Federal Reserve Bank of Dallas

FARM and RANCH BULLETIN

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MANY FACTORS AFFECT CHANGING CATTLE FEEDING ECONOMY

Big regional shifts in beef feeding have emerged with the growth of large commercial cattle feedlot operations. The establishment of specialized cattle slaughtering and processing plants near the major cattle feeding areas has facilitated these changes. Other contributing factors include changing consumer tastes and preferences, a shifting and growing population with an increasing per capita income, and continuing technological advances in cattle feeding and in the slaughter, transportation, and distribution of fed beef.

Economic factors important in determining the location and levels of cattle feeding include available supplies of feed grain and feeder cattle and economies of size in feedlot operations. According to a study by Raymond A. Dietrich of Texas A&M University, the best competitive advantage in cattle feeding exists in a belt encompassing parts of the Texas-Oklahoma Panhandle, New Mexico, Arizona, Colorado, Kansas-Nebraska, Iowa-Illinois, the eastern Corn Belt, and Kentucky-Tennessee.

COMPETITIVE ADVANTAGE DEFINES CATTLE FEEDING BELT

SOURCE: Texas A & M University

Regional price differences

Of course, the regional price structure for feeder cattle, feed grains, fed cattle, and dressed fed beef is affected by changes in the location and levels of cattle feeding. Such price structures result from regional surpluses or deficits in one or more of the above factors and the region's ability to compete for resource inputs and market outlets.

Feeder cattle prices in 1968 were generally lowest in the Southeast, East Texas, the Inter-Mountain states, and the Pacific Northwest. These regions produce a surplus of feeder cattle for long-distance shipping. By contrast, highest prices were generally noted in Arizona, Iowa, New Mexico, western Oklahoma, and Illinois. Regional price differences reflect existing supply-demand conditions and may change as the structure of the industry changes.

Feed grain prices tended to be highest in regions that produced less feed grain than was demanded by area poultry and livestock industry. Such deficit feed grain production is found in the West, the South, and the Northeast. As expected, feed grain prices were generally lowest in the Corn Belt and North Plains.

Prices for fed cattle were generally highest in Pennsylvania and the Northeast. This can be attributed mainly to a demand for fed beef in excess of production and to the availability of surplus

slaughter capacity. Fed slaughter cattle prices were lowest in West Texas, where, at the time of the study, there was not sufficient capacity to slaughter all the cattle fed there. However, additional slaughter plants in or near the Texas-Oklahoma Panhandle have been constructed or planned in recent years.

Fed beef prices were generally highest in the Northeast, the South, California, and Washington-Oregon, where there was a feed grain deficit. Normally, the lowest prices for fed beef were found in regions such as the South Plains and Colorado, where there was a surplus of fed beef and the major consumption areas were some distance away.

Potential adjustments

Results of this study indicate that substantial competitive advantage may accrue to regions that adjust to the competitive environment of the cattle feeding economy. Savings may be realized from such factors as economies of size in feedlot operations, location of feeding facilities in or near major areas of surplus feed grain production, location of slaughter facilities in the primary cattle feeding areas, and cost advantages in acquiring feeder cattle. A region's potential depends also on factors such as wage rates, level of management, availability of resource inputs, taxes, and the changing structure of demand.

FERTILIZER USE INCREASES STEADILY

Consumption of nitrogen, phosphorus, and potassium (elemental basis) as fertilizer has increased nearly fivefold in the United States since 1950. Led by steady gains in nitrogen, total use reached 13.5 million tons in 1971. Nitrogen's steady growth was due mainly to declines in relative price—particularly of anhydrous ammonia—and to the excellent yield response on forage and crop production.

In recent years, the use of these primary plant foods has grown faster in the five states of the Eleventh Federal Reserve District than in the nation as a whole. In these states—Arizona, Louisiana,

USE OF PRIMARY PLANT FOODS INCREASES

(Thousand tons)

Area	Nitrogen		Phosphorus		Potassium	
	1971p	Percent change from 1966	1971p	Percent change from 1966	1971p	Percent change from 1966
Arizona	97.4	35.5%	32.0	32.2%	2.4	100.0%
Louisiana	136.4	58.1	58.3	47.2	55.2	59.1
New Mexico	28.9	75.2	15.7	37.7	1.7	30.8
Oklahoma	173.7	58.9	94.4	31.8	33.6	42.4
Texas	666.4	71.0	261.8	39.5	98.3	72.8
Five states	1,102.8	63.7	462.2	38.2	191.2	62.4
United States	7,904.1	49.2%	4,777.6	23.0%	4,159.4	30.1%

p—Preliminary
SOURCE: U.S. Department of Agriculture

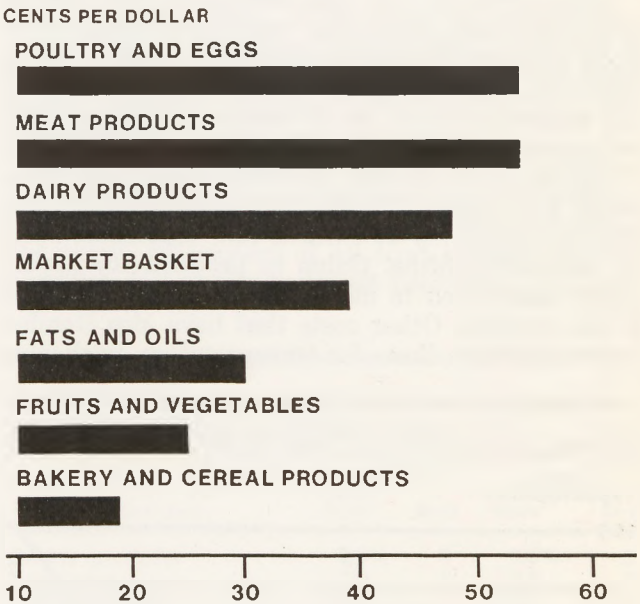
New Mexico, Oklahoma, and Texas—use of nitrogen and potassium has increased more than three-fifths and use of phosphorus nearly two-fifths. Some of this increase is due to additional use of fertilizer on pastures and forage crops. Rising land prices and increased demand for feeder calves have encouraged stockmen to improve pastures. These improved pastures allow them to produce more beef per acre with lower unit costs.

Compared with prices of other farm inputs, the price index of fertilizer has been fairly stable in the past 20 years, varying from a high of 110 in 1954 to a low of 99 in 1969 (1950 = 100). Preliminary figures for 1971 show a level of 108, the highest since 1955. Fertilizer prices moved up about 8 percent in 1971, due to higher marketing charges and a 17-percent rise in the average farm price of potash.

Farm prices of most nitrogen and potash fertilizers are expected to level out in 1972. Currently, production capacity far exceeds demand for these fertilizers. On the other hand, phosphate fertilizers —and particularly concentrated superphosphate— may be in relatively short supply. Reports from manufacturers seem to indicate that most phosphate production scheduled for the first half of 1972 was contracted for before the end of 1971. Supply pressures from foreign markets can also be expected.

A continual increase in the numbers of plants and firms manufacturing ammonia has boosted production capacity much faster than demand. In the 1960's, production of anhydrous ammonia increased about 72 percent. By 1970, there were 100 plants producing ammonia. Their combined annual capacity was estimated at 18.5 million tons—more than three times the capacity in 1960. In comparison, total nitrogen consumption for 1971 was estimated at only 8 million tons. A further discussion of the fertilizer industry may be found in the June 1970 *Business Review* published by this Bank.

FARMER'S AVERAGE SHARE
OF U.S. MARKET BASKET DOLLAR, 1970



SOURCE: U.S. Department of Agriculture

FARM-RETAIL PRICE SPREAD GROWS

In recent years, the spread between prices consumers pay for food in retail stores and the farm value of these foods has accounted for about 60 cents of each dollar spent in retail food stores. For all of 1971, the marketing margin widened less than 3 percent, a much slower general increase than in 1970, when the farm-retail price spread swelled a little more than 7 percent—the biggest year-to-year increase since 1951. Except for 1960 and 1965,

marketing spreads have widened every year for the past two decades.

From 1965 to 1971, the farm-retail price spread increased about 24 percent while the farm value of food products increased about 15 percent. Farm value as a percentage of retail cost declined from 40 percent in 1965 to 38 percent in 1971. Farm value averaged half of retail cost from 1947 to 1949.

Labor costs account for about half the farm-retail price spread. Since 1960, hourly labor costs have increased by two-thirds and unit labor costs by about two-fifths. Gains in productivity apparently have failed to match increases in wages and fringe benefits. Other costs that have also trended upward include those for transportation, packaging materials, fuel, power, property insurance, and many other goods and services bought by marketing firms.

Meat products rank first in retail cost, as well as farm value, in the total market basket of farm foods and account for nearly a third of the retail cost of farm foods purchased by the average U.S. household. In 1971, the average household paid $1,244 at the retail market for farm foods.

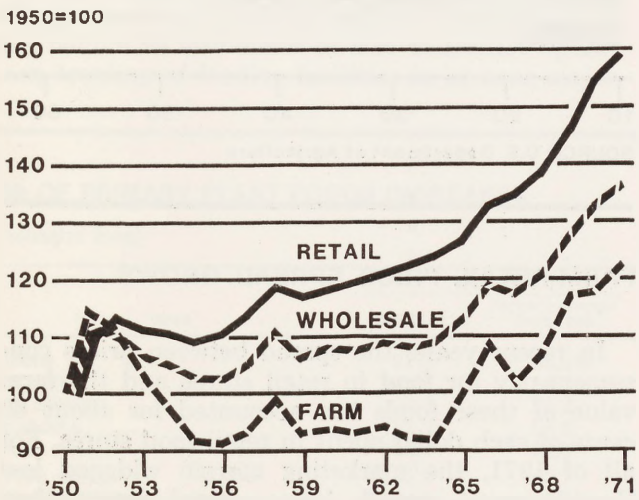
Since 1947, retail prices, farm values, and farm-retail price spreads have increased much more for fresh fruits and vegetables than for farm food products in general. For fresh fruits and vegetables, the farm price is a smaller percentage of retail price than it is for most other products. A lack of improvement in output per manhour has contributed to rises in farm prices of these products. From 1950 to 1970, while output per manhour in all farm production advanced 223 percent, output in fruit and nut production increased only 72 percent. In vegetable production, it increased 82 percent. In addition, sensitivity to weather conditions causes variation in the supply and quality of fruits and vegetables that, in turn, affects both farm and retail prices more frequently and to a greater extent than is the case for many other farm foods.

Bakery and cereal products—with their extensive processing—accounted for 21 percent of the farm-retail price spread in 1970. Changes in farm values of bakery and cereal products since 1947 have had little effect on the farm value of the total market basket of farm foods.

Frying chickens and eggs are among the few farm food products that have shown a decline in retail prices. But farm values have also declined, producing a moderate increase in farm-retail price spreads. Automation, changes in the organization of production and marketing, and other gains in efficiency were responsible for most of the price decline.

Prepared by Carl G. Anderson, Jr.

RETAIL, WHOLESALE, AND FARM FOOD PRICES



1971 figures estimated

SOURCE: U.S. Department of Agriculture