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Consumer Interests in Vertical Coordination in the Pork and Broiler Industries

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Introduction

The pork industry is currently undergoing a period of rapid structural changes, commonly referred to as the *industrialization of the pork industry*. Although its roots are embedded in the early 1980's, changes have accelerated in the 1990's. New technology is creating scale economies, geographical shifts in production are occurring, and the larger production and packing operations are turning to multi-year contractual arrangements and, to a lesser extent, vertical integration.

Moves from open market coordination via spot prices to contracting and integration may limit the ability of smaller independent producers to compete. These *non-spot coordinating arrangements* may create barriers to entry by reducing the number of available market outlets. Independent producers may be subject to price discrimination when the terms of contracts are not made publicly available. Market power through price discrimination or barriers to entry may result in misallocated resources.

On the other hand, these arrangements may also serve legitimate economic functions that benefit consumers. Consumer interests in how the food marketing system is organized is examined in this paper by comparing past developments in contracting and integration in the broiler industry with current changes in the pork industry.

Lessons From the Broiler Industry

The broiler industry began in the 1930's. About 65 million pounds of chicken were produced in 1934, about the equivalent of one day's output in 1991 (Hyk). By 1940, U.S. production increased threefold with Delmarva's (Delaware, Maryland, Virginia) share rising from 32 percent in 1934 to 43 percent in 1940. During World War II, demand for poultry products increased. At this time, it became apparent that broilers could provide a profitable business opportunity. After the war, many new production technologies were developed at a rapid pace. Yet, the manner in which the industry was organized at the time was not conducive to the adoption of available technology. Spot prices in open markets served to coordinate the flow of

resources in the broiler marketing system. Broiler growers purchased chicks from hatcheries and feed from feed dealers. When ready for market, the growers would sell the birds through open markets to processors.

Contractual arrangements between feed suppliers and growers became increasingly popular. Initially, under these arrangements feed suppliers would extend credit to growers with limited financial resources for buildings, equipment, and feed. In turn, feed dealers assured themselves of a potentially large market for their feed supplies. As price and production risk became more problematic for growers, in addition to greater needs for financing, *production contracts* evolved to shift more risk and management responsibilities to the feed suppliers. Additional areas of broiler production began in the South, in part, due to the South's declining cotton industry and their willingness to adopt contractual arrangements (Roy). By 1955, most broilers were produced using production contracts.

In the 1950's and 1960's, feed suppliers added hatcheries and processing facilities, and were referred to as *integrators*.¹ Later, processors assumed the role of integrator, as feed companies left the broiler business to focus on their feed business.

Consumers were the prime beneficiaries of these developments in the broiler industry. Technological gains and structural reorganization of the broiler industry facilitated rapid growth in production. Consequently, broiler prices continued to fall. Following World War II, the emergence of mass merchandising through supermarkets, provided an outlet for large broiler supplies. Broilers could be offered as a "price item" to attract customers into the store. Retailers, as well as consumers, found fresh, eviscerated broilers to be convenient because they required less handling by the butchers. Unlike red meat cuts, there was less concern about how fast various cuts sold because the bird was sold as whole or packaged parts.

As broiler production continued to increase, further reductions in price, and improved responsiveness to consumer preferences contributed to further increases in per capita consumption of broilers. The value of consumers' time increased, household size became smaller, and information linking diet and health became more prevalent. Consequently, consumer preferences for convenient, nutritious food products with assurances of quality became more important (Kinsey). Broiler integrators looked to further processed products, fast food outlets, and branding as ways to market their products, in response to the broiler glut. As a result, the percentage of broilers sold as whole declined. Broilers have increasingly been sold as

¹Substantial production growth and price instability contributed to numerous mergers and exits from the industry. In addition, the Poultry Inspections Act of 1957, required mandatory processing plant inspections, which led many processors to update their facilities and add capacity in a short time span. To capture scale economies, the plants had to run. Processors could assure themselves of an adequate supply of broilers through mergers or contracting. This contributed to the demise of the open market for broilers, and further reductions in the number of independent producers and processors (Tobin and Arthur).

cut-up parts and further processed into products such as nuggets and patties. Because integrators have greater control over the production process, standardization of production inputs enable them to establish brand names. Because a company is associated with the branded product, its reputation hinges on the quality and uniformity of the product.

The domestic market is not the only market that has benefitted from efficiency gains in the U.S. broiler industry. Much of the recent increase in exports were accounted for by Russia and China, which have moved toward more liberalized markets.

Industrialization of the Pork Industry

Although more subtle, there are similar developments occurring in the pork industry. Health enhancing, cost reducing technologies have created scale economies for large production operations. At the same time, hog production is reorganizing to facilitate more rapid growth in size. Whereas production historically occurred at a single site, production has shifted to more specialized operations, where farrowing, nursing, and finishing are conducted at three separate sites. Production contracts between large producers, commonly referred to as contractors or integrators, and smaller growers shift price and output risk from the growers to the integrators. Because growers invest in buildings and equipment, the integrators can invest in other areas of production to rapidly expand their operations. At the same time, packing plant capacity is on the rise. *Marketing contracts* are increasingly used by the large producer-integrators to sell hogs to the large packers. Survey results suggest that these arrangements are used to obtain a consistent, large supply of high quality hogs, and assure a market outlet for large hog supplies (USDA).

Hog production and slaughter capacity has been shifting from the Midwest to the Southeast, led by North Carolina, and other areas to a lesser extent. The decline of the tobacco industry, familiarity with poultry contracting, and lower labor and building costs are commonly cited reasons for expansion in the Southeast.

Efficiency gains in the pork industry are indicated by the number of pigs weaned per litter and the quantity of pork obtained from a given inventory of hogs. The number of pigs weaned per litter reached 8.65 in 1997, up 11 percent from 7.77 in 1987. Productivity gains have enabled hog producers to produce the same quantity of pork as in 1980, the peak year for hog production, with a 20 percent smaller breeding inventory (Benjamin). While productivity gains have contributed to increases in production and reductions in the real price of pork over the past ten years, added production has been exported or used to feed a growing U.S. population. While 1998 per capita consumption is expected to increase by 5 pounds, or 8 percent from 1997, per capita consumption of pork has remained fairly stable over the past ten years.

Future Growth of the Pork Industry

In the broiler industry, while supplies grew rapidly and prices continued to slip, developments further down the chain played an important role in its continual growth. Mass merchandising through supermarkets provided an ideal outlet for large broiler supplies. Later, the industry targeted consumer preferences for quality assurance and convenience through branding and further processing. Hence, price reductions and response to consumer preferences led to further increases in per capita consumption. Moves to contracting and integration appeared to serve an important economic function that facilitated the adoption of technology. Ultimately, these new methods of coordination provided a means to gain control of the production process to enable branding and new product development. Evidence exists suggesting that, since the 1980's, consumer demand for chicken may have increased. Although the exact cause is difficult to pinpoint, it is likely a combination of changing consumer tastes and preferences (for example, health interests and dietary fat concerns), changing relative prices of substitute meats, and higher incomes as premium parts and more value-added products were purchased (Rogers).

Despite growth in pork supplies and reductions in the real price of pork, per capita pork consumption has remained stable over the last ten years. Hence, future growth of the pork industry may hinge on its ability to respond to consumer preferences for quality, quality assurances, and new product development. A 1992 survey of major packing plants suggested that there is considerable room for improvements in pork quality (National Pork Producers Council). It was estimated that quality problems cost packers \$10.08 per hog. Of this amount, \$8.15 was found to be controlled by hog producers. This suggests that increased coordination between producers and packers to improve quality could result in cost savings. In a competitive marketing system, such quality improvements would benefit consumers through lower retail prices and higher quality products (Martinez, Smith, and Zering).

Apparently, packers are turning to multi-year marketing contracts to obtain the quality, consistency, and quantity of hogs for slaughter, as it becomes more costly to obtain hogs on the open market. We may see even more rapid moves to contracting, and perhaps vertical integration, as firms attempt to gain greater control over pork quality. By specifying premiums for higher quality hogs, multi-year contracts may serve to increase the quality of hogs obtained.²

There are, however, important differences between moves to contracting and integration in the broiler industry and current developments in the pork industry. The broiler industry represented a new industry with limited institutional constraints. Growth of the industry was facilitated by the use of contracts and integrated operations. The pork industry is an established industry, still coordinated by spot prices in open markets, for the most part. Hence, moves to contracting and integration are substituting for an established open market, coordinated by spot prices. Contracting and integration, coupled with larger operations, bring concerns related to market competitiveness.

²USDA found that half of all multi-year marketing contracts included quality specifications.

There appears to be growing institutional constraints that may affect future structural change in the pork industry. Consumers are becoming increasingly concerned about the effect that their own consumption choices and those of others have on the environment (Kinsey). As evidenced by the recent moratorium placed on pork production operations in North Carolina, environmental concerns may limit future growth. In fact, the poultry industry has also been recognized recently for possible water pollution problems. While technology may be able to lessen environmental risks, it is unclear whether such technology might accelerate consolidation of hog production.

The challenge for policymakers is to better understand the short and long run benefits and costs of contracting and vertical integration in more concentrated markets. In addition, by better understanding the reasons for contracting and integration, public policy decisions affecting the viability of open markets can be better formulated.

References

- Benjamin, Gary L. 1997. "Industrialization in Hog Production: Implications for Midwest Agriculture," *Economic Review*, January/February. Federal Reserve Bank of Chicago.
- Hyk, Deborah. 1995. "Two Industries, Two Journeys," *Hogs Today*, May/June.
- Kinsey, Jean. 1994. "Changes in Food Consumption from Mass Market to Niche Markets," *Food and Agricultural Markets: The Quiet Revolution*. National Planning Assoc. Rpt. No. 270. Eds. Lyle P. Schertz and Lynn M. Daft. Washington DC.
- Martinez, Steve W., Kevin Smith, and Kelly Zering. *Vertical Coordination and Consumer Welfare: The Case of the Pork Industry*. AER-753. USDA, Econ. Res. Serv., August 1997.
- National Pork Producers Council. *Pork Chain Quality Audit*, David Meeker and Steve Sonka, eds., Progress Report prepared for the National Pork Producers Council. Des Moines, IA: National Pork Producers Council in cooperation with the National Pork Board, April 6, 1994.
- Rogers, Richard T. Dec. 1992. *Broilers - Differentiating a Commodity*. Research Report No. 18. Food Marketing Policy Center, Univ. of Connecticut.
- Roy, Ewell Paul. 1963. *Contract Farming, U.S.A.*. Danville, IL: The Interstate Printers & Publishers, Inc.
- Tobin, Bernard F. and Henry B. Arthur. 1964. *Dynamics of Adjustment in the Broiler Industry*. Boston: Division of Research, Graduate School of Business Administration, Harvard University.
- U.S. Department of Agriculture, Packers and Stockyards Programs, Grain Inspection, Packers

and Stockyards Administration. *Concentration in the Red Meat Packing Industry*. Washington, DC: Government Printing Office, Feb. 1996.