PRICE AND DEMAND EFFECTS OF RECENT DEVELOPMENTS
IN MARKETING AND CONSUMPTION:

I. MARKET STRUCTURES AND PRICING IN SELECTED AGRICULTURAL
INDUSTRIES

Wilbur R. Maki

Recent studies of firms engaged in agricultural marketing activities show
these firms using various means to control the factors affecting their profit
accounts. These controls are effected in the manipulation of product, price
and merchandising. Marketing, thus, has come to mean "a systematic in­
tegration of product planning, procurement, manufacturing and merchan­
dising." 1

The broad changes in marketing have been achieved partly by shifts in mar­
ket structure. In the retail food market, for example, one-stop automobile
shopping, private brand development, management changes in sales and
marketing, and price-specification buying have evolved through the profit
policies of firms. In several food industries, the number of plants has
decreased, and the output per plant has increased. According to a recent
report on the food marketing industries, "Shortage of capital, overcapacity
in the industry, an inadequate or uncertain supply of raw materials, and
other unfavorable prospects for profitable operation have caused some
plants to be closed rather than modernized." 2 Changes have occurred also
in ownership and diversification among companies in a number of food and
fiber industries. 3

Other studies of changing food consumption patterns have pointed to the
subtle influence of technology on the whole pattern of consumer interest. 4

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1/ George L. Mehren, "The Changing Structure of the Food Market,"

2/ Forrest E. Scott, "The Food Marketing Industries -- Recent Changes and
1957, p. 23.

3/ Imogene Bright, "Food Marketing Companies; Diversification and
"Ownership Changes by Purchase and Merger in Selected Food Industries--

4/ Herman M. Southworth, "Implications of Changing Patterns of Consump­
tion, Preferences and Motivations," Journal of Farm Economics, 39:1299-
1309, 1957.
A growing concern with nutrition parallels a preoccupation with "the gadgetry of food preparation and service." Concern with nutrition has helped to improve our diets. This interest is associated with shifts in consumption patterns, including a declining per capita consumption of pork and lard.

Concern with modern kitchen gadgetry may represent a shift in status values from food itself to the equipment used in its preparation. Moreover, new convenience foods, or foods which economize on the time of the housewife in food shopping, meal preparation and meal planning, have increased as much as five-fold in total sales since 1950. These developments have accompanied an increase in the proportion of our labor force which is comprised of "working" housewives.

Most striking of all is the rapidly growing importance of advertising and promotion in the consumer markets. An increasing proportion of our resources is committed to "want creation." Advertising is described by one writer "as distinctively the institution of abundance." What, then, are the effects of the recent developments in marketing and consumption on farm prices and the demands for farm products, particularly meat products? In this section of our presentation, an attempt will be made to review the effects of changes in the structure and organization of livestock markets on price (and profit) performance in the livestock industries. Of particular interest are the buying and selling activities in the primary livestock markets insofar as these activities influence farm prices of livestock.

**Market Structures in the Livestock Industries**

Individual plants, firms and associations of firms -- the essential elements of market structure -- vary in size, location, degree of product differentiation, and the nature and extent of specialization or integration. If the technological, market and organization decisions of the firms display a similar structural pattern, the firms belong to the same industry. Because livestock production, marketing and slaughtering differ with reference at least to the nature of the production processes (and specialization), firms


in these activities belong to several different industry groups. These firms also belong to different markets insofar as they are in different industries and different areas of competitive behavior. The pricing system, however, serves to coordinate the activities of different businesses operating in the various livestock and meat markets.

Whether or not the livestock and meat markets perform satisfactorily depends upon the particular criteria used to evaluate performance. For example, livestock markets are unable to reimburse each livestock producer for the exact derived market value of the livestock sold. Livestock producers cannot always depend upon adequate price differentials to compensate for possibly higher production or related costs associated with the more desirable meat-type of livestock. The pricing system thus fails to function with the desired degree of precision or persuasion. In this connection, some underlying conditions of pricing performance in the Iowa livestock industries are examined in the following discussion.

In Iowa, the livestock industries comprise 180,000 livestock producers and over 1,200 livestock markets. In a recent year -- 1956 -- Iowa livestock producers sold 4,398,000 head of cattle and calves and 20,110,000 head of hogs and pigs, of which 82 percent and 91 percent, respectively, were slaughter livestock. In addition, purchases of feeder and breeding livestock included 2,783,000 head of cattle and calves and 3,107,000 head of hogs and pigs.

Iowa slaughtering plants handle an annual kill equivalent of 75 percent of the Iowa farm marketings of cattle and calves and 70 percent of the Iowa farm marketings of hogs and pigs. Most of the packer purchases of livestock are directly from farmers or through salaried packer buyers and dealers operating on a commission basis. Of the 25 federally inspected slaughtering plants in Iowa, 10 employ more than a 1,000 workers per plant and slaughter the equivalent of a million hogs or more (table 1). Hence, no more than 10 slaughterers (several operate more than one plant in Iowa) account for practically all of the meat production in Iowa. Since slaughter livestock are bought from many different sellers and market sources, the livestock market structure in Iowa is characterized by a complex size distribution of firms representing the major groups of buyers and sellers -- the packers, the primary market operators and the livestock producers.

Meatpacking establishments differ in the degree of specialization or integration. Most large plants are diversified, integrated operations involving processing as well as slaughter of two or more species of livestock. Many plants of smallish or medium size (i.e., 20 to 249 employees) are highly

specialized and some also represent large-scale operations. Because of the lack of integration of slaughtering and processing, personnel and capital requirements are much smaller for these plants. Hence, entry into the industry via this route is relatively simple. The specialized slaughterers, however, must sell their outputs in a highly competitive dressed meat market (unless the individual specialized plants are part of an integrated meatpacking business). Thus, the less efficient or flexible of these slaughterers find a profitable level of operations quite difficult to maintain.

Table 1. Percentage of Meat Packing Establishments Reporting Specified Average Number of Employees Per Establishment in 1954. a/

<table>
<thead>
<tr>
<th>Employees per Establishment</th>
<th>West North-central States</th>
<th>Other North-central States</th>
<th>Total North-central States</th>
<th>Other States</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>(percent)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 19</td>
<td>34.9</td>
<td>55.9</td>
<td>52.6</td>
<td>64.4</td>
<td>60.4</td>
</tr>
<tr>
<td>20 to 49</td>
<td>14.0</td>
<td>13.8</td>
<td>13.8</td>
<td>15.4</td>
<td>19.4</td>
</tr>
<tr>
<td>50 to 99</td>
<td>11.6</td>
<td>11.6</td>
<td>11.6</td>
<td>6.8</td>
<td>9.0</td>
</tr>
<tr>
<td>100 to 249</td>
<td>11.6</td>
<td>7.6</td>
<td>8.2</td>
<td>6.2</td>
<td>6.1</td>
</tr>
<tr>
<td>250 to 499</td>
<td>2.3</td>
<td>2.7</td>
<td>2.6</td>
<td>3.6</td>
<td>2.7</td>
</tr>
<tr>
<td>500 to 999</td>
<td>2.3</td>
<td>1.3</td>
<td>1.5</td>
<td>1.4</td>
<td>1.9</td>
</tr>
<tr>
<td>1,000 and over</td>
<td>23.3</td>
<td>7.1</td>
<td>9.7</td>
<td>2.1</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Number of establishments 43 225 268 585 1,514 2,367

a/ Based on U.S. Census of Manufacturers.

The 1954 data on the size distribution of meatpacking plants show a somewhat smaller than expected percentage of establishments of intermediate size -- 250 to 999 employees. In fact, four logical size classes of meatpacking plants were identified. A cumulative log normal distribution of establishments according to the number of employees per establishment was used to identify the four size classes of plants. For further discussion of technique in the analysis of size distribution of firms, see Herbert A. Simon and Charles P. Bonini, "The Size Distribution of Business Firms," American Economic Review, 58: 607-617, 1958.
packing plants are suggested by these data: 1 to 19 employees, 20 to 249 employees, 250 to 999 employees, and 1,000 employees and over. The first group of plants services a small local market and mostly would tend towards relatively low levels of efficiency. The second group includes many efficient but specialized slaughtering operations, which vary in scale of operation all the way from small to large. The fourth group of plants includes largely the integrated operations of the largest packers. Perhaps the intermediate size class of plants, though quite large as specialized operations, are rather small as single plant firms to effectively complement a national distribution organization. Thus, the size distribution of meatpacking plants is affected by the extent of diversification and vertical integration among these plants. Specialization among plants under the same ownership, however, complicates the picture of size distribution as related to the functional differentiation of plants. 11/

In summary, differences in the size, location, nature and extent of specialization of meat packing plants, degree of product differentiation, and the condition of entry to the market describe the market structures in the livestock industries. Moreover, these elements of market structure affect pricing performance and establish the conditions of competitive behavior among firms. 12/

Firm Behavior and Pricing

A systematic review of firm behavior and pricing appropriately might start with a formulation of the relevant economic relationships involved in the firm's decision making. 13/ For example, the pricing of livestock at primary markets can be described in terms of a single meat packing enterprise engaged in the pursuit of business profits. The profit account of this

11/ Technology tends to promote a smaller scale of operations but not necessarily a smaller scale of organization. For a discussion of the effects of technology on scale of operations in widely different industries, see John M. Blair, "Does Large-Scale Enterprise Result in Lower Costs? - Technology and Size," American Economic Review, 38:121-152, 1948.


13/ Oxenfeldt suggests that "while systematic differences in performance in industries can be attributed in moderate measure to their structure, important aspects of industrial performance lie outside their structure characteristics." For a thoughtful discussion of market characteristics that influence price behavior, see: Alfred R. Oxenfeldt, Industrial Pricing and Market Practices, Prentice-Hall, Inc., New York, 1951.
enterprise can be represented by the net profit identity

\[ \Pi = \sum_{i=1}^{f} p_i x_i - \sum_{j=1}^{g} q_j y_j - \sum_{k=1}^{h} r_k z_k \]  

(1)

where the letters p, q and r represent, respectively, the prices of the meat outputs, x; the livestock purchases, y; and the labor and other complementary inputs, z. The subscripts, i, j and k, denote the different classes of outputs and inputs in this enterprise. Thus, the net profit of the firm is expressed as an accounting relationship—the difference between total revenue and total expenditure. 14/

Some additional relationships are relevant in describing the market behavior of this firm. The engineering or technical conditions of the firm are represented by the product yield and production equations. The predicted quantity of product output, \( x_i \), and the predicted quantity of complementary input, \( z_k \), are obtained with two equations,

\[ \hat{x}_i = \sum_{j=1}^{g} a_{ij} y_j, \text{ and} \]

\[ \hat{z}_k = \sum_{j=1}^{g} b_{kj} y_j. \]

(2)

where the symbol \( \alpha \) denotes the relationship between a given number of cattle, calves, or hogs, and the output of beef, veal or pork, and where the symbol \( B \) denotes the amount of labor or other inputs required to slaughter and process each unit of livestock. Again, the subscripts pertain to the individual classes of inputs and outputs. Product outputs and complementary factor inputs are not related exactly to the quantity of livestock purchased because of variability in the quality of livestock inputs or because of other factors affecting the dependent variables, x and z. These additional factors are not included explicitly in equation 2. Hence, the two dependent variables are estimated subject to some degree of estimation error. 15/

14/ Considerable practical difficulty can be expected in identifying revenue-generating outputs with the precise inputs used in producing these outputs. Therefore, an exact measure of profits for a given time period would not be a reasonable expectation. Nevertheless, the accounting relationship offers a point of departure when conceptualizing about ideal data requirements for decision making.

15/ Numerous attempts to derive input-output relationships from survey or time-series data have been reported, of which the Douglas studies perhaps are the most notable. A rigorous methodological discussion on this subject is presented in a monograph by Ronald W. Shepherd, Cost and Production Functions, Princeton University Press, Princeton, New Jersey, 1953.
The market demands for the aggregate product outputs and factor inputs of the meat packing industry also are relevant in describing the behavior of this firm. Symbolically, the output and input market demands are represented by the functional forms

\[
\hat{P}_i = \sum_{i=1}^{F} A_{i* i*} X_{i*} + \sum_{i*=F+1}^{F*} A_{i* i*} X_{i* j*}
\]

(3)

\[
\hat{Q}_j = \sum_{j=1}^{G} B_{j j*} Y_{j*} + \sum_{j*=G+1}^{G*} B_{j j*} Y_{j*}
\]

\[
\hat{R} = \sum_{k=1}^{H} C_{k k*} Z_{k*} + \sum_{k*=H+1}^{H*} C_{k k*} Z_{k*}
\]

where \( \hat{P} \), \( \hat{Q} \) and \( \hat{R} \) are the predicted average market prices of the aggregate meat output, \( X \); the aggregate livestock purchases, \( Y \); and the aggregate complementary inputs, \( Z \). The variables, \( X_{F+1}, \ldots, X_{F*}, Y_{G+1}, \ldots, Y_{G*}, \) and \( Z_{H+1}, \ldots, Z_{H*} \), are other specified factors, such as personal income and assets, affecting market prices of livestock or meat products. Additional factors may affect market prices, but these are not included among the explanatory variables in the regression model. Again, the dependent variables are subject to some degree of estimation error.\(^{16/}\)

A supply relationship for livestock is involved also.\(^{17/}\) This relationship shows the level of farm marketings of livestock at different levels of prices and other supply determinants. The prediction equation is of the form

\[
\hat{Y} = \sum_{j=1}^{G} D_{j j*} Q_{j*} + \sum_{j*=G+1}^{G*} D_{j j*} Q_{j*}
\]

(4)


\(^{17/}\) Though the methodology of supply estimation is somewhat less advanced than the estimation of demand, several studies are available in this area, of which the most recent is by Gerald W. Dean and Earl O. Heady, Changes in Supply Functions and Supply Elasticities in Hog Production, Iowa Agr. and Home Econ. Exp. Sta. Res. Bul. 471, 1959.
where $Q$ represents the major factors affecting farm marketings, including market prices, $Q_1, \ldots, Q_G$, and other specified market conditions, $Q_{G+1}, \ldots, Q_{G*}$.

Finally, the internal activities of the firm are related to the output and input markets through the firm's own product demands, its pricing practices and its market share. The product demand function is simply

$$ x_i = \sum_{i=1}^{f} V_{ii'} P_{1'} + \sum_{i'=f+1}^{g} V_{1'i*} P_{i*1'/2}, $$

where $\hat{x}_i$ is the predicted quantity of the $i$th product sold, $P_i$ is the price of the firm's product $x_i$, and $P_{i*}$ is the specified nonprice or market price variable accounting for changes in the sales or output quantity, $x_i$.

Though the techniques of estimating market demand for an entire product, such as beef or pork, are quite sophisticated and reliable, the techniques employed to estimate the demand for a single firm's output are rather limited. Generally, packers are able to determine the most profitable price they could charge without estimating demand because they face a "kinky" demand curve or because they simply adjust to the market. Price reductions by one firm, for example, are quickly followed by comparable price reductions among competing firms while price increases by the one firm generally are not followed by corresponding price increases among competing firms. Or, inventory accumulations may trigger a series of price reductions among a group of packers which serves to encourage retail orders and a gradual depletion of excess inventories. Thus, the pricing system may operate quite effectively without extensive market knowledge on the part of individual sellers and buyers.

Another internal phenomenon for each meatpacking firm is its unique market price relationship. If the firm "follows the market" quite closely, its product prices would be described by the equations

18/ Some large firms make use of "consumer panels" and "test markets" in connection with their new product development activities. Most meat, however, is sold in fresh form under a system of federal grades. Hence, small differences in price among sellers of a given federal grade would result in large differences in their sales, unless compensating factors exist to differentiate sellers in terms of the services offered. In either situation, sales forecast might be prepared on an annual, quarter-year or weekly basis for the outputs of an individual company. These forecasts would be improved, however, by additional information about the effects of specified decision variables on sales, as indicated in the report on Forecasting in Industry, Studies in Business Policy, No.77, National Industrial Conference Board, Inc., New York, 1956.
\[ \hat{p}_i = a_i + a_i \hat{p}_i, \]  
\[ \hat{q}_j = b_j + b_j \hat{q}_j, \]  
\[ \hat{r}_k = c_k + c_k \hat{r}_k \]

where \( a, b \) and \( c \) denote the change in the firm's predicted prices, \( \hat{p}, \hat{q} \) and \( \hat{r} \), associated with a one-cent change in the appropriate market prices.

Lastly, the total purchases of the firm may be prescribed by the form

\[ \hat{y}_j = d_j + \lambda_j y_j \]

where \( \lambda \) is the firm's market share of the \( j \)th input, \( Y_j \). If the firm purchases only a small percentage of the total slaughter livestock, its procurement activities would not involve speculation about adverse competitive effects associated with rising (or falling) market shares. A large firm, however, is restrained by a market strategy aimed towards a certain predetermined share of the total industry purchases. 19/

The firm theoretically seeks its profit objective by varying the inputs, outputs and prices until any further change in any variable reduces total profits. The most profitable level of operation, however, depends upon the relevant prices, quantities and price-quantity relationships specified earlier. 20/

Inasmuch as the level of livestock purchases establishes the level of meat output, the former represents a critical decision variable of the firm.

Several planning periods are involved in the livestock pricing process. To illustrate, meat buyers place their orders with packers sometime before the delivery date. These orders ordinarily are fulfilled even at a loss to the packer. Furthermore, if the planning period is extremely short, most costs

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20/ Cutting tests made daily in larger plants provide management with current cost and selling price data, but no adjustments are made in these tests for deviations of current output from the output levels on which the cost data are based. In practice, daily prices are established on the basis of a number of relevant factors, as suggested by A. D. H. Kaplan, Joel B. Dirlam and Robert F. Lanzillotti, Pricing in Big Business, The Brookings Institution, Washington, D. C., 1958, p. 40.
are fixed. Therefore, the supplies of livestock and the market demand for meat are basic determinants of livestock prices in the extremely short-run production period. During longer planning periods, however, the firm may contemplate alternative levels of sales, prices and overall plant management.

Prices among specified market classes of livestock in the long-run are established at levels prescribed by the livestock supply function (equation 4), the market demand function (equation 3), and the market price relationship (equation 6). Theoretically, livestock purchases can be varied until a set of optimum livestock prices are obtained for the specific meat packing plant. The optimum set of prices are shown by a set of \( g \) (i.e., \( q_1, \ldots, q_g \)) price relationships,

\[
\begin{align*}
q_1 &= \left( \sum_{i=1}^{f} \left( p_i + x_i \frac{\partial p_i}{\partial x_i} \frac{\partial y_i}{\partial y_1} \right) \frac{\partial x_i}{\partial y_1} - y_1 \frac{\partial q_1}{\partial y_1} \right) \\
&- \sum_{j=2}^{g} \left( \frac{\partial y_j}{\partial y_1} + y_j \frac{\partial q_j}{\partial y_j} \frac{\partial y_j}{\partial y_1} - \sum_{k=1}^{h} \left( r_k + z_k \frac{\partial r_k}{\partial z_k} \frac{\partial z_k}{\partial y_1} \right) \right)
\end{align*}
\]

\[
\begin{align*}
q_g &= \left( \sum_{i=1}^{f} \left( p_i + x_i \frac{\partial p_i}{\partial x_i} \frac{\partial y_i}{\partial y_g} \right) \frac{\partial x_i}{\partial y_g} - y_g \frac{\partial q_g}{\partial y_g} \right) \\
&- \sum_{j=1}^{g-1} \left( \frac{\partial y_j}{\partial y_g} + y_j \frac{\partial q_j}{\partial y_j} \frac{\partial y_j}{\partial y_g} - \sum_{k=1}^{h} \left( r_k + z_k \frac{\partial r_k}{\partial z_k} \frac{\partial z_k}{\partial y_g} \right) \right)
\end{align*}
\]

The pricing model represents an intermediate stage in the derivation of the optimal set of purchase prices. Each of the variables applicable specifically to the firm, i.e., \( p_i, x_i, y_j, r_k \) and \( z_k \), can be related further to the relevant market prices and quantities using the equations cited earlier.

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21/ Firms typically react to changes in livestock prices by changing processing margins or kill schedules, but in either case an optimal set of prices would exist which equates marginal revenues with marginal costs and which, in the long run, covers total unit costs. For a discussion of sources of price variation in the meatpacking industry, see Elliott S. Clifton "Effect on the Meat Packing Firm of Short-Run Price Variations in Livestock", *Journal of Farm Economics*, 39:1645-1654, 1957.
When purchase quantities rather than prices are used as the dependent variables, a more useful representation of optimal firm behavior is obtained. In equation 8, however, each of the variables can be related to the input variable, $Y_j$, and thus the effect of changes in aggregate supplies on livestock prices, $p_2, \ldots, p_g$, can be ascertained. The intermediate form is presented, therefore, to illustrate and evaluate market structure as one of several pricing determinants that may affect significantly the optimal behavior of an individual meat packing firm engaged in the pursuit of business profits.

The intermediate pricing model includes (1) the internal firm relationships in equation 2, (2) the firm's quantity-price relationships in equation 5, (3) the firm-market price relationships in equation 6, (4) the firm's market share prescribed in equation 7, (5) the market price relationships in equation 3, and (6) the conjectural market share relationships (showing the effect of a one-unit change in the firm's sales or purchases on total market sales or purchases). Thus, the optimal set of livestock prices is dependent upon six groups of price and quantity relationships in addition to the market variables upon which the values of the firm's prices and quantities, $p_1, r_k, x_i, y_j$ and $z_k$, are based.

In summary, the sales orders ($x_1, \ldots, x_f$), the prospective deliveries ($y_1, \ldots, y_g$) and the complementary inputs ($z_1, \ldots, z_h$) must be estimated for the relevant pricing period. Also, the values of the coefficients, $\gamma, \beta, a, b, c, \lambda, A, B, C$, must be known. Finally, the conjectural relationships must be reduced to known values. This latter procedure can be accomplished by assuming that under certain prescribed conditions, changes in $x, y$ and $z$ in the given firm do not induce changes in equivalent variables among other firms operating in the livestock and meat markets. Hence, each of the conjectural relationships is assigned a value of unity. If the prescribed conditions of market structure are not satisfied, the individual firm must consider the effects of its activities on the performance of other firms.22/

**Aggregate Market Performance**

Several sets of firm-market relationships are dependent upon the components of market structure, particularly the size of firms and even more specifically, the scale of operations. A meatpacking plant that slaughters one percent of the total Iowa farm marketings of livestock can maintain a fairly stable pattern of slaughter and sales from week to week. In the operations of a much larger plant, however, the effects of the larger volume of livestock purchases on the conduct of other firms must be taken into

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account. Thus, the operation of an individual meat packing firm involves a large number of rather complex technical and economic considerations in the adjustment of sales and purchases to prospective market price relationships.

Even a cursory examination of aggregate market performance would show that an optimal set of purchase prices for one firm may not represent an optimal set of purchase prices for another firm. Hence, different firms will shift in their buying and selling activities from one market to another as they attempt to meet their commitments with respect to specific future deliveries, labor contracts and other obligations. Moreover, the market quantities of different classes of livestock and meat affect the magnitude of the price premiums paid for the most desirable qualities of livestock.

The manner in which these diverse activities of many firms in many geographically separated markets results in the coordination of aggregate farm production with aggregate consumer demands is not obvious from the theoretical pricing model. One obstacle to effective market coordination via the pricing mechanism is the uncertainty of the estimates involved in actual pricing. Nevertheless, numerous proposals dealing with market performance in the livestock industries require some lessening of their pricing uncertainties.

Proposals to improve the income position of farmers by reducing marketing costs, for example, involve some consideration of pricing practices in the agricultural marketing sector of the economy. Reductions in the costs of marketing would mean a smaller set of values for the complementary input relationships in equation 2. Hence, higher prices could be offered for livestock, which would tend to increase the supplies of these inputs. Reductions in marketing costs are quite uncertain, however, when the quantity of complementary inputs is fixed and when the quantity of agricultural raw materials is subject to substantial variation. Moreover, increases in the quantity of purchases would mean increased sales output and, hence, would require price reductions or additional merchandising effort on the part of the processor. The incidence of benefits from cost reductions in specific processing activities depends, therefore, on a number of variables and relationships, each of which is quite difficult to ascertain with any high degree of precision for the individual firm.23/

23/ A subcommittee of the U.S. Congress, nevertheless, concludes a report as follows: "Research and educational programs should be undertaken jointly by representatives of employers and employees to discover ways and means of accelerating technological progress and cost reductions in meat processing and distribution... Great changes are in progress in meat distribution.... These great changes in technological and economic forces in meat distribution make it highly desirable that a broad research and experimental program aimed at producing fundamental economies in meat processing and distribution be undertaken promptly." See, "Trends in Efficiency in Meat Processing and Distribution," A Report of the Consumers Study Subcommittee of the Committee on Agriculture, House of Representatives, Eighty-Fifth Congress, Second Session, March 10, 1958, p. 6.
Another set of proposals to increase farm prices pertains to quality improvements in farm products, particularly in pork production. These improvements are profitable to the producer as long as the increase in unit costs of production is less than the increase in unit price. But the higher retail value of a particular quality of product such as pork must be translated into appropriate price signals at the primary market level if the producer is to engage in quality improvement. The use of standard grades is one means to remedy this shortcoming in the pricing process. In effect, grading would facilitate prediction of retail product value at the primary and wholesale market levels. However, attempts to use only primary market grades, estimates of product yields and sales, or even product output prices to determine primary market prices for the agricultural raw materials are likely to fail as long as the relevant quantities and functional relationships described earlier are ignored. 24/

Under certain market conditions, an agricultural processor may find the customary price relationships inconsistent with the profit-maximizing objective of the business. When these situations occur, the firm may temporarily discontinue its buying activities or it may consider some costs as temporarily fixed and negligible in the short-run. If the latter situation occurred, the firm would continue its buying activities at a somewhat higher price level. 25/ If a large number of firms engaged in buying activities in each factor market, presumably the temporary withdrawals of a few firms would not penalize the individual sellers in these markets. 26/ Again, pricing performance would be related to market structure. 27/

24/ Recently, a study was initiated at Iowa State University by an interdisciplinary group (comprising a food technologist, a sociologist, a statistician and an economist) to measure the effects of changes in selected socio-economic, product and merchandising variables on consumer preferences for meat products and, thence, on livestock demand and prices. In this study, the demand variables which are subject to some degree of human control are identified and related finally to alternative programs of product and market development, including industry-wide programs of commodity promotion and grading.

25/ Elliott S. Clifton, op. cit.

26/ Even producer-controlled packing plants may procure livestock from distant, rather than nearby, markets to minimize short-term price instability.

27/ Several writers have suggested the hypothesis that "in an active market, the pace for the whole tends to be set by those firms whose opportunities and whose perspectives about them lead to the most vigorous competitive action, or those subject to the most urgent pressures of necessity, which have similar effect." J. M. Clark, "The uses of Diversity: Competitive Bearings of Diversities in Cost and Demand Functions", American Economic Review, 48:474-482, 1958.
Finally, the currently popular topics of bargaining power and negotiated prices are related to certain characteristics of market structure and conduct. The growth of large food retailer organizations has been accompanied by an increasing amount of vertical conflict. Dominance on one end of the distribution process, however, frequently encourages a grouping of organizations on the other end in an attempt to use countervailing economic and political power. Agricultural producers and processors, for example, might conceive of the distribution function as another process which is better accomplished under integrated control and organization. Thus, groups of agricultural producers or processors may organize to negotiate with other large organizations or otherwise increase the degree of control over the entire process of production and distribution. "Power", according to Palamountain, "has come to rival economic factors as the governing element in the vertical relationships of distribution."

In summary, the growing size and scope of operations of food processing firms has important repercussions on farmers through the primary markets for farm products. Acquisition of smaller farms, expansion of product lines and ownership of plants in more than one food industry subgroup have additional repercussions on brand labeling and advertising. The product demand functions and market share relationships of individual firms are affected by these changes in industry structure. Price, moreover, becomes a less important variable in explaining changes in the level of output and sales as firms become larger. Knowledge of consumer preferences, however, becomes highly useful in market and product development activities of these larger firms. Some further implications of the changing consumer market are examined in the next discussion dealing with the effects of income changes and advertising on the consumption of farm products.


