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# INTERREGIONAL AND INTERNATIONAL COMPETITION IN THE CATTLE/BEEF INDUSTRY

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and Gregory M. Clary**

Interregional and international competitive relationships in the cattle and beef industry undergo continual change in response to rapidly changing economic, social and political conditions. This paper examines some of the factors generating changes in regional competitive alignments including: 1) recent structural changes in the cattle industry with major focus on the cattle feeding/fed beef sectors, 2) current competitive alignment in the cattle feeding/fed beef economy, 3) the impact of specified regional factors on regional competitive position, and 4) the role of the United States in the world's beef business. The major focus is on the cattle feeding/fed beef industries and its influence on the demand for feeder cattle.

## FACTORS IMPACTING REGIONAL ALIGNMENTS

Changes in the livestock economy during the 1975-85 decade were generated by increasing energy and labor costs, increases in interest rates, highly fluctuating livestock and feed grain prices, and changes in the demand for beef and competing products. These modifications stimulate adjustments in location and size of operations, in marketing strategies, and in patterns of distribution as firms seek to compete. Major differences exist within and between most regions of the United States with respect to the location and concentration of potential beef consumers, demand for beef, cattle feedlot operations, and commercial cattle slaughter operations. In addition, major differences are also apparent within and among most regions in annual calf crops, annual feed grain production, feed requirements for livestock other than cattle, and size and type of cattle operations.

Major changes are also evident in the structure and size of feedlot operations. Farmer feeders or lots with less than 1,000 head capacity represented about 98% of the total feedlots in 1980, but accounted for less than 28% of the fed cattle marketings compared to 45% in 1970. Commercial feedlots, those with 1,000 or more head capacity, accounted for less than 2% of the total feedlots, but they accounted for more than 70% of the fed cattle marketings in 1980 compared to 55% in 1970.

The rapid expansion of large scale commercial cattle feeding in the Southern and Central Plains and the relative decline of

feeding in the Corn Belt between 1965 and 1985 encouraged increased competition for resources utilized by cattle feeding firms and for fed cattle and fed-beef markets. While many of the necessary ingredients for cattle feeding are located in the Corn Belt, and the Southern and Central Plains, about half of the U. S. population is concentrated in the Northeast and South. Approximately half of the U. S. beef cows, which produce feeder cattle, are on farms and ranches in the Southern Plains and the Southern and Southeastern states.

The cattle slaughter industry, especially fed-cattle slaughtering, is characterized by large and highly specialized cattle slaughter plants with national systems of distribution. There are, however, a variety of diversified or smaller slaughterers outside the main cattle feeding areas. Commercial cattle slaughter has increased primarily in those areas realizing large increases in cattle feeding as the Central and Southern Plains. Cattle slaughter firms have found it more economical to locate slaughter plants near concentrated sources of fed cattle, a practice which results in increased competition for fed slaughter cattle in concentrated feeding areas.

## FUTURE COMPETITIVE ALIGNMENTS

If cattle feeding and slaughtering firms are to survive in such a competitive industry, they must continually examine decisions relative to optimum size and location, optimum sources of supply, and optimum distributional systems in a rapidly changing economic environment. The feeding industry, for example, is concerned with regional differences in feeding costs, feed supplies, feeder cattle supplies, economies of size in feedlot operations, feeding practices, etc. The slaughter industry is concerned with regional price differences in fed slaughter cattle supplies, slaughter and fabrication costs, economies of size in slaughter operations, demand for fed and non-fed beef, packaging and distribution costs, etc.

A recent research study designed to simulate the cattle feeding and fed beef industries examined interregional economic relationships and potential adjustments among 26 regions in the contiguous 48 states. The study revealed that the Southern and Central Plains and the Western Corn Belt enjoyed considerable competitive advantages over other

regions in the cattle feeding/fed beef economy (1).

Six major cattle feeding areas, including West Texas-West Oklahoma, Nebraska, Kansas, Colorado, Iowa and Michigan-Indiana-Ohio have the potential to account for 80% of the total cattle fed in the United States (figure 1). All six of these major cattle feeding regions possess locational advantages with respect to feeder cattle and/or feed grain availabilities. Major cattle feeding regions using their total feedlot capacity include West Texas-West Oklahoma, Kansas, Washington-Oregon and New Mexico. These regions, along with Nebraska which used almost all of its feedlot capacity, were able to realize cost advantage due to economies of size in feedlot operations or favorable locations relative to a combination of feeder cattle supplies, feed grain supplies, and fed slaughterer markets. The study showed that Southeastern states had a potential to feed up to their 1980 available feedlot capacities with surplus feeder cattle being shipped to feedlots to the west and north of the area. The Southeast has an advantage from a surplus feeder cattle supply, but a disadvantage from a shortage of grain and a humid climate in feeding cattle.

Approximately half of the U.S. feedlot capacity was used for cattle feeding on a least cost basis in the simulation model. Excess feedlot capacity existed primarily in Iowa, Illinois, California, Missouri, the Northern Plains and the Lakes states. Feedlots in these regions were at a competitive disadvantage due to diseconomies of size in feedlot operations, required inshipments of feeder cattle or feed grain or both, or were located relatively long distances from fed beef markets.

Approximately 90% of the U.S. fed beef production is involved in interregional shipments. Since fed beef is produced predominately in the Southern Plains-Central Plains-Western Corn Belt corridor, beef shipments or flow patterns are predominately east or west (figure 2). Fed beef was generally distributed to the west from slaughter plants in the Southern Plains and Colorado in all models analyzed. West Texas-West Oklahoma also enjoyed locational advantages over other slaughter regions for deficit fed-beef markets in the Southeast. Fed beef was distributed to the east from slaughter plants in the Central Plains and the Corn Belt.

Iowa and Nebraska, for example, enjoyed a locational advantage in supplying fed beef to the large deficit Northeast market. Kansas had a competitive advantage in shipping fed beef to Illinois and Missouri. Kansas had to compete with the Southern Plains for deficit fed-beef markets in Kentucky-Tennessee and the Atlantic Coast.

#### REGIONAL FACTORS AND COMPETITIVE POSITION

Recent changes in energy costs have economic implications for available supplies

of irrigation water, feed grains, feeder cattle, and least cost distribution patterns in cattle feeding and fed-beef. Regional changes in production patterns or in factors affecting production patterns have economic implications for regional competitive position and regional ability to compete.

#### Effect of a 30 Percent Decrease in Feeder Cattle Supplies From Southern States

Changes may occur in major feeder cattle supply areas, such as the southern United States, as a result of beef cattle production cycles, increased energy costs, regional production alternatives, or reduced demand for beef. Research results showed that regions most dependent on feeder cattle from southern suppliers, such as the Corn Belt, would be impacted most adversely if feeder cattle supplies were to decrease in the Southern states. Feeding levels in West Texas-West Oklahoma, Colorado, Kansas and Nebraska remained at or near 100% utilization rates of 1980 capacity levels as feeder cattle supplies decreased in the Southern states. Feeder cattle shipment patterns revealed that cattle would continue to be fed primarily in the Central and Southern Plains, as these regions had the greatest competitive advantages in terms of cattle feeding and slaughter.

#### Effects of a 50 Percent Decrease in West Texas-West Oklahoma Feed Grain Supplies

Some projections regarding future feed grain supplies in West Texas-West Oklahoma show dramatic decreases between 1985 and 2000. Declining water supplies and increased energy costs generally are cited as reasons for the decreases.

Results showed that a 50% reduction in West Texas-West Oklahoma feed grain supplies would have a minimal impact on the U.S. cattle feeding industry. West Texas-West Oklahoma cattle feeding and slaughter levels would undergo little or no change if feed grain production was decreased 50% in that area. If feed grain supplies were to decrease in the Southern Plains - given 1980 regional feeding - slaughter demand conditions total costs in the cattle feeding-fed-beef economy would be minimized if feed grain were shipped from surplus production areas into the Southern Plains. Other regions are affected more severely by such changes in feed grain shipment patterns, as cattle feeding declined in California and Michigan-Indiana-Ohio. Feeding declined in California under such a scenario as California is deficit in feed grains and has a locational disadvantage compared to West Texas-West Oklahoma with respect to surplus feed grain and feeder cattle supplies.

#### Effects of a 50 Percent Increase in Variable Slaughter Costs

Regions with relatively higher regional slaughter costs - such as the Western Corn

Belt, the Lakes States, and the West Coast - would be adversely impacted if such regional cost differences were to persist. The results suggest that if slaughter and other associated costs remain at relatively higher levels in one region, compared with competing regions, the higher cost region will find it increasingly difficult to compete in interstate commerce. The longer run implications are that industries will relocate to lower cost regions, other things equal or in the absence of offsetting considerations.

#### IMPLICATIONS FOR FUTURE INTERREGIONAL COMPETITION

The cattle feeding-fed-beef economy faces a rapidly changing economic environment over the next decade. Firms hoping to succeed in this highly competitive industry must continually analyze economic, technological and social changes relative to optimum location, size, and management of cattle feeding and slaughter firms.

Research results suggest that regions with the greatest competitive advantage in the cattle feeding/fed-beef economy including West Texas-West Oklahoma, Kansas, Nebraska, Colorado and Iowa enjoy two or more of the following competitive attributes:

- 1) Economies of size in feedlot operations,
- 2) Location of feeding facilities in or adjacent to major surplus feed grain producing areas,
- 3) Advantages in slaughter costs and location of slaughter facilities in the primary fed cattle producing areas,
- 4) Advantages in acquiring feeder cattle, and
- 5) Locational advantages with respect to fed beef markets.

Results further indicate changes in regional feed grain supplies would have a minimal impact on regions with strong competitive advantages in feeding and slaughter, such as West Texas-West Oklahoma, Kansas and Nebraska. Regions with relatively higher regional slaughter costs - such as the Western Corn Belt, the Lake States and the West Coast - will likely be adversely affected if such regional cost differences persist.

Southeastern states will continue to be an important source of supply for feeder cattle. Research revealed that Southeastern states have the potential to feed cattle up to their 1980 regional capacities with possibly some expansion due to: 1) abundant supplies of feeder cattle, 2) feeder cattle prices being from \$3 to \$4 lower per hundredweight in the Southeast compared to Southern and Central Plains feeding area, and 3) the Southeast

being deficit in fed-beef production relative to demand. The Southeast historically has faced some disadvantages in cattle feeding. These include: 1) diseconomies of size in feedlot operations, 2) large deficits in feed grain production, 3) a limited slaughter base and 4) a more humid climate than the Central and Southern Plains.

Fed beef consumers in the deficit Northeast will continue to look primarily to the Central Plains and Western Corn Belt for fed beef supplies. The Southern and Central Plains will continue to be major suppliers of fed beef to the Southern states. The Southern Plains, along with Colorado, will be major suppliers of fed-beef to the deficit West Coast.

#### COMPETITION IN INTERNATIONAL BEEF TRADE

The main exporting countries for beef have long been Argentina, Uruguay, a few other South American countries, and Australia and New Zealand. These countries have a comparative advantage in producing forage finished beef. Their competitive advantage has been undercut recently by the European Community (EC) due to high internal price supports, accumulation of surpluses and an export subsidy for beef.

The largest importing country until the 1960s was the United Kingdom. Now that the U.K. is part of the EC its markets are no longer open to its former suppliers who were mainly Australia, Argentina and Uruguay. During the 1960s the U.S. became the largest beef importing country and has continued to hold that position, because of trade barriers of the EC, Japan and Russia.

The U.S. has a comparative advantage in producing grain fed beef and export a relative small amount to many areas of the world, with Japan being our largest market. The U.S. competitive advantage is sharply diminished because there are no large countries that allow free trade in beef. In the summer of 1985, slaughter cattle prices fell about \$15/cwt or over 20% due to bunching of marketing and overfed cattle. Consumers in most other countries could not take advantage of these lower U.S. prices due to their own country's quotas or embargoes. As a result, the U.S. market was very slow in recovering.

Barriers to international trade in beef have increased significantly since 1974 and have been especially damaging to the meat trade in the 1980s. The EC policy of subsidizing beef and poultry exports has become such a distortion of the EC's own economy that some policy changes will likely be forthcoming. These distortions have resulted in relatively higher prices in the EC which in turn have decreased the demand for beef and poultry items in the EC. However, producers in the EC have responded to these higher prices by increasing production resulting in the EC being the largest exporter of beef and

poultry as a direct result of the EC subsidy in effect for beef and poultry. The net result of the EC subsidy program for beef and poultry is that although the U.S. has a comparative advantage in producing beef and poultry, the EC has competitive advantage in international trade directly due to the EC subsidy program.

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#### NOTES AND REFERENCES

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Figure 1

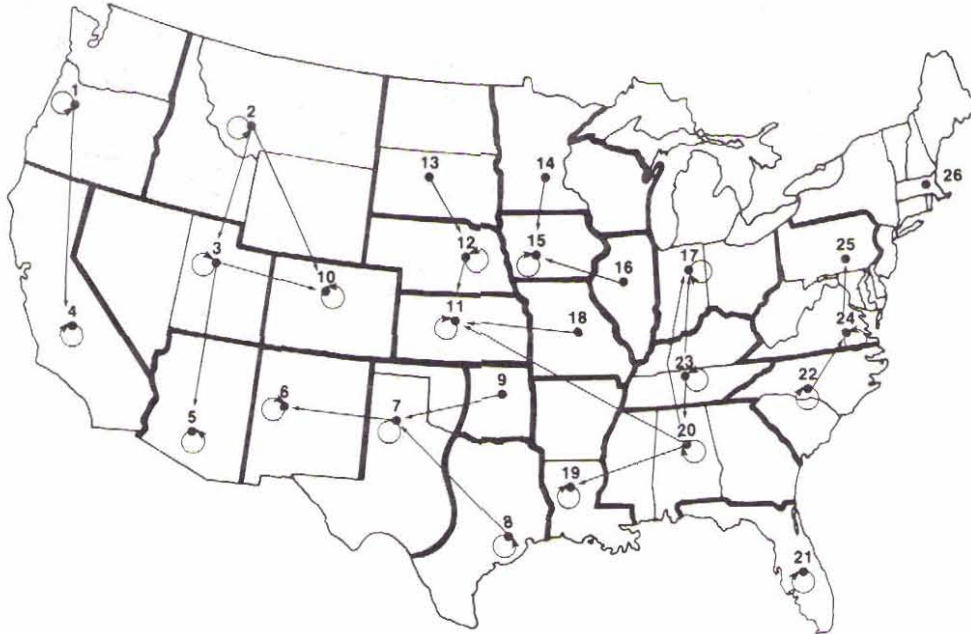


Figure 1. Optimum interregional flows of feeder cattle

Figure 2

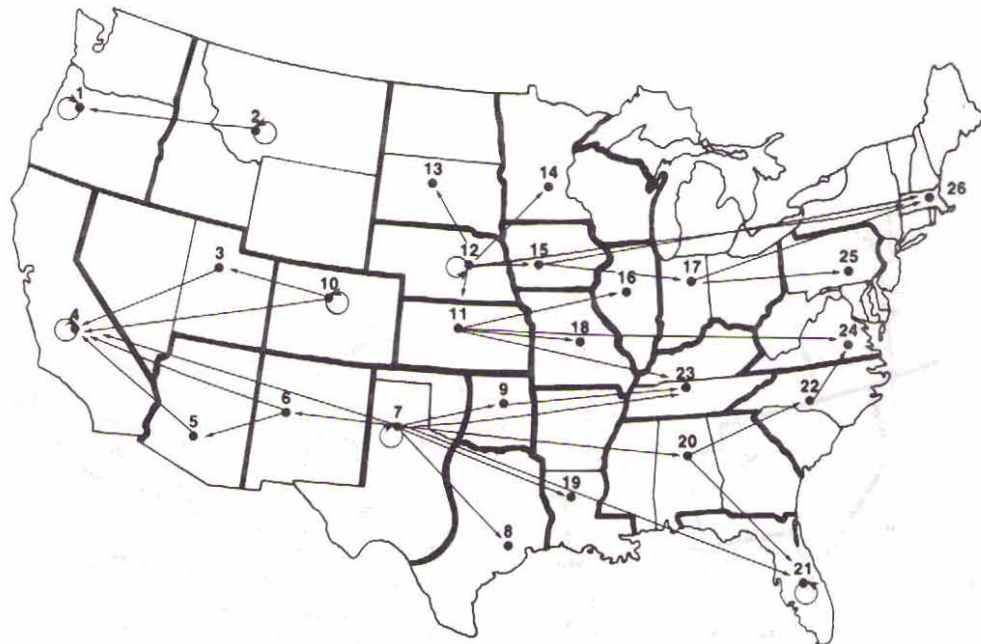


Figure 2. Optimum interregional flows of fed beef