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REFLECTIONS ON THE ECONOMIC IMPLICATIONS OF SHORT-TERM HOG FEEDING PROGRAMS IN THE MARKETING CHANNEL[1/]

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Slaughter hogs frequently have access to feed while being held in the marketing channel awaiting shipment to distant packers. This policy is widespread among country markets and exists also on some terminal markets where dealers sort hogs to meet the individual specifications of various packers. Common procedure is to purchase the hogs from farmers, either directly or through a commission agency, allow them access to feed while they undergo the necessary sorting, and to re-weigh them into the truck that is to transport them to the purchasing packer. The purpose of feeding is to minimize or eliminate the shrinkage in the yards that would otherwise occur during the sorting process.

It was to investigate the effect of such short-term feeding programs on in-transit shrinkage and carcass yield that a study was undertaken and recently completed at Purdue University. A short statement of the results relevant to this discussion may serve as part of the basis for the comments that are to follow.[3/]

1/ Journal paper number 1651 of the Purdue Agricultural Experiment Station.
2/ The author wishes to express his appreciation to J. H. Armstrong, V. W. Ruttan, M. M. Snodgrass, and L. T. Wallace, Department of Agricultural Economics, Purdue University, for helpful comments and criticism on an earlier draft of this paper.
3/ The empirical basis for portions of this paper is found in the results of Purdue Agricultural Experiment Station Project 733, recently completed under the author's supervision by Jack H. Armstrong in fulfilling the requirements for the degree of Master of Science.

Empirical Results

Unfed hogs displayed an average weight loss of 1.2 pounds at concentration points where they were sorted and held for shipment. If hogs were fed, the in-yard shrinkage was eliminated and was replaced by a weight gain averaging 2.0 pounds. Fed hogs, therefore, averaged 3.2 pounds more than unfed hogs after approximately four hours of feeding. The immediate effect of feeding was to lower carcass yield, but the yield of fed hogs increased during shipment as time in-transit passed, whereas the yield of unfed hogs decreased. At 200 miles and beyond, the yields of both groups were the same, but the resulting carcass weight of fed hogs was greater, since it was based on a higher liveweight. It was evident, therefore, that feeding hogs at concentration points could result in a greater quantity of pork at wholesale, and presumably at retail, with no increase in farm production.

The implications of this situation now are considerably more apparent than they were at the outset of the study. Therefore, turning now to less concrete circumstantial evidence, and searching for insight through a modest theoretical maze, I relegate the remainder of this paper to the realm of "reflection" on the aggregate implications.

The packer is intimately concerned with dressing percentage, or carcass yield, inasmuch as it represents the pounds of carcass realized from the live animal he buys. Assuming equal by-product credits and other variables equal, the packer will be inclined to bid similar prices for similar carcass yields. If wholesale prices permit him to bid on the basis of 20 cents per pound for the carcass, for example, he would bid $14.00 per hundredweight for any hogs from which he anticipated a 70.0 percent yield, and he would be indifferent as to whether the hogs were fed or not. A 200.0 pound unfed hog and a 203.2

pound fed hog would both bring $14.00 per hundredweight when shipping distance was great enough to permit equal yields of 70.0 percent on each. While the packer would pay more in total for the heavier hog, he would pay at the same rate per pound. Market feeding, then, can, at least in the short-run, result in a greater supply offered at wholesale and retail at any given price.

But the dealer who sold the additional 3.2 pounds did not sell 3.2 pounds of meat; he sold at least 3.2 pounds of feed and water in the form of fill at the time of sale. That the immediate effect of the fill was to reduce carcass yield is unimportant since the hogs were not intended for immediate slaughter; rather, they were intended only for immediate shipment. What is important is that the increase and recovery in carcass yield which finally resulted was due as much to natural animal metabolism as it was to the efforts of the dealer, yet the dealer, in essence, received wholesale meat prices for what was, at the time of sale, only feed plus other feeding costs. So the crux of the issue becomes a matter of the possible existence of an innovational profit. If payment at the rate of $14.00 per hundredweight on the gain was more than enough to pay total feeding costs, then the dealer could receive an innovational profit on the feeding enterprise. If such innovational profits exist, then there also exists the long-run possibility that the resultant increase in supply could be offered at retail at a lower price per pound.

Circumstantial Evidence of Innovational Profit

It is not my purpose here to attempt to prove the existence of an innovational profit. I wish only to introduce innovational profit as an added and justifiable consideration in tracing the possible influences of such feeding programs through the marketing channel, and in speculating upon the implications. I should like to turn for a moment, then, to some of the "circumstantial evi-

dence" that lends credence to this possibility.

(1) Imagine a competitive equilibrium situation in which farmers feed hogs to the point where MC = MR, and AC = AR. Recognizing the costs inherent in the enterprise, and comparing this to costs involved in short-term market feeding programs, a difference is apparent. Nearly all the costs of market operation must be faced by the dealer whether he feeds hogs or not. For example, his pen space is already fixed, and labor must already be available for normal market operations. The incremental costs of feeding involve troughs for feed, a small amount of labor to make feed available, and the cost of feed itself. Were we to isolate the costs of the feeding program, it does not seem to be taking liberties to suspect that while MC may equal MR, it would not necessarily be true that AC = AR.

(2) The author noted during the period studied (March-October, 1959) that, as the price of hogs rose, feeding programs expanded. During periods of price decline, feeding operations lost popularity and, in some instances, stopped. Feeding might have occurred when MC = MR and at any time that AR was equal to or greater than AC, but would have stopped when this latter condition was not met.

(3) On terminals where packer buyers and dealers both buy competitively, and where dealer-operated feeding programs are common, there has been a noticeable decline of packer buyer operations while dealers flourished. The possibility of an innovational profit would be helpful in explaining this changing pattern. Innovational profit sharing between dealers and farmers, in order to entice more hogs into a profitable operation, could result in prices for hogs that could not be matched by packer buyers for sustained periods.

(4) The competitive model would suggest that the rapid growth of the country marketing system be accompanied by competitive prices paid for products.

While small country markets lack the economies of volume normally associated with terminals, their growth has been explained by convenience and their adaptation, after World War One, to the new technologies of roads and trucks. With similar adaptations being made by terminals the explanation seems less adequate in explaining the existence of many small markets. One wonders if innovational profit-sharing in the country system where feeding is widespread might offer some explanation for growth of markets that are often too small to compete on the basis of economies of scale alone.

Implications

Contemplating the possible economic effects of market feeding programs, it is apparent that, within the competitive framework, results are influenced not only by the possibility of an innovational profit, but are compounded by short- and long-run elasticities for pork and for hogs, and by cross-elasticities between pork and competing products.

In the Short-Run-

If prices paid on the weight gain are sufficient only to cover total market feeding costs, there would be no immediate effect on aggregate returns to producers if all dealers undertook such feeding programs. No change in farm production is required and there is no basis for additional competitive bidding on the part of dealers. Beyond the immediate effect, if short-run demand for pork is assumed to be inelastic, an increased supply at retail would begin to exert a downward effect on total payments for pork and aggregate returns to producers would begin to decline.

If an innovational profit is being enjoyed by dealers, however, the initial effect might be an increase in total returns to producers as dealers bid competitively for more hogs to feed. It should also be expected that there might also

be a short period in which the position of pork at retail relative to other meats may be enhanced through a lowering in price as innovational profits are competed away.[1] Should this be the case, the effect may amount to a short-term shift in demand which could offset expected tendencies toward a decreased total return to producers.[2] In the short-run, then, the developing tendency of increased supply to lower total returns to producers might be offset by the presence of an innovational profit. This could originate from either higher competitive bids by dealers or from a short-term shift in demand.

In the Long-Run-

If no innovational profit accrues to market feeding operations, the long-run effect of increased supply would be to cause decreased aggregate returns to producers. There is, however, room for controversy on this point for it is not unreasonable to take the position that the long-run demand for hogs and for pork is elastic.[3]

As innovational profit is competed away, total returns to producers may decrease not only by the amount dictated by the slope of an inelastice demand curve, but also by the extent to which producers may have been sharing in innovational profits. Again, however, the added efficiency in marketing to be realized by passing the saving on to consumers might bring about a shift in de-

1/ I treat this possibility of changing cross-elasticity relationship as a short-run consideration under the assumption that in the long-run similar efficiencies could occur in other meats as well and that benefits derived through a lowering of prices from this particular innovation could occur for them also.
2/ It is difficult to maintain that the result would be a shift in demand inasmuch as the changed situation may involve only a re-evaluation of the slope and position of the given instantaneous demand curve.
3/ See, for example, Williams, H. C. and R. W. Sherman, "The Demand for Hogs," Ohio Agricultural Experiment Station Bulletin Number 809, June, 1958.

mand. But the shift would not have to be reflected in changing cross-elasticity relationships between various meats if the saving were widespread and served rather to make meat in general more desirable, price-wise, relative to other foods.

Implications to Producers -

The market feeding innovation need not be expected to benefit producers in either the short-run or the long-run unless: (1) demand for hogs and for pork is elastic in the long-run, (2) cost-saving efficiencies exist which (a) are shared with farmers in the short-run, or (b) cause shifts in inelastic demand curves in either (or both) the short-run or the long-run.

Implications to Society

The effect on producers is not the only possibility with which to display concern; the effect to consumers may be the dominant social issue. Such feeding programs may be a cost to consumers and to society in the present circumstance if one wishes to regard potential savings not acheived as a cost. Such a position could be taken if dealers were able to hold the innovational profit within their segment of the marketing channel, but this is improbable in a marketing channel where the agent is unable to control either prices or quantity and the competitive model is appropriate. If an innovational profit does exist, then although the innovation itself has already offered increased supply at retail at no added cost per pound, a potential future saving to consumers lies in the possibility that greater quantities may be offered at retail at a lower price.