AGRICULTURAL ORGANIZATION IN THE MODERN INDUSTRIAL ECONOMY

Department of Agricultural Economics
and Rural Sociology
The Ohio State University
Columbus, Ohio

NCR-20-68

FOREWORD

This volume contains papers and discussions presented at a seminar on changes in the economic organization of American agriculture. Organization alternatives were examined in terms of workability, acceptability, consequences, and implications for public policy. Seminar participants included members of two North Central Research committees, NCR-20 and NCR-56, and selected other individuals whose experiences and areas of interest qualified them to contribute in unique and valuable ways.

The contents herein should be of particular interest to agricultural leaders who are formulating policy proposals bearing on agricultural organization, to educators who are dealing with issues of changing industry structure in their research and teaching programs, and to students of agriculture who are seeking greater comprehension of the kinds of changes and problems likely to be faced by agricultural people in the years ahead.

The seminar was planned by a Subcommittee of NCR-20 consisting of Peter Helmberger, University of Wisconsin; R. J. Hildreth, Farm Foundation; James D. Shaffer, Michigan State University; and Paul L. Farris, Purdue University, Chairman. The subcommittee coordinated arrangements involving NCR-56 with Dale E. Hathaway, Michigan State University. Manuscript preparation and publication arrangements were handled by Thomas T. Stout, Ohio State University.

Paul L. Farris
Purdue University

BARGAINING POWER POTENTIAL IN AGRICULTURE*

John R. Moore
University of Maryland

There has been considerable interest in recent years among economists, agricultural producers, government officials, and others in the possibility of increasing producer returns through price bargaining.1/

In spite of this interest, there has been relatively little theoretical development on the possible sources and the amount of gain that bargaining groups might expect where there is no control on the amount of product being supplied by members of the bargaining group, the usual case.2/ This article discusses this issue.

This analysis of bargaining power potential is based on the basic supply-demand model of price theory, the theory of derived demand, and the theory of profit maximization by business firms.

According to the supply-demand model of price theory, the maximum amount that consumers will spend for food or any commodity is determined by the quantity of the product put on the market and the consumer demand schedule for the commodity. This is illustrated in Figure 1 where O-A is the amount of food produced by farmers in a given time period and D_c-D_c is the consumer demand schedule for food. Assuming no change in demand or the processing and services surrounding the food, the total returns from the sale of

---

*This article benefited from the comments of John M. Curtis; Billy V. Lessley, and Richard E. Suttor

1/ The interest among economists is reflected in the not infrequent appearance of producer bargaining as a topic at the annual meetings of the American Agricultural Economics Association. Interest among government officials is reflected in recently sponsored government legislation that would facilitate producer bargaining (A. 2973) and conferences on producer bargaining sponsored by the Farmer Cooperative Service. Interest in bargaining by producer groups is reflected in the large number of producer bargaining organizations in this country and the popularity of bargaining as a topic at the annual meetings of the American Institute of Cooperation and other farm groups.

2/ Two of the best treatments of the subject are found in George Ladd, Agricultural Bargaining Power (Ames: Iowa State University Press, 1964) and Peter Helmberger and Sidney Hoos "Economic Theory of Bargaining in Agriculture" Journal of Farm Economics, Vol. 45, No. 5 (December 1963) pp. 1272 - 1280. Relative to these reports the discussion here is more explicitly concerned with profits as a potential source of gain for farmers.

O-A food will be no more or less than OADE. In 1966, for example, civilian expenditures for farm food in the United States were $83.4 billion.3/ They would have been more if farmers had produced less food since the demand for food is inelastic and conversely they would have been less if farmers had produced more food.

It follows from this basic conclusion drawn from the supply-demand model that farmers can increase their revenue from a given output of food when consumer demand remains unchanged only by taking some share of the food marketing margin for themselves. It is obvious from Figure 1 that there is no other place from which increased returns can come.

The theory of derived demand helps explain from where in the marketing system farmers might expect to obtain an increased share of the retail price through bargaining. The basic concept of the theory of derived demand is that consumers are the ultimate source of demand and that demand at each level in the marketing channel below the retail level is derived in sequence from the retail level. The demand for agricultural products at the various levels below retail demand are determined by the costs (including profits) of the succeeding marketing agencies. The farmer being at the lower end of the sequencial marketing chain receives what is left after the various marketing agencies have subtracted their costs, making the farmer the residual claimant. The theory of derived demand holds regardless of the degree of competition among firms at the various levels of the marketing system. The impact of the degree of competition is reflected in the size of the profit margin, other conditions being the same.

The theory of derived demand can be illustrated using Figure 1 where D_c- D_c, D_r- D_r, and D_p- D_p are the demand schedules of the consumers, retailers, and processors respectively for the product. The line segment D-C represents the retailers' per unit cost of marketing food, C-B represents the processors' per unit costs, and B-A is the per unit value left over for producers, the residual claimants. The amount that D-C and C-B differ from retailers and processors actual costs is reflected in their profits (or losses), the residual after all their costs have been paid. In the long run, of course, profits to marketing agencies must show some minimum positive value if the firms are to remain in business.

The assumption of profit maximization of business firms is also essential to this analysis. In essence it states that the primary objective of business firms is the maximization of their profits. This implies that they are buying as cheaply, operating as efficiently, and selling as dearly as reasonably possible. The theory of profit maximization appears applicable in large measure to agricultural marketing firms. Not all firms in an industry,

---

3/ Preliminary figure. Marketing and Transportation Situation, U.S. Department of Agriculture, August 1967, p. 13.

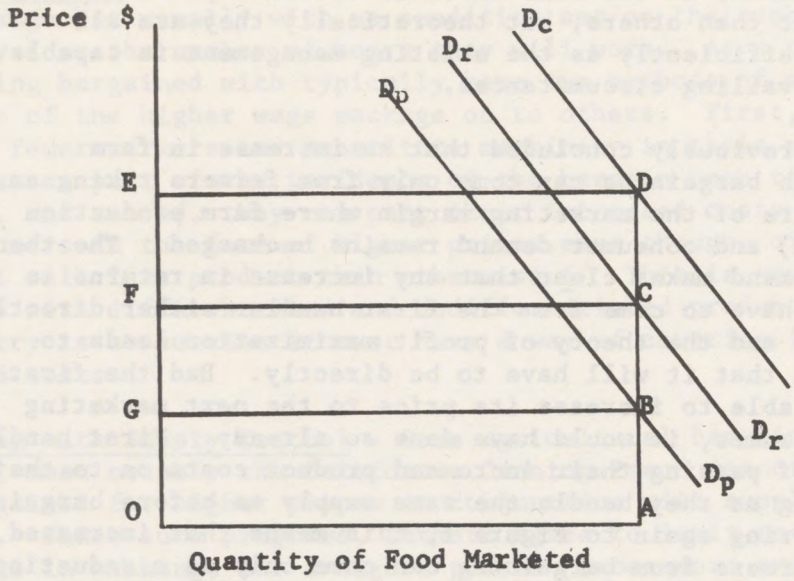

Figure 1 - Agricultural Production, Demand Schedules, and Distribution of Consumer Food Expenditures.

of course, operate at the same level of efficiency. Some are more efficient than others, but theoretically they are all operating as efficiently as the existing management is capable under the prevailing circumstances.

It was previously concluded that an increase in farm prices through bargaining can come only from farmers taking an increased share of the marketing margin where farm production is given (O-A) and consumer demand remains unchanged. The theory of derived demand makes clear that any increase in returns to farmers will have to come from the first handler either directly or indirectly and the theory of profit maximization leads to the deduction that it will have to be directly. Had the first handler been able to increase its price to the next marketing agency or consumer, it would have done so already. First handlers have no way of passing their increased product costs on to their buyers as long as they handle the same supply as before bargaining began. Referring again to Figure 1, this means that increased returns to farmers from bargaining can come only as a reduction in the size of area GBDE.4/

Before proceeding, it might be instructive to contrast the type of bargaining considered here with other types of bargaining: labor bargaining, bargaining with supply control, and bargaining with price discrimination. The type of bargaining being considered here and the type frequently attempted in agriculture is bargaining both for a specified price and quantity, the quantity being the amount that farmers in the bargaining group have produced. In contrast, under conditions of labor bargaining, bargaining with supply control, and bargaining with price discrimination, the price is specified but not the quantity. In these situations, an increase in price to buyers typically results in their taking less commodity or service, processing less, and selling at a higher price with no great long-run adverse effect on their net income.5/ Each of the above mentioned types of bargaining has a built in system for passing increased factor costs on to others, usually the consumer. Their methods are explained below.

4/ Some have argued against this conclusion saying that cost plus pricing is common and that if a buyer knows the seller has had increased costs the buyer will be willing to pay more for the product. This argument may be valid in those industries where final industry output can be varied by command on short notice (where the selling firm sets a price for its product and adjusts its production to the amount it can sell at this price), but it would not apply in agriculture because there is no way in the short run of cutting back the whole industry's output and thus raising the equilibrium retail price and in turn the price that the buyer could profitably pay suppliers.

5/ Long run changes in profit levels due to wage and price bargaining appear to be negligible in spite of frequent negotiations.

Labor Bargaining - Labor unions typically negotiate for a specific wage package but usually with no condition set on the number to be employed or the number of hours they will work. As a result, firms being bargained with typically have two methods of passing the costs of the higher wage package on to others. First, they can hire fewer workers and substitute machinery in their place (which passes part of the incidence of the bargain back to the workers), and second, they can pass their increased costs on to the consumers in the form of higher prices even though, of course, they will sell less product than otherwise.6/ This is true both for firms with differentiated and undifferentiated products. If an industry is to survive it must have a way of covering its increased costs.

Bargaining with Supply Control - Some agricultural bargaining agencies, most notably the California Canning Peach Association, have bargained for higher prices in conjunction with supply control programs. Under such programs, farmers agree to limit total marketings in exchange for a higher price. Processors are able to accept such an agreement mainly because the reduced marketings raise the equilibrium price for the product at the wholesale and consumer levels and they can thus pass their higher product costs along.

Price Discrimination - Price discrimination involves selling a product at two different prices. The prices are often related to the product's use. Dairy bargaining associations, for example, have increased their returns enormously in some areas by selling milk for drinking at a much higher price than milk going into manufactured products. Processors are able to profitably pay higher prices for milk for drinking because they can pass these prices on to the consumers. They can do so because they only have to take as much fluid milk for drinking purposes from farmers as consumers are willing to buy at the higher prices. Fluid milk bargaining would likely be no more successful than bargaining on manufacturing milk prices if farmers were to demand that along with a price increase, processors had to take the same amount of milk.

Accepting the argument that price increases through bargaining to farmers selling a given supply of product at established market prices must come from first handlers' margins, the next step in the analysis is to look at the data to see what part of the marketing margin of the first handlers farmers might in fact bargain away.

For seven major food items processor margins on the average are made up of the following items in the following proportions:

6/ This also will result in a reduction in the amount of labor used.

labor and fringes, 35.4 per cent; containers and supplies, 19.3 per cent; buildings and equipment, 6.7 per cent; advertising and promotion, 4.6 per cent; other expenses, 22.6 per cent; and profits before income tax, 11.4 per cent.7/

Looking these items over it would appear that the only one that farmers might logically bargain away is profits, the item in the marketing margin that is in fact the residual after all other factors have been paid. The price of the other items are set largely in their respective inter-industry market places or by government regulations thus putting them out of the reach of farmer-first handler negotiations.

It would not appear likely, at least in the short run, that farmer bargaining could reduce wage rates, salaries, transportation costs, taxes (other than income taxes), depreciation, interest, rent, electric, container, advertising, fuel, buildings, and equipment costs.

Some might argue that bargaining pressure on buyer profits could force buyers to seek greater efficiencies to offset these losses and that these greater efficiencies could be the source of increased producer returns. This proposition, however, violates the assumption that marketing firms are already maximizing their profits. It should be recognized that in reality though that firms not infrequently do forego some short run expenditures such as those for advertising and research when profits become squeezed.

Assuming then that first buyer profits are the only significant source from which farmer bargaining agencies might expect to increase their revenue, the question is, how great are these profits in relation to farm prices at various profit levels for the processing firms? This should indicate how much farmer bargaining agencies might theoretically bargain away or their bargaining power potential.

Profits can be measured in two ways, before and after taxes. Which is the relevant figure to consider? The answer is profits before taxes because profit taxes are not paid unless the profit is actually made. Because corporate income taxes are approximately 50 per cent of net income, approximately one half of the amount that is bargained away from a firm comes out of the reduced tax liability of the firm.

7/ Unweighted averages derived from respective commodity tables in National Commission on Food Marketing, Cost Components of Farm-Retail Price Spreads for Foods, Technical Study No. 9 (Washington: U.S. Government Printing Office, 1966) for the seven commodities listed in Table 1.

Table 1 - Effect of Changes in Processor Profits on Farm Prices, 1964

Table 1 - Effect of Changes in Processor Profits on Farm Prices, 1964

Commodity	Unit	(A) Farm Price	(B) Processor Resale Price	(C) Processor Profits: Per unit before income taxes	(D) Processor Profits: Percent of equity after income taxes	(E) Processor Profit before taxes as percent of farm price (D/B)	(F) Cents Change in Farm Price due to 1 percentage point change in processors rate of return on equity after taxes (D/E)	(G) Percent Change in Farm Price due to 1 Percentage point change in processors rate of return on equity after taxes (G/B)	(H) Percent Change in Farm Price if Processors Earned the Following Rates of Return[a]: 0	5	10	15
		Cents per unit	Cents per unit	Cents per unit	Percent	Percent	Cents	Percent	Pct	Pct	Pct	Pct
Beef	1 lb (choice)	46.2	51.5	0.4	9.0	0.865	0.044	0.096	+0.9	+0.4	-0.1	-0.6
Broilers (ready to cook)	1 lb	19.7	23.9	0.1	7.6	0.507	0.013	0.066	+0.5	+0.2	-0.2	-0.5
Cheese	½ lb	15.1	17.4	1.0	12.2	6.622	0.081	0.542	+6.6	+3.0	+1.2	-1.5
Eggs (grade A)	1 doz	29.1	36.5	0.7	13.0	2.405	0.054	0.185	+2.4	+1.5	+0.6	- .3
Fluid Milk	½ gal	23.1	40.4	1.5	12.2	6.493	0.123	0.532	+6.5	+3.9	+1.2	-1.4
Processed fruits + Vegetables	Market Basket	$20.84	$65.08	88.0	6.7	4.226	13.134	0.630	+4.2	+1.1	-2.1	-5.2
Wheat (for bread)	1 lb loaf	2.33	17.05	0.73	11.3	31.330	0.065	2.772	+31.3	+15.5	+3.6	-10.2

[a]This analysis assumes that short run changes in food processing industry's profits are fully reflected in farm prices. It also makes the not too unrealistic assumption that the corporate income tax rate is the same for firms earning 5, 10, and 15 per cent of equity.

Source: Margin data except profits as per cent of equity are from National Commission on Food Marketing, Cost Components of Farm - Retail Price Spreads for Foods, Technical Study No. 9 (Washington: U.S. Government Printing Office, 1966. Data on profits as a per cent of equity are from Marketing and Transportation Situation, U. S. Department of Agriculture, May 1965, p. 11 and from respective commodity technical studies of the National Commission on Food Marketing.

The profit made per unit handled has been calculated for seven types of processors (beef, broilers, eggs, fluid milk, fruits and vegetables, and wheat)8/ as a share of the producers' price at various rates of return on processors' equity, 0, 5, 10, 15 per cent (Table 1). This data can be used to show the returns to farmers at various levels of profits for the firms where changes in profits are fully reflected in changes in farm prices and vice versa.

The data show that profits as a share of producers' price ranged from 0.5 per cent (broilers) to 31.2 per cent (wheat for bread) but that of the seven only wheat for bread was greater than 6.6 per cent. Thus, among the seven commodities with the exception of wheat for bread, producers couldn't expect to increase their returns more than 6.6 per cent through bargaining no matter how strongly they were organized without causing processors, on the average, to lose money. Most farmer bargaining agencies, it seems reasonable to assume, would hope and expect processors of farm products to earn some positive rate of return on their investment both in fairness to the processors and to insure that processors would stay in business and remain progressive.

Several rates of profit might be selected by an all powerful bargaining agency as a guide in setting average profit rates after taxes for the processors of their products. These include the average rate allowed public utilities, approximately 6.5 per cent; the average rate earned by all manufacturing concerns, 14.1 per cent (1966); the average rate earned by farmers producing the product being processed; the average rate earned by all food processors, 12.5 per cent (1966); and an arbitrary modest level somewhat below the level earned by all food processors, 10 per cent.9/ If the latter were chosen and processors in each of the various processing industries achieved it in 1964, prices received by farmers producing for the various industries analyzed here would have changed in approximately the following ways: beef, -0.1 per cent; broilers, -0.2 per cent; cheese, +1.2 per cent; eggs, +0.6 per cent; fluid milk, +1.2 per cent; processors fruits and vegetables, -2.1 per cent; and wheat for bread, +3.6 per cent. It can be seen that in three of the seven industries

---

8/ Bread baker-wholesalers are not typically first buyers of wheat from farmers. Farmers are thus not in a position to bargain with them on price. They are included in this analysis to illustrate the high ratio of processor profit to farm value where the value added by the processors is high relative to the farm price for the raw material.

9/ Several problems, of course, would arise for the all powerful bargaining agency attempting to bargain processor profits to a predetermined level. There would be the enormous problem of trying to measure and anticipate rates of return and the complications caused by the great variation in rates of return about the average. A price to processors, for example, that would have

analyzed, farmers would have received less than they did and in only one, wheat for bread, would they have gotten more than a 1.4 per cent increase. Considering the cost of organizing and maintaining a bargaining agency and that it most likely would not be as powerful as the theoretical one assumed here, one might question whether or not the organization of a price bargaining agency without the power to control producer supply would be worth the effort. The general lack of price bargaining power potential no doubt explains much of the lack of success of the producer bargaining movement in many areas.

EPILOGUE

Though this article has rather pessimistic implications for agricultural price bargaining without supply control, it should not be interpreted that producer bargaining agencies cannot make a positive contribution to farmer welfare. Aside from possible limited gains in price bargaining, they could improve farmers' positions by bargaining on non-price factors such as when they will be paid and how long they must wait to unload their products at the processing plant. They could also help members by protecting them against discriminatory pricing practices, keeping them informed of processors paying the highest prices in their areas and providing for uniformity among contracts which would facilitate comparison among them. A producers organization that included the majority of the producers of an annual crop or animal products produced and sold in a relatively short period under contract could possibly increase grower returns by setting a price in advance of the production process at the national level and letting processors determine how much they want to contract for in advance at that price. This type of bargaining would be similar to that engaged in by labor unions and fluid milk bargaining associations.

9/ (continued) reduced the average rate of return in the dairy industry (12 largest companies) from 12.0 per cent to 10 per cent in 1966 would have reduced returns to Fairmont Foods and Pet Milk Company from 7.5 to 5.5 per cent, a level that if it persisted, might affect their long run health. Conversely a price that would have raised the average return to meat packers in 1966 from 5.5 to 10 per cent would have raised the returns of the Iowa Beef Packers, Inc. from 19.9 to approximately 24.6 an increase some farmers would feel hardly seems necessary. These deductions assume the mentioned companies had approximately the same ratio of sales to equity capital as the industry average. Firm profit data are from U.S. Federal Trade Commission, Rates of Return for Idential Companies in Selected Manufacturing Industries (Washington: 1967), p. 37.