.

A second mode of behavior is that of the price fixer. The price fixer has as his action parameter the price at which he wishes to sell his product, the level being based on the expected price-sales relation which

he perceives for his product. Several classes of price fixers can be identified. If the sales of a particular firm depend only on the price established by the firm in question, his behavior can be described as that of a monopolist. However, it is possible that his sales also depend upon the prices established by other firms. If his sales depend upon prices established by others and, further, if other firms will react to changes that he makes in his price, he will behave as an oligopolist.

The third class of firms is represented by the quantity fixer. As suggested by the title of this class of firm, their action parameter consists of the quantity of output they wish to offer for sale. This quantity is selected on the basis of an expected price-sales relation as in the price fixer mode with the price at which a given quantity can be sold established by the buyer. Again, we can identify three subclasses of quantity fixers - - those for which the outcome is influenced solely by the quantity they choose, those firms whose price-sales relation also is affected by the actions of others and, finally, that class of firms for which the actions of other firms influence their price-sales relation and which need to be concerned about possible reactions by other firms to choices they make concerning the quantity to be sold.

The fourth mode of action is that of the fixer of options. Firms in this class have, as their action parameter, the setting of both price and quantity. Obviously, this is not to be thought of as dictating what the consumer will choose. Rather, such a firm establishes an option which a buyer of this product is free to accept or reject. Clearly, the willingness of buyers to accept or reject a particular option depends upon the price and quantity characteristics of the offer. The types of options which are proposed, therefore, will reflect the expected response by such buyers to alternative price-quantity combinations.

We finally come to the fifth class, that of the economic warrior. It is necessary to include this fifth class in order to allow for the possibility that the behavior of firms will no longer consist of the type of peaceful adaptation provided for in the first four classes. Here, we find ourselves in the world of strategy and maneuver on the part of individual firms - - the relevant variables including not only the behavior of rivals, given the fact that peaceful coexistence is to be maintained, but also the recognition that the choices open to a particular firm may include those that in the long-run will defeat competitors and leave a larger share of the market to the firm engaging in such behavior.

We now see that it is only the first class of sellers, the quantity adjusters, whose behavior is described by the pure competition model. Furthermore, introductory economics texts to the contrary, the agricul-

tural sector of the United States is ill-defined in terms of quantity adjusters alone. In fact, the existence of cooperative and other groups of firms which band together to influence prices and sales together with the participation of state and federal governments in price-setting and quantity-regulating decisions are sufficiently important in agriculture to require our careful attention.

MARKET POWER

Is there a relationship between modes of firm behavior and market power? Can market power be measured? Can the consequences of uses of market power in different amounts be identified? These questions I find largely unanswered to date, although there are some clues here and there.

As a starting place, let market power be defined as the ability to favorably influence the terms of trade (exchange) through position, status or strength [2]. Conditions necessary for the existence of market power include favorable supply conditions and favorable demand conditions. Favorable supply conditions can be summarized as control over production through voluntary producer cooperation, through mandatory producer cooperation under government control, through ability to eliminate competing firms and discourage new entrants or by "captive" production units. Favorable demand conditions include a high market share and the ability to increase that share, inelastic demand for the product and low cross elasticities of demand with other products [3].

Enhancement of terms of trade results when favorable demand and supply conditions which make it possible to exhibit opponent-pain is combined with the willingness to pay the price of exercising market power [6]. Measures of market power must be designed to be applicable whether or not such market power is, in fact, exercised. High market share is a relatively simple measure. Ability to control the quantity offered for sale is less readily measured. Direct and cross elasticities are conceptually straightforward, but empirical estimation may be difficult for a firm or group of firms, especially since any drifting of the curves over time may be as important as their slopes.

If the difficulties connected with measuring the present level of market power are too great, there may still exist the possibility that the impacts of changes in market power can be approximated. Changes in market power may affect prices, output and market shares. They may affect the distribution of income among farm owners, managers, workers, marketing firms and farm suppliers. To the extent that government is a source of new market power, or withdraws support for existing market power, the

measurement of the impact of public policy alternatives becomes crucial. In any case, the need to tie modes of firm behavior to levels of market power must be recognized.

THE DATA BASE

This is a good point at which to ask how the ideas of Averitt and Schneider relate to more common terminology used in the discussion of changes in market structure, firm conduct, and industry performance. Perhaps as good a reference point as any is the series of papers presented at the American Farm Economics Association meetings in Fort Collins, Colorado, in August 1961 entitled "Do Market Structures Influence Market Development?" I urge you to reread the papers given by Sosnick, Townshend-Zellner and Mueller and the discussions of these papers [10, 11, 7].

Since 1961, a substantial amount of first-rate information has become available through the work of the National Advisory Commission on Food and Fiber and the National Committee on Food Marketing. Both of these series of reports have been discussed at earlier meetings of this association. However, there is a great need to disaggregate our analysis of agricultural firms, to delve into the ways in which different pieces of individual firms fit together to form rational decision entities. Only at the very micro level can we fully understand past or future changes.

The modes of behavior proposed by Schneider provide a very promising base from which to start. For example, typical farming units today clearly fall in the periphery firm classification. The unconstrained quantity adjuster still dominates the livestock, egg, manufactured milk, soybean and fresh vegetable producing sectors. Quantity adjusters constrained by government action of various types include producers of fluid milk, wheat, peanuts, corn, sorghum, cotton, tobacco, and sugar, to mention a few. We might argue that broilers, turkeys, and processed vegetables are grown largely by firms behaving as option-takers. At the moment, I can think of no farm products that are produced by firms which would fall in the price fixer, quantity fixer, or economic warrior classification.

When we move to buyers of raw products we find that the quantity adjuster category is a much less satisfactory description of mode of behavior. Here I believe we will find a larger representation of fixers of options, price fixers, and quantity fixers of various descriptions. This possibility deserves early investigation, and it is possible that much of the necessary data are already available in some of the reports referred to earlier. I foresee continued change in the behavior of business decision-making units. Many of the periphery firms now behaving as quantity adjusters

may well move into the taker of options or the price fixer and quantity fixer categories. Further, some of these periphery firms may choose to take action to enable them to enter the center firm category. A third possibility is that center firms will choose to step up their activity in the agricultural marketing sector and possibly the farming sector as well. A start in this direction has already been made in livestock and to a lesser degree in milk production.

CONCLUSION

What of the role of the land-grant college economist? How can we use these concepts in our university teaching and extension programs to increase economic understanding? What of the possibilities of using these ideas as a basis for formulating and testing hypotheses with respect to desirability of alternative market systems? Will these ideas serve to improve the models which we currently have at hand? My answer is a tentative "yes."

Our two-fold goals include the increase in economic understanding and the improvement of decision-making at the firm and public policy levels. To do this we must find new ways to describe, analyze and predict changes in modes of firm behavior and uses of market power. In the past, farming firms have used the political process as a major route to follow in escaping the quantity adjuster mode substituting where possible the quantity fixer mode. More recently we have seen a wide variety of decisions taken that use collective action as a supplement to government action [4].

Students of politics warn us that the political power base of farming is eroding, although at widely differing rates in different sectors. This is another reason for us to intensify our research efforts so as to improve our ability to understand and perhaps guide changes in the agricultural sector of the economy along those lines that will ease the adjustment problems that seem inevitable for many participants in the production and marketing of agricultural products during the 1970's.

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