



MICHIGAN BEEF PRODUCTION

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Michigan's Competitive Position in Cattle Slaughtering and Beef Processing

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The continuing decline of the Michigan cattle slaughtering industry is having an adverse impact on local cattle feeders and on the state's cattle producers more generally. Increasing numbers of fed cattle are moving out of state for slaughter. Meanwhile, over 60 percent of the state's supply of fresh, table-cuts of beef are being purchased from out of state, mostly from large beef plants located in the Western Cornbelt and the Southern Great Plains areas. A high percentage of the imported beef arrives in "boxes" as closely trimmed, vacuum-packed, sub-primal cuts which offer significant operational advantages to retail food stores over the more traditional on-the-rail handling of beef carcasses, quarters and large primal cuts. The existing relatively small slaughter plants in Michigan have found it very difficult to meet the competition of the larger western packers who have successfully taken over most of the fresh beef sales to Michigan retail food chains.

This bulletin describes the major organizational changes that have occurred in cattle slaughtering, beef processing and distribution and the competitive position of Michigan packers in a rapidly changing industry. Some alternatives for actions are suggested as a means of strengthening the industry's position during the next decade.

Changing Organizational Structure and Location of Cattle Feeding and Slaughtering in the U.S.

During the 1950s and early 1960s, cattle feeding and slaughter underwent major structural and locational

changes. The process of change and the factors influencing change can be described as follows:

1. Decentralization of Livestock Slaughtering

The major national packers closed large, obsolete, multi-specie slaughter plants located at the long-established terminal markets, such as Chicago and Kansas City, and constructed modern and more specialized facilities at interior locations. Newer, independent packers also located plants in cattle feeding areas. The new plants realized cost advantages through lower procurement costs and reduced operating costs associated with more favorable labor contracts and more efficient methods of slaughtering.

2. Expansion of Cattle Feeding and Large-Scale Feedlot Operations

For several decades, cattle feeding was concentrated in Cornbelt feedlots. During the 1950s and 1960s, cattle feeding activity expanded rapidly in response to the growing consumer demand for grain-fed beef. Most of the growth occurred in large-scale commercial feedlots located in the Western Cornbelt, the Great Plains and in the southwestern area of the U.S. The rapid increase in irrigated grain production in the Great Plains, the availability of western-produced feeder cattle and the relative cost efficiency of the large feedlots influenced the locational shift in cattle feeding activity. The rapid growth of population on the West Coast also pulled an increased proportion of the total U.S. beef supply in that direction. Cattle

slaughter plants were closely coordinated with the new feedlots through direct buying arrangements, forward contracts and vertically integrated feeding and slaughtering operations (e.g., Montford of Colorado, Inc.).

3. Federal Beef Grading

The use of federal beef grades spread rapidly during the 1950s as retail food chains adopted U.S. Choice beef as a merchandising tool and as a means of reducing their buying costs. Chain-store merchandisers found that they could negotiate their beef purchases through telephone contacts with packers' representatives with the privilege of rejecting deliveries that failed to meet the agreed upon specifications. Prior to the use of federal beef grades, purchases were usually made on the basis of personal inspection of beef carcasses in packer or wholesaler refrigerated warehouses. The widespread use of federal grades facilitated trading by description and the development of a market information system that in effect created a highly competitive national market for steer and heifer beef carcasses. The *Yellow Sheet*, a private market news service, became an important instrument in pricing beef under forward contracting agreements. Among other things, the federal beef grading system eroded the market advantages of the traditional "Big Four" packers by making it easier for independent packers to compete in wholesale beef distribution. As a consequence, the number of beef slaughtering plants increased during the 1950s and 1960s, while the general trend in the food processing industry as a whole was towards fewer and larger processing facilities.

4. Meat Inspection Regulations

The U.S. Wholesome Meat Act of 1967 imposed more stringent facility and inspection requirements on slaughter plants. Each state was instructed to either upgrade their inspection specifications to the equivalent of federal standards, or to submit plants to federal inspection. As a result, a number of small slaughter plants and several older, but larger plants, closed their operations. Michigan was one of the states that has continued to operate a state-supported inspection program. Nevertheless, larger beef slaughterers have elected to comply with federal inspection regulations in order to sell their products in interstate trade. One of the effects of the stricter meat inspection regulation is to concentrate slaughtering into fewer and larger plants.

5. New Entrants into Beef Slaughtering and Processing

Iowa Beef Processors, Inc. (IBP) began operations in the mid-1960s and quickly became a

strong competitive element in the industry. By the mid-1970s, they had moved ahead of Swift and Armour to become the largest steer and heifer slaughtering firm in the U.S. Although IBP was initially successful in achieving a sizeable market penetration in the sale of carcass beef, they have been even more successful in the development of the "boxed-beef system" of processing and distribution. Other new entrants into beef slaughtering that have adopted some of the same methods of operation as IBP include the MBPXL Corporation, Montford of Colorado, Inc. and Spencer Foods Corporation (now owned by Land O'Lakes). These new firms have provided an innovative and highly competitive environment in the beef industry.

The Development and Adoption of Boxed-Beef

The processing of boxed beef can be described as the disassembly of beef carcasses into smaller, trimmed cuts (primals and subprimals) that are vacuum packaged and placed in boxes weighing approximately 90 to 100 pounds each.

IBP has pioneered the development of factory-like production lines and the sales and distribution of truckload lots of boxed beef to large food chain buyers. The processing operation is carried out as an extension of steer and heifer slaughtering operations, although additional carcasses are also purchased from other packers to meet growing customer demands.

The adoption of boxed beef began in the late 1960s and increased rapidly during the mid to late 1970s. By 1980, approximately 60 percent of the steer and heifer beef was moving through wholesale channels in boxes. It is expected that by 1985 the boxed beef market share will reach 75 to 85 percent.

Some of the advantages that are attributed to the boxed beef system over the on-the-rail system of handling are as follows:

1. Vacuum-packed beef has a longer shelf life that extends the safe holding period up to 28 days.
2. There is substantially less shrinkage and surface spoilage during transportation and storage.
3. Reduced costs of handling and transportation due to greater ease of handling boxed beef with mechanized equipment and the reduced weight that results when excess bone and fat are trimmed out and retained at the processing plant.
4. Greater recovery from by-products that are retained for volume processing at the packing plant.
5. Reduced labor costs as processing is shifted from retail stores to efficient disassembly lines in packing plants operated with labor receiving lower wages than retail meatcutters in large urban centers.

Although packing material costs are higher, the net gain of the boxed beef system over the on-the-rail system of beef processing and distribution has been estimated to be approximately 5 to 6 cents per pound (Williams).

Boxed beef offers additional advantages to retail food chains, since it not only reduces labor costs at the store level, but also reduces space requirements for the meat operations and provides additional merchandising flexibility.

Several of the larger beef packers are now competing with IBP for the boxed beef trade. Smaller packers, such as those in Michigan, find it difficult to achieve cost efficiencies comparable to those being realized by the large, specialized beef plants, although some are attempting to do custom boxing for some of their clients.

The Competitive Position of Michigan Beef Slaughtering

Michigan's relative position in cattle slaughtering declined from a 3 percent share of the total U.S. slaughter in 1960 to 1.5 percent in 1980. The number of cattle killed in Michigan decreased from an average of over 700,000 head per year during the mid-1960s to less than 500,000 head in 1979 and 1980.

There were 170 livestock slaughtering plants in Michigan in 1980. Most are small, local establishments and many offer custom slaughtering and processing services under state health regulations. Twelve federally-inspected beef plants are handling about 60 percent of the cattle slaughtered in the state. One of these plants is a large, recently modernized cow slaughtering and processing plant that has an annual killing capacity in excess of 200,000 head. There are three steer and heifer slaughtering plants with killing volumes between 25 and 50 thousand head annually. Other plants are smaller with volumes ranging downward from 15,000 head annually. Over the past decade, several beef plants have gone out of business, especially in the Detroit area. The few remaining plants are holding on to a specialized Kosher trade along with some additional local retail and HRI trade. None of the specialized steer and heifer slaughter plants are in a position to be significant suppliers for Michigan retail food chains and especially for U.S. Choice boxed beef.

There are significant economies of size in most food processing activities and cattle slaughtering is no exception. Some of the newest specialized beef plants that have been built in the Great Plains area have the capacity to kill and process from 500,000 to one million head of cattle a year. Studies made at the University of California in 1976 indicate that average **in-plant killing costs** per head were 30 percent higher for plants with an annual kill of 88,000 head as compared with plants designed to kill 562,000 head. However, average total costs of **all plant operations** were only ten percent higher in the smaller plants. A 1970 study made by Michigan State University staff indicated that a beef

plant designed to kill 38,000 head/year would have average per head costs 28 percent higher than a plant designed to kill 267,000 head annually. In both sets of studies (California and Michigan) it was assumed that plants would operate at full capacity.

Labor accounts for 50 to 60 percent of total cattle slaughter plant operational costs. Thus, wage rates and work rules become critical factors in assessing the competitive relationship between Michigan cattle slaughterers and those in the areas that now supply the state with large quantities of boxed beef. For the past several years, Michigan's general wage structure has been significantly higher than in areas such as Kansas, Nebraska and Colorado. But, these relationships are likely to adjust towards greater equality over the next decade.

Michigan beef slaughterers operate in a product market where the upper limit in Michigan wholesale prices for U.S. choice beef is a nationally adjusted price being registered in the surplus-producing area centered in the Western Cornbelt, southern Great Plains area, plus transportation costs for delivering boxed beef into Michigan. In early 1981, the truck transportation costs from Emporia, Kansas, to Grand Rapids, Michigan, was \$3.25 per cwt. of dressed beef. The upper limit that a Michigan packer could bid on locally-produced U.S. choice grade steers and heifers would be the delivered cost of "western" beef minus his buying, slaughtering and selling costs. Given the existing small-scale, relatively high-cost slaughtering operations, this often results either in price bids for Michigan fed cattle that are less than can be realized by shipping the cattle to out-of-state markets, or in very low or negative margins to the Michigan slaughterer.

Michigan beef slaughterers are also confronted with other problems in the procurement of live cattle. Michigan's cattle feedlot operations follow a seasonal pattern that results in very short supplies of local cattle during the fall and winter months. In order to maintain an efficient level of plant operations and to retain their dressed beef customers, local slaughterers are forced to buy and ship in live cattle from other states. This is a relatively high cost alternative which exacerbates an already precarious competitive position for Michigan packers. Even during the season of most abundant local supplies of fed cattle, Michigan packers are operating with a relatively costly system of buying small lots of cattle through Michigan auction markets. Given the existing system of cattle feeding, this system has some advantages over more direct methods of selling but the total costs of moving cattle from feedlots to packing plants are greater than the costs of closely coordinated, more direct methods of cattle procurement that are common in the major cattle feeding states.

Alternative Paths for the Development of a Stronger Beef Slaughtering & Processing Capability

Michigan cattle industry leaders readily agree that

the future of the industry is closely tied to the development of a more economically efficient slaughtering and processing capability for steers and heifers. Given the existence of a relatively large cow killing and processing plant, there is less concern over this component of the industry.

The competitive situation that has been described above and a recent unsuccessful effort to establish a new, larger-scale beef plant in southern Michigan have created a cautious attitude among industry leaders and potential investors in steer and heifer slaughter facilities. Nevertheless, there is a strong interest in carrying out a systematic assessment of the economic potential for new slaughtering facilities and a related program to expand beef production. Because of the limited volume of fed cattle being produced in Michigan, the assessment should include a four-state area, Ohio, Indiana, Illinois and Michigan. Consideration should also be given to the recent expansion of fed cattle sales to Canadian markets.

The principal questions that should be addressed by a four-state study are:

1. What would be the most advantageous size and location of new steer and heifer slaughter plant(s)?
2. Is the supply of fed cattle large enough and seasonally distributed in a manner that will support one or more slaughter plants that can successfully compete with western boxed beef?
3. If the supply is inadequate to support a larger-scale slaughter plant, what are the possibilities for expanding cattle feeding activity to meet the minimum volume requirement?

The analysis should take into consideration the following factors which will affect the future of the beef industry in Michigan and nearby states:

1. The four-state area, and especially Michigan, will continue to be highly dependent on other areas for a major portion of their fresh beef supply.
2. Michigan has been exporting nearly 40 percent of its corn production and has the potential for expanding forage production.
3. The demand for beef seems to be shifting toward leaner, meat-type cattle that can be produced advantageously with rations that are adapted to Michigan conditions. This shift in demand would be accelerated if foreign demand for feed grains continues at a high level.
4. The increase in transportation costs is already being felt and over the next decade will continue to

shift the economic advantage towards locally-produced and processed food products. This will reduce the existing disadvantage of the Michigan beef industry in competing with cattle feeding operations in the Western Cornbelt and southern Great Plains.

Finally, institutional arrangements that will reduce the market risks for both new investors in slaughtering facilities and cattle feeders need to be examined. A system of forward contracting is one alternative that would assure a minimum flow of cattle through a slaughter facility and would assure cattle feeders of a dependable direct method of selling. Another alternative might be a "joint venture," similar to what has been organized in the Pacific Northwest. There a group of six cattle feedlot operators entered into a 5-year joint venture with IBP under which they will supply 6,700 head of cattle per week to two IBP slaughter plants that have a total kill capacity of 10,000 head per week. The joint profits of feeding and slaughtering activities are being shared by IBP and the feedlot operators.

A careful assessment of the economic potential for additional slaughtering capacity can assist cattle industry leaders, state officials and potential investors in taking sound decisions that vitally affect the future of the beef industry in Michigan and nearby states.

REFERENCES

- Lana Hall and Maurine McBride, *Boxed Beef in the Meat Marketing System—A Summary Appraisal*, A.E. Res. 80-14, Department of Agricultural Economics, Cornell University, Ithaca, NY, 1980.
- Willard Williams, *The Changing Structure of the Beef Packing Industry*, TARA, Inc., Lubbock, Texas, 1980.
- John Huie, *Number, Size and Location of Beef Slaughter Plants in Michigan*. Report No. 161, Department of Agricultural Economics, Michigan State University, 1970.
- James Cothorn, et. al., *Economies of Scale in Beef Slaughtering—Northern California*, 1976, Beef Cattle Economics Series, Leaflet 21040, University of California, Cooperative Extension Service, 1978.
- Forrest P. Dixon, *Implications of Joint Venture Contracting on the Structure of the Pacific Northwest Beef Industry*, Ph.D. thesis, University of Illinois, 1979.

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