

WHERE WILL FEEDING AND BEEF PACKING CENTERS BE IN THE FUTURE?

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Introduction

When I looked at the program for this symposium I found that I had gotten rather more than I bargained for. I had thought that my assignment was to come to southwestern cattle country, make a few comments on cattle feeding from an Illinois corn-soybean bias, learn something about the industry, and enjoy western hospitality. But now I am the guru to address the whole topic and have landed in the middle of a shootout between two great cattle feeding regions. My basic inclination is to protest that I know little about the industry--which is true--make a few general comments and run for the nearest cover. However, there are some underlying forces that will ultimately determine the locational distribution of the industry and I will try to identify some of them. The future is unknown and uncertain. How the several forces will work themselves out will not be known for a long time. Members of the cattle feeding industry will continue to live in their normal state of risk and uncertainty. Thus my first conclusion as a guru is one of continuing normalcy.

I think it reasonable that I let you know where I'm coming from at the beginning of my remarks. My first serious contact with the cattle feeding industry was as a vocational agriculture teacher in Malta township, DeKalb County, Illinois in 1941. At the time, this county was one of the most intensive cattle feeding areas in the world. I welcomed the opportunity to learn all about the cattle feeding business: feed rations, rates of gain, quality, veterinary problems, shelter, manure management, etc. At the end of several months there I had learned that these were not what cattle feeding was really about; that most anyone could feed cattle. Cattle feeding was really about buying, selling, and speculating in cattle prices. The purpose of the mundane physical activities was to lend respectability to cattle speculation. That lesson has stood me in a good stead since, not only in looking at the cattle industry but also in understanding soybean producers as well.

This leads me to a second conclusion. Cattle raisers and cattle feeders are chronic optimists. As in the past, they will produce themselves into unprofitability and when, on rare occasions, they make it big, as in 1972-73 and 1979, they will give it all back. It is rightfully said that a cattle feeder who dies rich has died before his time. We should not expect complete economic rationality of the industry during the period of adjustment that lies ahead.

Where the industry is and how it got there

When I looked at the location of the cattle feeding industry and its history I found a fairly simple three-region structure. The first region is the Upper Midwest, comprised of Nebraska, Iowa, South Dakota, Minnesota, Illinois, Indiana, Missouri. The most concentrated cattle feeding in this area sits astride the Upper Missouri river and extends to the east. The second region is the Southwest Plains: Texas, Oklahoma, Colorado, and Kansas. It is not clear where Nebraska belongs. It could be put in either region, but I put it in the Upper Midwest because of the concentration along the Missouri river. The third region is called "Other." There is some cattle feeding almost everywhere in the country but California and Arizona dominate. If there is a regional shootout it will be between the Upper Midwest and the Southwest Plains regions.

Figure 1 shows the total number of cattle on feed in the principal feeding states on January 1 from 1930 through 1982. The 23 principal states account for about 95 percent of the total cattle on feed for the U.S. There was a persistent and gradual increase from 1930 through 1958. There were periods of decrease in the 1930's and 1940's when grain was in short supply but the persistent upward trend is clear.

The period 1959 through 1974 was one of rapid increase in cattle feeding. Grain was abundant and consumer incomes were increasing at a relatively rapid rate. The industry enjoyed a combination of cheap feed and rapidly expanding demand. Cattle raising increased rapidly during the later stages of the period to levels that appear, in hindsight, to have been greater than the market could absorb.

Beginning in mid-1973 the industry was hit by overexpansion and an acute grain shortage. The industry made a speculative mistake by rapidly increasing cow numbers in the early 1970's. The grain shortage was caused by rapidly expanding demand for grain outside of the U.S., grain production shortfalls outside of the U.S., and very adverse growing season in the U.S. in 1974. A very rapid and large reduction in total cattle numbers and a sharp cut in the number of cattle on feed followed. The liquidation ended in 1978 and cattle on feed increased during the period 1976-1979. Total cattle numbers stabilized during 1979, increased at a rapid rate during 1980, and rose at a moderate rate during 1981.

For the past two years the number of cattle on feed has been down from the 1979 level and the nonfed slaughter has been relatively high. The number of cattle on feed January 1, 1982 was low in relation to the supply of cattle available for feeding. Now is a time of a superabundance of grain. The existing set of price relationships is not conducive to large feedlot placements. Whether this is because the market has not yet caught up with the underlying forces or because of underlying forces that will lead to a long run decrease in the relative importance of concentrate feeding in beef production is one of the current major uncertainties. It appears that industry growth has stopped and a long run decrease may have begun.

Figure 2 and Table 1 show the number of cattle on feed by states on January 1 in the Upper Midwest, the Southwest Plains, other states of the 23 principal states for the period 1960-1982. First let us look at "Other". The percentage of cattle fed in this group was nearly stable through 1971. There was a bulge, along with the rest of the industry, in 1972-74. The recovery in 1976 was followed by a persistent decrease. We should keep in mind that a substantial share of "Other" is California and Arizona. They decreased by 15.5 percent from 1981 to 1982 (45.4 percent to 29.9 percent) compared to an industry decrease of 9 percent. They may be dropping out of the shootout.

The Upper Midwest participated in the rapid growth of the industry through 1970. The percentage in the region was nearly stable from 1960 to 1970. The region's share decreased sharply from 1969 to 1973 and has held nearly stable since 1973. The various states within the region have performed differently, however. Illinois numbers were nearly stable during the 1960's but decreased 35 percent from 1969 to 1981. Indiana, Minnesota, and Missouri shared in the growth during the 1960's but their share has since decreased substantially. The number of cattle on feed in Iowa doubled from 1960 to 1970 but since has returned to its 1960 level. It currently stands at only 72 percent of its level of 20 years ago. Cattle on feed in Nebraska increased rapidly from 1960-1979. The numbers has since decreased by only 9 percent (compared to a total industry decrease of 20 percent).

Two conclusions can be made from the above. First, the number of cattle on feed in the Upper Midwest regions has held at a stable percentage of the industry total in recent years. Secondly, the location of cattle feeding has moved within the region to the north and west. There is an increasing concentration of cattle feeding in the Upper Missouri River area.

The number of cattle on feed in the Southwest Plains region increased rapidly during the period 1960-1973, going from 719 thousand to 4.8 million. That was the period of rapid growth of large scale feedyards. Note that the region's share of the industry went from 10 to 16 percent in the early 1960's to 35 percent in 1973. The region's relative importance has been nearly stable since 1973. It participated in the recent industry decline to about the same degree as the rest of the country.

Where does this leave us? After a period of rapid growth the industry stabilized but recently has declined in spite of an increasing number of animals available for feeding. There is an increasing concentration of cattle feeding in the principal feeding areas. The industry appears to have reached a Mexican standoff between the Upper Missouri River area and the High Plains.

Underlying Assumptions

Cattle feeding must operate within a context of the market for beef, supply of feeder cattle, and the supply of feed concentrates. The future of each of these is uncertain. However, I have reached some conclusions which I will state without the supporting evidence.

First, the demand for meat as a whole will continue to expand but at a rate slower than from 1964 to 1979. Meat consumption and consumer expenditure for meat expanded as real consumer incomes rose. Increasing quantities of meat were supplied to consumers at nearly constant real prices. In the future I expect real consumer income to increase but at a slower rate. Since there is no evidence that consumers' appetite for meat has been satiated, I think they will continue to take more meat at constant prices as their real income rises.

Real prices of meat may be forced up by a shortage of feed concentrates. The rapid increase in grain exports during the 1970's was due to unused resources being brought back into production and by technological improvements. There are no more unused resources so production increases will be slower in the future. If world demand for grain continues to increase rapidly, prices will be forced up as domestic and foreign markets compete for feed. However, I think that the period of rapid expansion in grain exports is past and that increases during the next decade will be smaller than those in the past decade. On balance I expect a reduction in the rate of growth in livestock product production from that of the past 20 years but there will be growth.

Secondly, beef will fare well in competition with other meats. I have found no substantial evidence of a shift in consumer preferences among meats. Broiler consumption has increased dramatically but only at a lower price relative to beef. Pork consumption rose rapidly in 1980-1981, also because of a lower relative price. Taking relative supplies into account, relative prices among meats have not changed.

Should a situation of tight and expensive feed supplies develop, beef may do better than pork and poultry. Between two-thirds and three-fourths of beef production comes from cattle raising, which is basically the salvaging of otherwise unused roughage. Thus, much of the resources used in beef production have no alternative outlet. Resources used in pork and poultry production do have an export alternative.

It is uncertain how much of the beef supply will be produced from concentrates in the future. The proportion of concentrates used for feed increased rapidly for a long period of time as cattle feeding increased. The past four years suggest that this has stabilized and actually may be decreasing. I think that the proportion produced from concentrates will stay relatively high. If concentrate prices (in constant dollars) rise the cost must be taken out of feeder cattle prices--cattle raisers have no alternative. The proposition that the market wants leaner beef has been around for a very long period of time without much, if any, impact.

Third, cattle raising will continue to increase but at a slow rate. However, rising fertilizer costs will slow the rate of increase. As in the recent past, expansion will be more rapid in more humid areas, Southeast in particular. There will not be a shortage of feeder cattle supplies in the future.

Comparative Advantage

This brings us back to the shootout between the Upper Midwest and the Southwest Plains. The question of location will be settled on the grounds of comparative advantage in a situation of slow industry growth.

The substantial growth in the Midwest as a whole during the 1960's was associated with the rapid expansion in the demand for beef and the abundance of low-cost concentrates. Relative scarcity and the high cost of grain due to increased exports have contributed to large numbers of small feeders going out of business or decreasing the size of their operations because they had more attractive alternatives. The grain production areas closest to export transportation have been the ones of greatest decrease in cattle feeding. In addition, acreage has been shifted from corn to soybeans. The extent to which cattle feeders have been forced out by losses compared to their taking more attractive alternatives is not known.

The rapid growth in cattle feeding in the Southwest Plains was the result of several forces. Government commodity programs developed in a way that encouraged increased feed grain production. Technological developments in grain production, especially irrigation and hybrid grain sorghum increased feed supplies. There were economies and incentives associated with large commercial feedlots. These were partly economies of scale, partly developments in financing and risk spreading through custom feeding, and partly the development of new institutional technology including management, financing, marketing, and integration.

The Upper Midwest also has some advantages. The first is lower feed cost. This advantage has increased with the rising cost of energy and transportation. In general, livestock production is moving nearer to feed supplies. For example, currently there is a major decrease in hog production in Kentucky, Georgia, and South Carolina and an increase in Iowa. If cattle raising does expand it will be in the Southeast where transportation costs from the Midwest will be less than those to the West.

There is greater diversity of feedstuffs in the Midwest. We may be entering a period of increased use of offal from grain processing. There is increasing pressure for soil conservation and soil loss regulation. This, in addition to rising real energy prices, makes manure attractive and may result in increased cattle raising and feeding.

The Midwest has been slow in moving toward large-scale cattle feeding operations. The extent to which this is related to the ownership of land and the organization of agriculture into relatively small units and to which it is related to climate and environmental considerations is uncertain. The Midwest does not have the institutional arrangements that have been conducive to the development of large scale feedyards in the Plains. At the same time, the size of operations is increasing and cooperative and custom feeding arrangements are developing. This leads to the question of optimum size. The most rapid growth in feedyards in recent years has been in the 1000 to 4000 head units. It may be that the very large units in the High Plains have developed due to business and management considerations rather than economies of scale. If the

optimum economies of scale are achieved by relatively small units (say 5000 head) they could be developed in the Upper Midwest.

The Southwest Plains also has advantages. First among these is that its cattle feeding industry is already fully developed. There is technology in marketing and trading already in place. This accounts for the \$1 and \$2 price advantage enjoyed by feedlots in the Plains. The industry is large enough and sufficiently concentrated to have the necessary support services, including veterinarians, nutritionists, and consultants. There is a large and efficient meat packing industry in place. This structure tends to hold cattle feeding in place until it is depreciated and until it loses its labor cost advantage. There is also a climate advantage associated with moderate temperatures, low humidity, and low rainfall. This is an advantage for feedyard construction and operation.

It appears that cattle feeding is decreasing in Arizona and California, probably being crowded out by other opportunities. The market for beef to the West of the Southwest Plains will remain large and grow and will be supplied from the Plains feeding area.

Conclusions

If all of the above is correct, the question becomes one of feed cost versus climate and an efficient industry that is already in place. I think that cattle will be fed where the feed is. Feed supplies are in place in the Upper Midwest and cattle feeding will remain large and probably grow in that area. It is and will remain in the area of greatest supply and lowest cost of feed.

The supply of feed in the Southwest Plains is questionable. Water is and will remain a problem. Rising energy costs and decreasing water tables may result in a move back toward dry land grain production, perhaps to less corn and more grain sorghum. There is also the possibility that world demand for grain will increase to the extent that land will move out of grain sorghum into wheat.

A second conclusion is that the beef packing industry will be located where cattle are fed. The current advantage of the Southwest Plains is transitory. There is no monopoly on technology and labor costs tend to even out over time. Unless there are dramatic production and supply problems of world grain, further change in the cattle feeding industry will be gradual. The period of rapid growth is behind us. The decreases of the past three years do not seem to be justified by the current abundance of grain. The relative shares of the Upper Midwest and the Southwest Plains appear to have stabilized and the advantages and disadvantages are in balance. I expect the Mexican standoff to persist for several years to come.

The industry does not appear to have a high profit potential during the time immediately ahead. This gets me back to where I started forty years ago. Cattle feeding is a high risk speculative venture and the survivors will be the best traders and best business risk managers.

Table 1. (continued) Cattle on Feed, January 1, 1960-1982 (000 head)

state or region	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
<u>Upper Midwest</u>										
Nebraska	1581	1525	1160	1390	1580	1700	1800	1680	1640	1640
Illinois	585	530	500	630	620	650	510	460	510	480
Indiana	276	263	250	285	290	315	280	250	280	240
Iowa	1922	1715	1200	1530	1520	1690	1620	1390	1370	1130
Minnesota	494	464	380	430	340	400	400	390	370	350
Missouri	310	250	200	260	255	220	180	120	105	90
S. Dakota	378	381	345	365	370	365	340	350	355	335
Total	<u>5546</u>	<u>5128</u>	<u>4035</u>	<u>4890</u>	<u>4975</u>	<u>5340</u>	<u>5130</u>	<u>4640</u>	<u>4630</u>	<u>4265</u>
<u>S.W. Plains</u>										
Colorado	1050	930	785	925	915	1020	1080	960	845	750
Kansas	1250	1160	920	1340	1315	1400	1440	1270	1100	1110
Oklahoma	272	392	232	286	305	360	345	330	325	270
Texas	2245	2205	1327	1882	1710	1850	2000	1970	1830	1660
Total	<u>4817</u>	<u>4587</u>	<u>3264</u>	<u>4443</u>	<u>4245</u>	<u>4630</u>	<u>4865</u>	<u>4530</u>	<u>4100</u>	<u>3790</u>
Subtotal	10363	9715	7299	9333	9220	9970	9995	9170	8730	8055
23 States	13861	13067	9619	12296	11948	12799	12681	11713	11105	10999
Other	3498	3352	2320	2963	2728	2829	2686	2543	2375	2044
(as percent of 23 States)										
Upper Midwest	40.0	39.2	41.9	39.8	41.6	41.7	40.5	39.6	41.7	42.3
S.W. Plains	34.8	35.1	33.9	36.1	35.5	36.2	38.4	38.7	36.9	37.5
Other	25.2	25.7	24.2	24.1	22.8	22.1	21.2	21.7	21.4	20.2

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Figure 1. Cattle on Feed, January 1, 1930-1982.

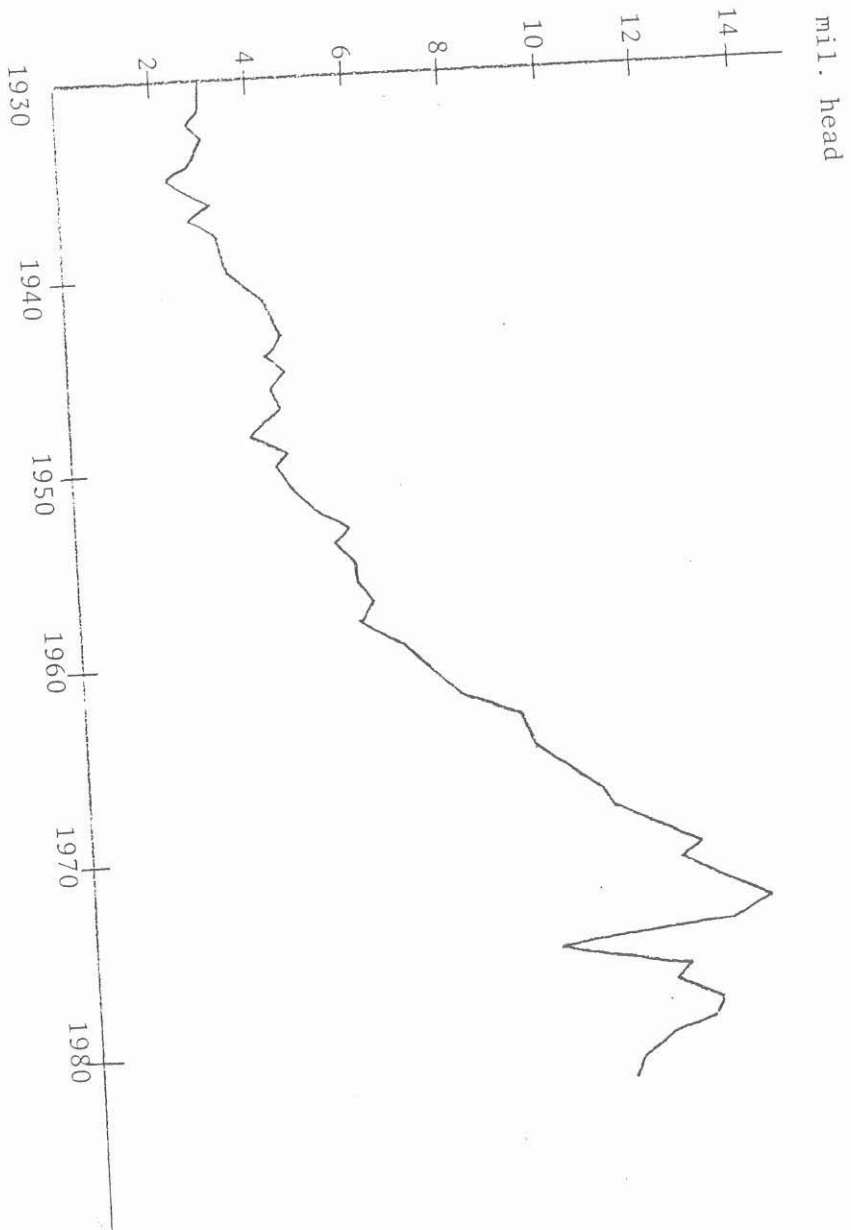


Figure 2. Cattle on Feed, January 1, 1960-1982, Upper Midwest, S.W. Plains, Other States

