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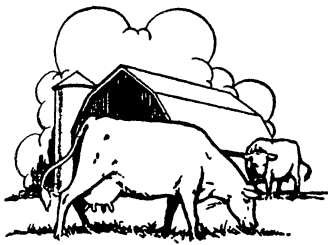
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MINNESOTA farm business NOTES



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Hog-Cattle Price Picture Shows Wide Changes

R. R. Newberg and A. A. Dowell

Recent changes in pork supply and demand for fat cuts have helped widen the gap between hog and steer prices. A look at the prices tells the story.

Average yearly prices per hundred pounds liveweight of all slaughter steers and hogs sold at Chicago from 1900 to 1951 are shown in figure 1.

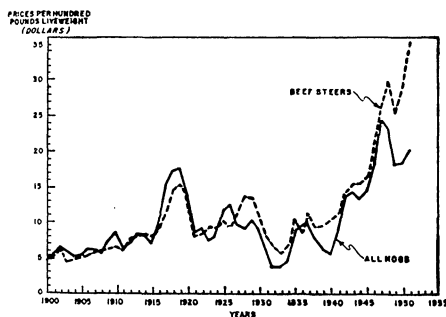


FIG. 1. Prices per hundred pounds liveweight of all slaughter steers and all slaughter hogs at Chicago, 1900-1951.

In this graph some general tendencies common to both types of animal are apparent. There is a tendency for the prices of both steers and hogs to rise and fall together. Prices of each rise sharply during a boom and fall precipitously during a severe depression. The over-all price trends for the period as a whole have been upward.

Closer examination, however, reveals some significant differences between the two price series. The price of hogs was above the price of steers most of the time from 1900 to 1926, while the price of steers was above the price of hogs most of the time from 1927 through 1951. The price spread between the two species was relatively narrow most of the time up to 1926, fairly wide in 1928-29 and 1939-40, and extremely wide from 1948 through 1951. In 1951 the price differential between steers and hogs was at an all-time high, aver-

aging \$13.77 per hundred pounds liveweight.

The relationship between steer and hog prices also can be expressed in the form of a price ratio. This relationship is shown in the solid line in figure 2. In this diagram the average annual price of steers is divided by the average annual price of hogs.

The fluctuations from low to high in the ratio of prices of steers to prices of hogs have increased greatly since 1900. A new high for the ratio has been established at the peak of each succeeding cycle. In 1951 it was 1.77 and in the early part of 1952, as marketings of hogs increased seasonally, steers were selling at almost twice the price of hogs. This wide differential has aroused interest in possible causes.

The factors causing the price of steers to rise relative to the price of hogs may be divided into two categories: those which operate to increase the production or supply of pork relative to the supply of beef, and those which tend to decrease the demand for hog products relative to that for beef products.

The production of beef and pork by five-year periods from 1900-04 to 1945-49 and for 1950 and 1951 is shown in table 1. Some general tendencies will be observed. First, the production of pork tends to be greater than the production

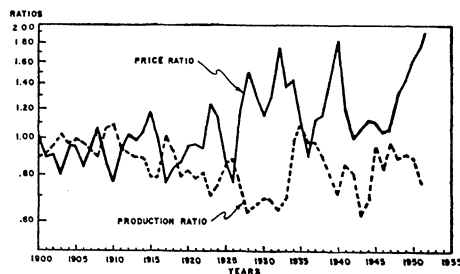


FIG. 2. Ratio of price of all slaughter steers to price of all slaughter hogs at Chicago, and ratio of production of beef to production of pork in the United States, 1900-1951. (Logarithmic scale.)

Table 1. Total Production of Beef and Pork in the United States by Five-Year Periods, 1900-04 to 1945-49, and for 1950 and 1951

Period	Beef	Pork (excluding lard)
millions of pounds		
1900-04	5,901	6,215
1905-09	6,632	6,915
1910-14	6,325	6,727
1915-19	6,851	7,941
1920-24	6,503	8,424
1925-29	6,400	8,480
1930-34	6,499	8,755
1935-39	6,937	7,337
1940-44	8,357	11,478
1945-49	9,721	10,602
1950	9,543	10,751
1951	8,855	11,570

of beef. Second, supplies of each kind of meat have increased greatly since 1900. Third, the increase in the production of pork has been greater than the increase in the production of beef.

The relationship between the production of beef and the production of pork is shown in the form of a production ratio in figure 2. Total annual beef production was divided by total annual pork production (excluding lard) for this diagram. The production ratio varied greatly from 1900 to 1951. Most of the time it was below 1.0, which means that the production of beef was less than that of pork (table 1).

Variations in the production ratio are due to variations in the production of each kind of meat. Pork production can be increased or decreased more quickly than beef production. The supply of beef increases when herds are being reduced and decreases when herds are being expanded.

In addition, production of both kinds of meat depends on available feed supplies. Beef is produced largely on grass and roughage, while pork is produced mainly on grain—chiefly corn.

From 1900 to 1914 the production of beef averaged only slightly below the

MINNESOTA farm business

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production of pork. But from 1914 to 1928 the ratio moved sharply downward. This was due largely to an increase in pork production made possible by an increase in corn acreage, the release of some grain formerly fed to horses and mules, and improved sanitation and nutrition of hogs.

The steep rise in the ratio from 1932 to 1935 was partly due to some increase in the supply of beef as a result of the liquidation of cattle herds. But the rise was more especially due to a sharp reduction in hog numbers resulting from the severe drouth.

Hog Production Hits Peak

As rains returned to the drouth-stricken areas, feed supplies and livestock numbers increased. The unusual combination of large stocks of government-stored grain, high corn yields due to favorable weather and use of hybrid seed, continued replacement of horses and mules, large quantities of grain from Canada, and a favorable price support program resulted in record hog production and the lowest ratio of beef to pork production of record in 1943.

As hog numbers were reduced from the all-time peak and cattle slaughter increased, the production ratio recovered sharply and fluctuated around .90 from 1945 to 1950.

It is apparent that variations in the production ratio in figure 2 are due to variations more in pork production than in beef production.

When the production ratio is low, the price ratio tends to be high (figure 2). That is, when the supply of beef is low in relation to the supply of pork, the price of steers is high in relation to the price of hogs.

Furthermore, a given percentage change in the production ratio is associated with a larger percentage change in the price ratio. In other words, a given percentage decrease in beef production relative to pork production results in a more

than proportionate rise in the price of steers relative to the price of hogs.

Consequently the decline in the production ratio since 1900 accounts in part for the more than proportionate rise in the price ratio.

Demand Down for Fat Cuts, Lard

The fact that the price ratio has increased considerably during the last half of the period covered in figure 2, with no measurable upward or downward trend in the production ratio, implies a greater increase in the demand for beef than for pork. The principal reason for this shift in demand appears to be a decline in the demand for fat cuts and lard (table 2).

In 1950 lard and fatbacks were worth much less per pound than live hogs and only about one-third as much as loins. The relative decline in price of lard has been due principally to increasing competition of vegetable fats and oils.

The shift from a net export to a net import basis for beef, together with import restrictions—including tariffs, quotas, and embargoes—also has contributed some to the relative rise in price of steers.

In the early 1900's the export trade in meats—especially pork and lard—was very important. But after the first World War the United States became a net importer of beef and veal, and the exports of pork declined greatly. In 1950-51 only a little over one per cent of the total pork produced was exported. However, lard exports have continued to be important.

This study suggests that one way to narrow the price spread between steers and hogs is to produce hogs with a high proportion of lean meat. To provide an incentive for farmers to make this shift, the market needs to develop a more accurate method of reflecting consumer preferences in prices paid to hog producers.

Table 2. Prices of Fresh Pork Loins, Green Hams, Prime Steam Lard in Tierces, Dry Salt Fatbacks, and Average of All Hogs at Chicago by Five-Year Periods, 1905-09 to 1945-49 and 1950 and 1951

	Loins	Hams	Lard	Fatbacks	Live hogs
		dollars per	hundredweight		
1905-09	10.67	12.81	8.89	8.42	6.13
1910-14	13.92	16.45	10.51	10.49	7.96
1915-19	23.16	23.31*	19.69	19.79	13.42
1920-24	20.86	19.22*	15.42	13.79	9.46
1925-29	22.88	21.86	14.95	15.01	10.70
1930-34	13.79	13.27	8.51	8.33	5.61
1935-39	19.53	17.95	11.32	11.23	8.77
1940-44	22.45	21.29	12.41	10.95	11.35
1945-49	41.93	37.88*	20.84	17.51	19.75
1950	45.53	.....*	15.68	13.82	18.20
1951	46.75	.....*	20.40	15.56	20.23

* The prices of hams not available for 1919, 1920, 1949, 1950, and 1951.

FEEDERS, HOGS GIVE BEST LABOR RETURNS

S. A. Engene and Niels Rorholm

Feeder cattle and hogs gave larger returns to labor than did dairy cattle and poultry in 1951. Costs and returns per hour of labor for these four classes of livestock are given in the table. These data were obtained from records kept by 32 farmers in the southern counties of Minnesota.

Costs and Returns for Livestock per Hour of Labor in Southern Minnesota, 1951

	Class of livestock			
	Dairy cattle	Feeder cattle	Hogs	Chickens
Number of farms...	22	9	29	27
Average size of enterprise	20 cows	20,300 lbs.	34,800 lbs.	205 hens
Costs:				
Feed	\$1.55	\$8.05	\$7.57	\$2.58
Shelter .....	.19	.33	.17	.15
Equipment .....	.07	.08	.11	.11
Interest* .....	.09	.76	.16	.03
Use of tractor, truck, auto ...	.03	.15	.11	.05
Misc. cash expense .....	.21	.18	.30	.10
Total	\$2.14	\$9.55	\$8.42	\$3.02
Value produced	3.65	12.23	10.42	4.22
Net return per hour of labor	\$1.51	\$2.68	\$2.00	\$1.20
Quantity produced per hour of labor.....	2.6 lbs.	33 lbs.	57 lbs.	8.4 doz.
		butterfat gain in weight	gain in weight	gain in eggs weight

* Interest at five per cent on investment in livestock.

The farmers cooperating in this study were somewhat better farmers than the average of their communities. For example, they averaged 325 pounds of butterfat per cow for their dairy herd and 205 eggs per hen. This is considerably above the average for the state.

The method of calculation can be illustrated with the data for dairy in the first column of the table. These dairy farms produced 2.6 pounds of butterfat for each hour spent in taking care of the dairy herd.

The value of dairy products and young stock raised was \$3.65 per hour. Feed, shelter, equipment, interest, the use of power units, and miscellaneous items cost \$2.14. This left a margin of \$1.51 as a return for each hour of labor. This is the pay that remained to the farmer for his labor, management, and general overhead costs.

Feeder cattle gave the highest return per hour of labor, with a return

of \$2.68. Hogs were second, with a return of \$2.00 per hour of labor. Dairy cattle were third, with \$1.51. Chickens were lowest, with a return of \$1.20. The data for hogs, dairy cattle, and chickens cover replacement stock as well as growing and breeding stock.

In these calculations, shelter and equipment have been charged at what they cost originally. But prices have gone up sharply since many of the barns and much of the equipment were purchased and these costs would be considerably higher if charged at current prices.

Detailed records are available only for 1951, and price relationships may have been unusual for that year. However, a reasonably accurate estimate of the average returns for the five-year period of 1947-51 can be made by using the annual reports of the Southeast and Southwest Minnesota Farm Management Services.¹ Data on feed costs and

¹ Division of Agricultural Economics, University of Minnesota, Mimeographed Reports 195 and 197.

values produced are given in those reports. Returns per hour of labor for the five-year period would be approximately:

\$1.30 for dairy cattle
2.25 for feeder cattle
2.45 for hogs
.90 for chickens

The return per hour is much greater for feeder cattle and hogs than for dairy cattle. However, most farmers can market much more labor with dairy cattle than with feeder cattle. In 1951, for example, a farmer feeding \$8.05 of feed to feeder cattle would use 1.0 hour of labor, with a return to labor of \$2.68. If he had fed the same amount of feed to dairy cattle he would have used 5.2 hours of labor, with a total return to labor of \$7.85. On farms where feed is plentiful and labor is scarce, feeder cattle and hogs can be profitable enterprises. On farms with limited supplies of feed and ample labor, dairy cattle may be a more profitable enterprise.

Approximately 91 per cent of the concentrate feed was corn, two per cent was small grain, and seven per cent commercial feed. There was little variation from this in either the high- or low-return groups. Of the dry roughage consumed 79 per cent was legume hay.

Terms Explained

Net increase in value is the result of both the gain in weight put on in the feed lot and the price spread. It is computed by subtracting the purchase cost of the animals from gross sales and dividing the remainder by the net weight produced. Feed was charged at the average farm price in southern Minnesota for the feeding period covered.

Any excess over \$100 return represents the amount available to cover costs other than feed, such as labor, power, shelter, taxes, interest, insurance, equipment, and similar items.

Previous studies indicate that feed costs constitute up to 75 or 80 per cent of the total cost of fattening cattle. Thus the return for \$100 feed would need to be at least \$125 to \$133 to cover all costs.

For the period of this study the return for \$100 feed averaged \$140 and ranged from an average of \$103 in the 1941-42 feeding period to \$187 in the 1949-50 period. In eight of the eleven feeding periods the return for \$100 feed exceeded the \$125 minimum estimated as necessary to cover all costs.

Feeder Cattle Returns Probed

H. G. Routh

Data have been collected on feeder cattle operations from the farm management services in Minnesota since 1940. The studies are on a feed lot basis beginning with the time of purchase and continuing until the animals are sold. To date 265 lots of feeder cattle (averaging 45 head per lot and totaling 11,925 head) have been included. This represents a net beef production of over four million pounds.

The animals were purchased at an average weight of 641 pounds per head, they gained 352 pounds in 219 days, and they were marketed at an average of 993 pounds per head. Of the 219 days an average of 26 days was spent on pasture. The gain per head per day was 1.6 pounds.

In 10 of the 11 years there was a positive average price spread ranging from \$1.20 per hundred pounds in the 1940-41 feeding period to \$8.50 in the 1947-48 feeding period. Price spread is the difference between the purchase and sale price per hundred pounds.

Only in the 1948-49 period was the average price spread negative. Here the purchase price exceeded the sale price by an average of \$.45 for the lots studied. However, even in that feeding period the net returns were sufficient to cover feed costs in 23 of the 32 lots.

The accompanying table shows the average feed consumption, feed costs and returns, and other significant information about these lots. Also similar data are shown for the high and low thirds in return over feed cost.

Relation of Feeds Consumed, Costs and Returns, and Other Factors to Return over Feed from Feeding Cattle, 1940-51

	Return over feed		
	Average	High third	Low third
Number of lots	265	89	89
Number of head purchased per lot	45	50	38
Weight per head bought	641	644	657
Weight per head sold	993	1,004	976
Total gain per head	352	360	319
Number of days on farm	219	224	201
Daily gain per head	1.6	1.7	1.6
Number of days on pasture	26	24	19
Net gain in weight per lot, pounds	15,996	18,439	11,772
Percentage death loss	1.1	.9	1.4
Pounds feed per 100 pounds net gain in weight			
Concentrates	830	661	1,053
Hay and fodder	323	313	379
Silage	465	477	430
Total digestible nutrients*	902	752	1,098
Per cent protein in TDN*	11.6	11.9	11.4
Cost and return per 100 pounds net gain in weight			
Net increase in value	\$27.86	\$31.22	\$25.42
Total feed cost	19.79	16.47	24.43
Return above feed cost	\$ 8.07	\$14.75	\$.99
Return for \$100 feed	\$141	\$190	\$104
Purchase price per 100 pounds	\$16.47	\$16.22	\$16.52
Sale price per 100 pounds	\$20.16	\$21.13	\$19.10
Price spread	\$ 3.69	\$ 4.91	\$ 2.58

* Not including nutrients received from pasture.

Minnesota Farm Prices For May-June, 1952

Prepared by Jerry M. Law

Average Farm Prices for Minnesota, May and June 1952, with Comparisons*

	May 1952	May 1951	June 1952	June 1951
Wheat	\$2.13	\$2.16	\$2.13	\$2.11
Corn	1.48	1.52	1.56	1.47
Oats .....	.75	.83	.73	.75
Barley	1.17	1.37	1.15	1.21
Rye	1.68	1.69	1.79	1.67
Flax	3.67	4.20	3.72	3.39
Potatoes	2.40	1.05	4.00	1.10
Hay	14.30	15.20	14.00	16.20
Hogs	20.00	19.90	18.70	20.30
Cattle	27.60	29.60	27.10	30.00
Calves	31.80	33.20	31.30	34.70
Lambs-sheep	24.71	30.25	24.30	31.07
Chickens .....	.176	.257	.182	.227
Eggs .....	.299	.420	.305	.411
Butterfat .....	.77	.75	.76	.76
Milk	3.65	3.45	3.60	3.50
Wool† .....	.46	1.07	.46	1.00

* Average prices as reported by the USDA.

† Not included in the price index numbers given below for Minnesota.

The index of Minnesota farm prices represents the average of the increases and decreases in farm product prices in the given month of 1952 over the average of the five corresponding months of the period 1935-39. Weights for Minnesota indexes are the average sales in the five corresponding months of 1935-39. Weights for the United States indexes are average sales of 60 months in 1935-39.

Prices received by Minnesota farmers averaged about the same in June as a month earlier. Significant changes included price increases for potatoes, rye, and corn, and a decline in the price of hogs. Prices in June averaged lower than a year earlier.

Indexes and Ratios for Minnesota Agriculture

	May 1952	Average May 1935-39	June 1952	Average June 1935-39
U. S. farm price index	275.4	100	277.0	100
Minnesota farm price index	273.4	100	271.7	100
Minn. crop price index	241.2	100	263.0	100
Minn. livestock price index	332.3	100	302.3	100
Minn. livestock products price index	238.5	100	248.1	100
Purchasing power of farm products				
United States	119.9	100	121.4	100
Minnesota	119.0	100	119.1	100
Minn. farmers' share of consumers' food dollar	58.8*	46.3	58.8†	45.5
U. S. hog-corn ratio	11.8	10.7	11.2	12.0
Minn. hog-corn ratio	13.5	14.6	12.0	15.2
Minn. beef-corn ratio	18.7	12.7	17.4	12.8
Minn. egg-grain ratio	10.2	14.6	10.2	14.6
Minn. butterfat-farm-grain ratio	31.5	29.7	31.2	30.9

* Figure for January 1952.

† Figure for February 1952.

The Outlook Corner—Dairy Production

Milk production on farms in the United States increased from 104 billion pounds in 1935-39 to 116 billion pounds in 1951. At the same time, however, milk consumption per capita fell—from 801 pounds in 1935-39 to 757 pounds in 1951. Population increased more rapidly than production.

The forms in which milk is consumed have changed. Per capita consumption of these products increased from 1935-39 to 1951:

Fluid milk and cream—from 340 to 395 lbs.
 Cheese—from 5.5 to 7.5 lbs.
 Evaporated milk—from 15.0 to 16.5 lbs.
 Dry skim milk—from 1.9 to 3.4 lbs.
 Ice cream—from 2.0 to 3.5 gals.

The amount of milk used per capita for these products has increased by about a quarter. Slightly more than one-half of the milk was marketed in these forms in 1935-39 and almost three-fourths in 1951.

Butter consumption, too, dropped in this period—from 16.7 lbs. to 9.7 lbs. per capita. Part of this butter market was taken over by margarine—consumption increased from 2.9 lbs. in 1935-39 to 6.7 lbs. in 1951.

People have shifted toward products which use all of the solids in milk. And in general, these products bring higher returns to the producers than other dairy products. Changes in manufacturing techniques, nutritional knowledge, tastes, and income have been the principal factors in this shift.

Milk production in Minnesota and the adjoining West North Central states has declined in the last ten years (see table). Much of the milk

produced here is used for butter. Since butter prices have been less favorable than those for competing enterprises (crops, hogs, beef, poultry) farmers have shifted away from dairying. Labor shortages and high wages have hastened the shift.

Production Up in East

But milk production has increased in the East North Central and Atlantic states. These areas have fewer alternative production opportunities; they have the market advantage of large populations nearby; and they have been protected by various market restrictions.

It seems probable that dairying in Minnesota will continue to face strong competition from other areas and other enterprises. It is also probable that future beef, hog, and wheat prices may be less favorable than during the last decade. With efficient production and marketing, dairying can still be profitable.

Total Milk Production on Farms in Selected Areas

Year	Minnesota	West No.	East No.	North	South	U.S.
		Central	Central	Atlantic	Atlantic	
billion pounds						
1940	8.4	27.7	30.6	17.4	6.6	109.4
1942	9.0	30.0	33.7	18.2	7.1	118.5
1944	8.4	28.6	33.3	18.0	7.3	117.0
1949	8.3	26.2	34.7	19.5	8.0	116.1
1950	8.1	26.3	34.4	19.7	8.1	116.6
1951	7.9	25.7	34.7	19.6	8.2	115.6
% 1951 is of 1940	94	93	113	113	124	106

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