The survival and growth potential of small meat packing businesses in Montana
by Charles Henry Rust

A thesis submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY in Agricultural Economics
Montana State University
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Abstract:
Montana is primarily a producer of unprocessed agricultural products. Most of the marketing and processing facilities are located beyond the state borders. Interest in the expansion of those activities involving farm and ranch products beyond the farm gate is associated with the interest in expanding economic opportunities, enlarging the income base, diversifying sources of income, and increasing market alternatives within the state.

Meat packing is an important link in the chain of marketing services before consumers have an acceptable product. This industry contributes to the economic welfare of producers and consumers', as well as those directly involved in the trade. Therefore, an inquiry into the economic potential of meat packing firms in Montana might have widespread implications.

The slaughter establishments in Montana are all defined as small businesses based on the small business administration classification and, therefore, are eligible for the benefits of small business legislation.

Observations of the Montana meat packers offer some empirical evidence to substantiate the theory that as volume of output increases cost per unit of output decreases. The data suggests that economies of size associated with increased plant size are just over 3 cents per pound of output.

Plants with survival difficulty have a relatively high percentage of fixed costs. When fixed costs are. greater than 15 percent of total operational costs for an individual plant over any prolonged period of time, the plant is heading for survival trouble.

The survival and growth potential of meat packing firms in Montana depends upon the availability of capital for expansion, careful and wise management, expansion of local cattle feeding, sustained turn-off of fed animals, and thus meats; expanded hog production and kill', aggressive selling at West Coast markets, quality control, and cost management.

The degree to which individual firms and all Montana firms, as a group, are able to solve these restrictive problems as a degree to which growth, and even survival, will be evidenced.

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CHARLES HENRY RUST

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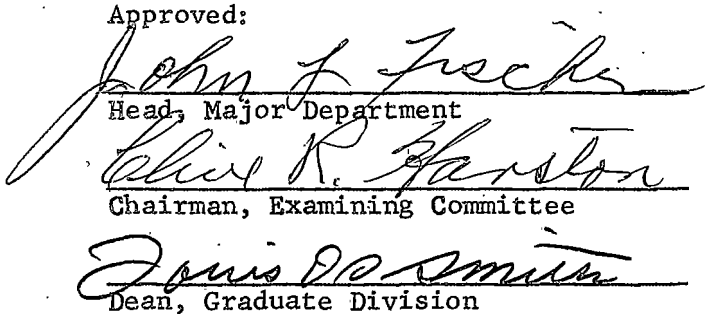
Approved:



Head, Major Department

Chairman, Examining Committee

Dean, Graduate Division

Montana State College
Bozeman, Montana

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ABSTRACT

Montana is primarily a producer of unprocessed agricultural products. Most of the marketing and processing facilities are located beyond the state borders. Interest in the expansion of those activities involving farm and ranch products beyond the farm gate is associated with the interest in expanding economic opportunities, enlarging the income base, diversifying sources of income, and increasing market alternatives within the state.

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The slaughter establishments in Montana are all defined as small businesses based on the small business administration classification and, therefore, are eligible for the benefits of small business legislation.

Observations of the Montana meat packers offer some empirical evidence to substantiate the theory that as volume of output increases cost per unit of output decreases. The data suggests that economies of size associated with increased plant size are just over 3 cents per pound of output.

Plants with survival difficulty have a relatively high percentage of fixed costs. When fixed costs are greater than 15 percent of total operational costs for an individual plant over any prolonged period of time, the plant is heading for survival trouble.

The survival and growth potential of meat packing firms in Montana depends upon the availability of capital for expansion, careful and wise management, expansion of local cattle feeding, sustained turn-off of fed animals, and thus meats; expanded hog production and kill, aggressive selling at West Coast markets, quality control, and cost management. The degree to which individual firms and all Montana firms, as a group, are able to solve these restrictive problems as a degree to which growth, and even survival, will be evidenced.

CHAPTER I

INTRODUCTION

Sale of livestock and livestock products accounts for about 50 percent of the total $200,000,000 annual cash receipts for farmers and ranchers in Montana. 1/

Development of marketing and processing firms to handle and market the raw agricultural products would contribute a great deal to the welfare of consumers, producers, and the state as a whole. Meat-packing businesses are an important link in the processing and distribution of meat, the end product of the cattle and hog industries. Although the meat-packing industry in Montana slaughters less than one-half of 1 percent of the nation's total livestock slaughter, Montana also has less than one-half of 1 percent of the nation's human population. Therefore, employment in, and economic well-being of the meat-packing industry in Montana is relatively as important to the structure of the state's economy as it is in states with a larger slaughter volume. The payroll of Montana meat packers in 1960 totaled almost 3.5 million. 2/ This excludes returns to management and does not include local plants that are operated on an individual or partnership basis. The packing firms provided employment for about 800 people in 1960.

During the last 15 years cattle slaughter in Montana reached a low of 51.8 thousand head in 1952 and a high of 102.7 thousand in 1960 (Table I). In the same time period hog slaughter reached a low of 138.3 thousand head in 1947 and a high of 268.5 thousand in 1959.

Each year Montana exports about 1,000,000 head of cattle and calves. In 1959, out-of-state shipments were 1,069,509 head; in 1960 they were

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1/ Agricultural Marketing Service, Montana Agricultural Statistics, Vol. VIII, Montana Department of Agriculture, cooperating with United States Department of Agriculture, Helena, Montana, December, 1960.

2/ Unemployment Compensation Commission Reports.

TABLE I. COMMERCIAL LIVESTOCK SLAUGHTER: NUMBER OF HEAD, SLAUGHTERED BY SPECIES, IN MONTANA, 1946-61.* (Thousand head)

Year	Cattle	Calves	Hogs	Sheep and Lambs
1946	88.8	25.6	155.0	11.4
1947	66.8	18.7	138.3	7.4
1948	55.8	11.6	161.2	6.5
1949	67.1	12.4	183.2	5.4
1950	57.8	10.0	180.5	4.4
1951	52.0	4.9	199.9	4.3
1952	51.8	5.6	210.0	6.7
1953	67.3	8.4	216.0	8.8
1954	80.4	8.7	189.7	12.5
1955	81.1	7.9	224.0	10.6
1956	93.9	6.9	224.0	7.4
1957	91.0	6.6	219.0	6.0
1958	85.4	4.0	227.5	5.0
1959	83.9	2.6	268.5	6.5
1960	102.7	3.2	260.9	7.8
1961	100.5	3.2	255.5	8.7

*Source: Agricultural Marketing Service, Livestock and Meat Statistics, Statistical Bulletin 230, United States Department of Agriculture, Washington, D.C., June, 1960.

Agricultural Marketing Service, Montana Crop and Livestock Reporting Service, Montana Department of Agriculture, Helena, Montana.

up to 1,227,835, an increase of nearly 15 percent. Out-of-state marketings accounted for over 60 percent of the total cattle and calf sales of 1,912,072 head in 1960. 3/ The remainder were sold locally within the state, with about one half of them going through Montana markets. 4/ About 40 percent of the out-of-state shipments were calves, about one-fourth were steers, and the remainder was composed of about an equal number of cows and heifers. Most of the exports were composed of feeder animals to be fattened in other states. 5/

Fed Cattle in Montana

Fed cattle numbers in Montana for the past three years are estimated as follows:

Year	Number Fed
1959	99,000
1960	115,000
1961	113,000

The 1961 data can be further broken down by areas within the state, numbers on feed by quarters and numbers marketed by quarters (Table II). During 1961 the southcentral area of the state (Billings) fed approximately 45 percent of the state's total, the triangle area (Great Falls, Havre, Shelby) fed another 33 percent, the eastern counties (mainly lower Yellowstone Valley) accounted for 16 percent and only 6 percent were fed in the western counties. Therefore, the combined Billings and Triangle areas accounted for over three fourths of Montana's fed cattle.

Slaughter of cattle in Montana is approximately 100,000 head per

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3/ Montana Crop and Livestock Reporting Service, United States Department of Agriculture, Montana Experiment Station, Montana Livestock Commission, Released February 8, 1961.

4/ Clive R. Harston and Elmer L. Menzie, The Market for Montana Cattle and Calves, Montana State College, 1961.

5/ Ibid.

TABLE II. CATTLE AND CALVES ON FEED, PLACED ON FEED AND MARKETED BY QUARTERS, ALSO NUMBER ON FEED BY AREAS, MONTANA, 1961.*

	No. Mkted.	Placed on Feed	Number on Feed				Total on Feed
			S. Central (Billings)	Triangle (G. Falls)	Eastern third (lower Yellowstone Valley)	Western Counties	
Jan. 1 - 1961							77,000
Jan. 1 - Mar. 31	34,000	15,000	27,000	19,000	9,000	3,000	58,000
Apr. 1 - June 31	29,000	14,000	20,000	15,000	6,000	2,000	43,000
July 1 - Sept. 31	28,000	29,000	21,000	13,000	7,000a/	3,000a/	44,000
Oct. 1 - Dec. 21	22,000	53,000	31,000	25,000	13,000	6,000	75,000
Jan. 1 - 1962							75,000
	113,000	111,000					
			45%	33%	16%	6%	100%

*Source: Montana Crop and Livestock Reporting Service, Helena, Montana.

a/ There was a lump sum of 10,000 given for the two areas.

year, two-thirds of which are steers and heifers, and only an insignificant number are purchased from out-of-state. Assuming that most of the cattle fattened in Montana are steers and heifers, then approximately one-third of them (40,000) must be sold to out-of-state packers.

Hogs in Montana

In 1960 only 185,000 hogs were marketed in Montana. Meat packers within the state slaughtered 263,000 hogs, 110,000 of which were purchased from out-of-state. This indicates that about 30,000 hogs marketed in Montana were probably sold to out-of-state buyers. Hog producers in Montana marketed 185,000 hogs in 1960, 204,000 in 1959, 159,000 in 1958, 145,000 in 1957 and 175,000 in 1956. 6/ If the production high of 204,000 in 1959 had been slaughtered in Montana plants it would have only amounted to three-fourths of the slaughter total. Therefore, commercial plants have been dependent on sources outside the state for hogs even in the years when Montana hog production was the greatest.

Consumption

Meat has always been an important item in the human diet. In the United States pork and beef have been the most popular meat used. Beef and pork combined made up approximately 92 percent of the total per capita consumption of red meat in 1950, and they increased to 94 percent by 1960. 7/ Beef is just over 50 percent of the total red meat consumption.

It is quite likely that the type of work an individual does has some

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6/ Agricultural Marketing Service, Livestock and Meat Statistics, Statistical Bulletin No. 230, United States Department of Agriculture, Washington, D.C., June, 1961, 1960 and 1959.

7/ Agricultural Marketing Service, Supplement for 1960 to Livestock and Meat Statistics, United States Department of Agriculture, Statistical Reporting Service, Washington, D.C., June, 1961, p. 137.

effect on the quantity of meat consumed. To determine what, if any, differences existed in food consumption patterns between urbanization groups, the United States Department of Agriculture 1955 Household Food Consumption Survey stratified their sample by urban, rural nonfarm and farm households.

For the United States, the farm group consumed more pork per person than any other group and the urban group consumed the most beef (Table III). In the West, which is of primary importance in this study, rural nonfarm people consumed more pork and beef than any other group.

Consumption by Income Group

Meat consumption characteristics of households may also be expected to relate to level of income. In the 1955 United States Department of Agriculture consumption study, higher income families used more of the expensive cuts. This could be an indication that size of income would affect quality rather than quantity of meat consumed.

The consumption patterns of pork and beef in the Northeast, South, and Northcentral regions tend to closely follow that of the United States (Figure 1). Fluctuations in the West are erratic, but there is an indication of a marked increase in beef consumption as income increases. Pork consumption in the West indicates only a slight increase as income rises until a very large increase occurs as income surpasses $10,000.

Per Capita Consumption

Per capita consumption of all red meat today is about 160 pounds, not much higher than the 155 pounds of 1909, but much higher than the mid-thirties when a low of 117 pounds was recorded in 1935. 8/ Trends

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8/ USDA, Meat Consumption Trends and Patterns, Agricultural Handbook No. 187, AMS, Agricultural Economics Division, Washington, D.C., July, 1960, p. 34.

TABLE III. QUANTITY OF BEEF AND PORK USED AT HOME PER PERSON, BY REGION AND URBANIZATION, ALL HOUSEHOLDS, IN ONE WEEK, SPRING, 1955.*

Urbanization Group	Regional				
	U.S.	Northeast	North Central	South	West
	lbs.	lbs.	lbs.	lbs.	lbs.
Pork:					
All Groups	1.14	0.98	1.23	1.26	1.00
Urban	1.13	0.95	1.22	1.33	1.00
Rural Nonfarm	1.15	1.01	1.17	1.22	1.05
Farm	1.21	1.15	1.34	1.18	0.89
Beef:					
All Groups	1.25	1.29	1.51	0.85	1.62
Urban	1.34	1.29	1.52	1.09	1.52
Rural Nonfarm	1.10	1.23	1.43	0.64	1.89
Farm	1.18	1.54	1.61	0.68	1.73

* Source: H. E. Breimyer and C. A. Kause, Consumption Patterns for Meat, Bulletin No. 249, Agricultural Marketing Service, United States Department of Agriculture, May, 1958.

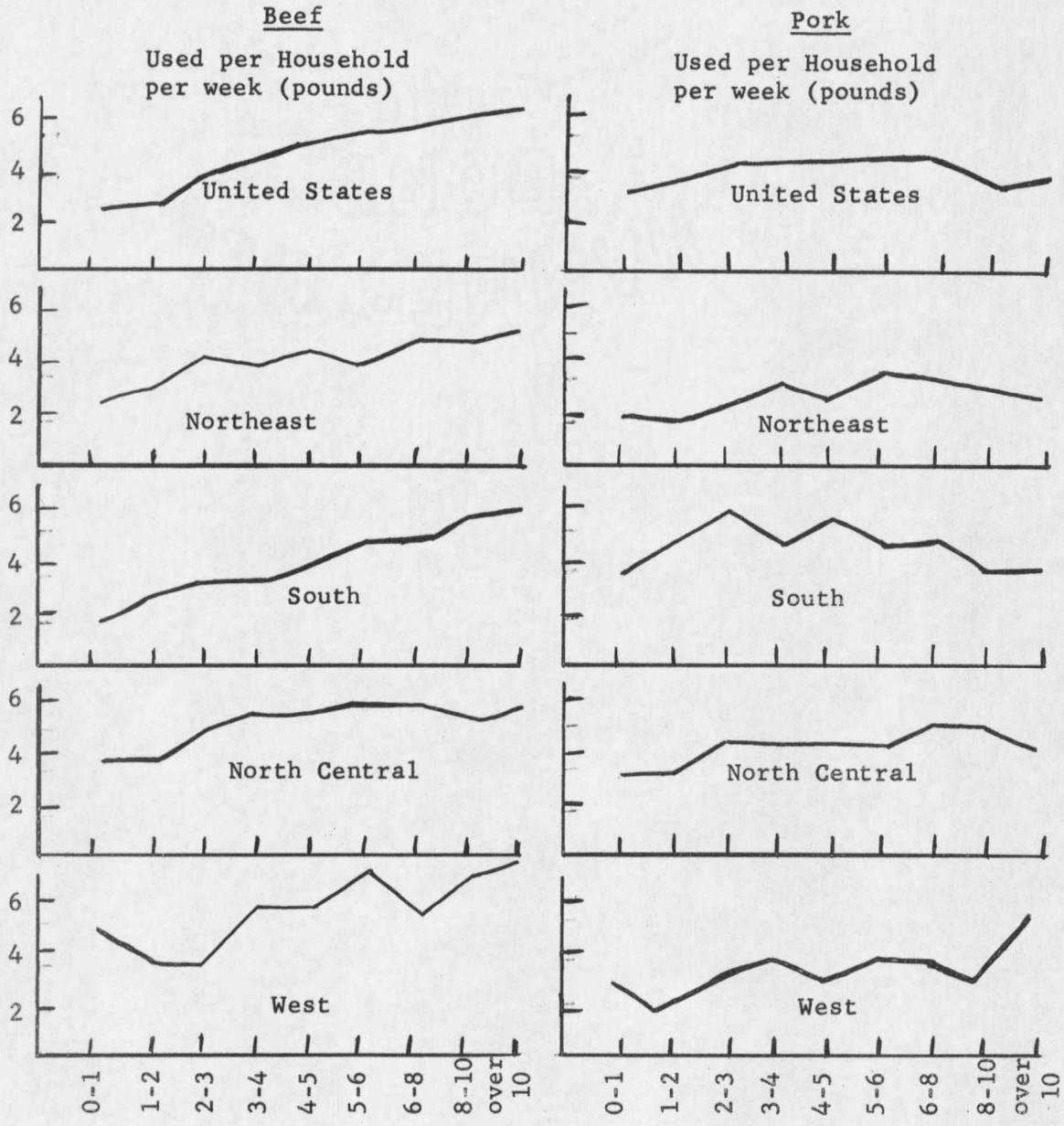

Figure 1. Beef and Pork Used Per Household Per Week Related to Income (1955) In the United States and by Regions.

Source: Household Food Consumption Survey 1955, Reports No. 1, 2, 3, 4, and 5, United States Department of Agriculture.

of beef and pork per capita consumption are illustrated in Figure 2. Trends in beef consumption are generally increasing, however, fluctuations in pork have not established a recognizable trend.

Western States Consumption

Differences in regional per capita consumption are evident in Table III. Estimates of annual consumption of beef, veal, pork, lamb and mutton for the 11 Western States were made on the basis of the current population and an estimate of the per capita consumption of each meat item for 1960. Estimates of per capita consumption of each meat were made by multiplying the average per capita consumption of each meat in the United States during 1960 by the ratio of the Western region to United States household consumption (Table III) as follows: 9/

$$X = a \frac{b}{c}$$

Where X is the estimated Western region per capita consumption, a is the 1960 national average per capita consumption, b is the Western region per household consumption, and c is the national per household consumption. The above formula was used to arrive at Western per capita consumption of beef, veal, pork, lamb and mutton. The estimated per capita consumption of the 11 Western States for 1960 are:

	Western States	U.S.
	lbs.	lbs.
Beef	110.4	85.2
Veal	5.3	6.2
Lamb and mutton	6.6	4.6
Pork	57.9	65.3

9/ Average U.S. per capita consumption (pounds) for 1960:
Beef -- 85.2 pounds Lamb and Mutton -- 4.6 pounds
Veal -- 6.1 pounds Pork --66.0 pounds
AMS, Livestock and Meat Statistics, Supplement for 1960, Statistical Bulletin No. 230, USDA, Washington, D.C., June, 1960, p. 137, Live-Stock and Meat Situation, March, 1961, p. 23.

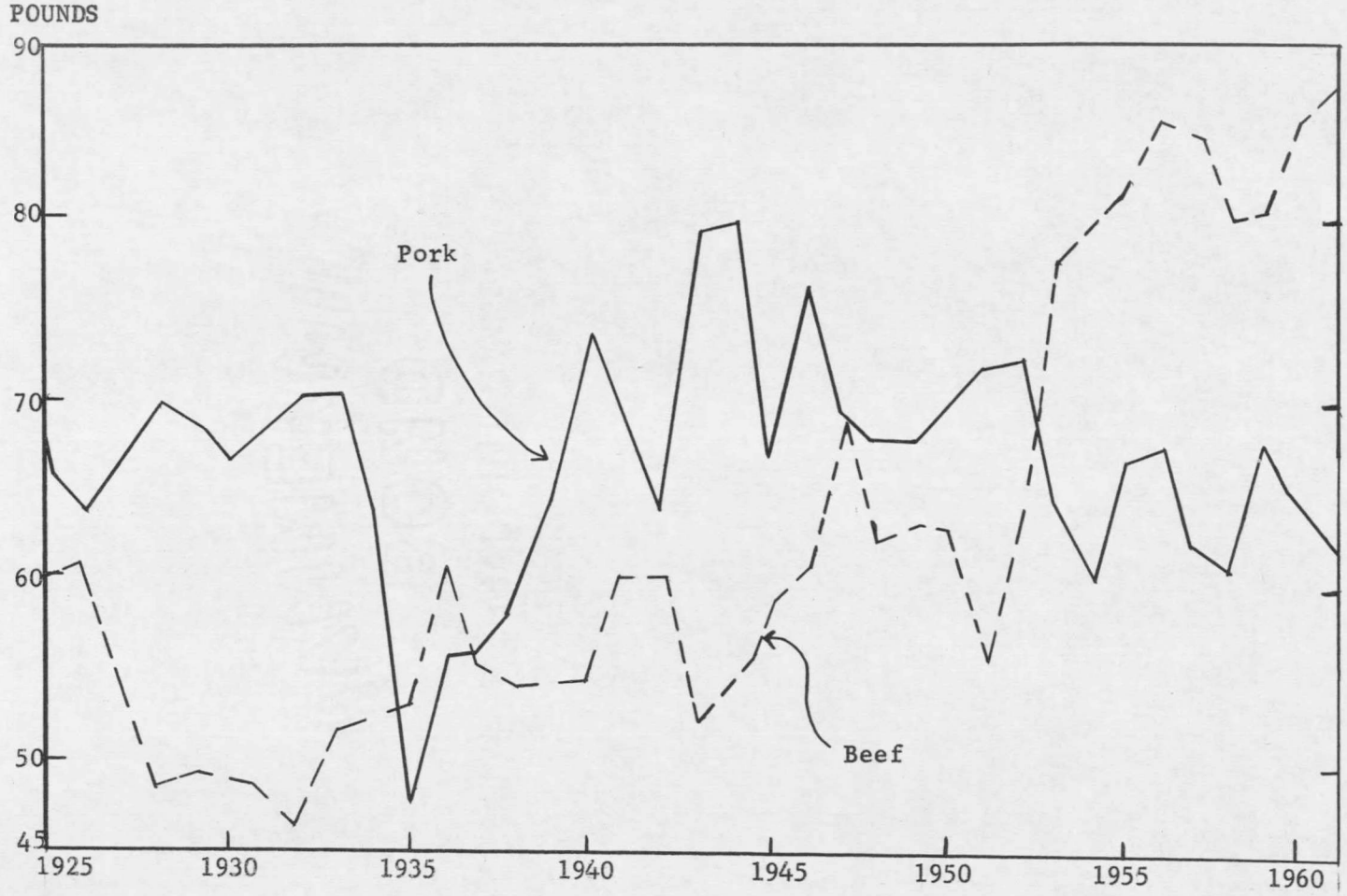

Figure 2. Average annual per capita consumption of pork and beef in the United States, 1920 to 1961 (pounds, carcass weight).

Source: Consumption of Food in the United States, U.S.D.A., Agricultural Handbook No. 62, 1957 and 1959.

Livestock and Meat Situation, Economic Research Service, U.S. Department of Agriculture, May, 1962.

Since there were no data available on which to base further measurement of differences between states in per capita consumption, it was necessary to assume that differences which did exist between states in the West would not be of significant magnitude.

Total consumption for each of the 11 Western States was computed by multiplying population times per capita consumption for 1960 (Table IV).

TABLE IV. CONSUMPTION OF BEEF, VEAL, LAMB-MUTTON AND PORK, ELEVEN WESTERN STATES, 1960. a/

States	Population 1960*	Beef Consumption	Veal Consumption	Lamb & Mutton Consumption	Pork Consumption
		1,000 lbs.	1,000 lbs.	1,000 lbs.	1,000 lbs.
Montana	674,767	74,494	3,576	4,453	39,069
Idaho	667,191	73,658	3,536	4,403	38,630
Wyoming	330,066	36,439	1,749	2,178	19,111
Colorado	1,753,947	193,636	9,296	11,576	101,554
N. Mexico	951,023	104,993	5,040	6,277	55,064
Arizona	1,302,161	143,759	6,901	8,594	75,395
Utah	890,627	98,325	4,720	5,878	51,567
Nevada	285,278	31,495	1,512	1,883	16,516
Washington	2,853,214	314,995	15,122	18,831	165,201
Oregon	1,768,687	195,263	9,374	11,673	102,407
California	15,717,204	1,735,179	83,301	103,734	910,026
Total	27,194,165	3,002,236	144,129	179,480	1,574,542

* Source: Bureau of the Census, 1960 Census of Population PC (A1)-1, U.S. Department of Commerce, Washington, D.C., November 15, 1960.

a/ Western States per capita consumption:

Beef	110.4 lbs.
Veal	5.3 "
Lamb & Mutton	6.6 "
Pork	57.9 "

Western States Production and Slaughter

Montana ranks third in beef and fourth in pork production among the Western states (Table V). Production of red meat in Montana is important

in the aggregate and factors that affect Montana meat production are probably of economic importance to the Western States in general.

TABLE V. PRODUCTION OF CATTLE AND CALVES, SHEEP AND LAMBS, HOGS, ELEVEN WESTERN STATES, 1960 (DRESSED WEIGHT).* a/

State	Cattle & Calves	Sheep & Lambs	Hogs
	1,000 lbs.	1,000 lbs.	1,000 lbs.
Montana	431,172	41,958	27,482
Idaho	255,892	43,746	27,042
Wyoming	216,156	51,046	5,222
Colorado	482,789	52,680	34,569
New Mexico	220,217	20,932	8,976
Arizona	165,047	9,666	4,348
Utah	124,026	31,012	10,144
Nevada	92,154	7,659	1,602
Washington	198,642	10,768	27,108
Oregon	229,144	25,778	32,471
California	808,282	57,452	50,734
Total	3,223,521	352,697	229,698

* Source: USDA, Supplement for 1960 to Livestock and Meat Statistics, Statistical Bulletin No. 230, AMS, Statistical Report Service, Economic Research Service, Washington D.C., June, 1961, pp. 32, 36, 40, for liveweight data, which was refined to dressed weight by using individual states average dressing percentages for each kind of livestock, results are data in Table V.

a/ Production data in pounds produced for some states is the gain on fed cattle and for other states production of feeders.

Slaughter within the various states compared to consumption gives an estimate of the market situation in each state. Contrast between the slaughter and consumption, in Table VI, indicate that only Colorado, Idaho, and Utah slaughter more beef than is consumed within their states. A surplus of 24 million pounds of beef appears for the total of the Western States. Colorado had a surplus slaughter of over 442 million pounds. Colorado disposes of a considerable portion of its surplus in states other than the 11 Western states. The Western states as a group are deficit in both calf and hog slaughter. Montana is the only

TABLE VI. ESTIMATED SLAUGHTER AND CONSUMPTION BALANCES, ELEVEN WESTERN STATES, 1960 (DRESSED WEIGHT).

	Total*a/ Slaughter	Consumption**	Surplus or Deficit	% Surplus or deficit of slaughter	% Slaughter is of Consumption
Cattle	1,000 lbs.	1,000 lbs.	1,000 lbs.		
Montana	63,827	74,494	-10,667	16.7	85.7
Idaho	125,654	73,658	+51,996	41.4	170.6
Wyoming	14,726	36,439	-21,713	147.4	40.4
Colorado	636,287	193,636	+442,651	69.6	328.6
N. Mexico	40,891	104,993	-64,102	156.8	38.9
Arizona	84,097	143,759	-59,662	70.9	58.5
Utah	125,581	98,325	+27,256	21.7	127.7
Nevada	18,320	31,495	-13,175	71.9	58.2
Washington	271,983	314,995	-43,012	15.8	86.3
Oregon	158,004	195,263	-37,259	23.6	80.9
California	1,487,567	1,735,179	-247,612	16.6	85.7
Total	3,026,937	3,002,236	+24,701		
Calves					
Montana	1,674	3,576	-1,902	113.6	46.8
Idaho	1,651	3,536	-1,885	114.2	46.7
Wyoming	381	1,749	-1,368	359.1	21.8
Colorado	4,027	9,296	-5,269	130.8	43.3
N. Mexico	1,673	5,040	-3,367	201.3	33.2
Arizona	4,064	6,901	-2,837	69.8	58.9
Utah	3,125	4,720	-1,595	51.0	66.2
Nevada	989	1,512	-523	52.9	65.4
Washington	5,260	15,122	-9,862	187.5	34.8
Oregon	6,893	9,374	-2,481	36.0	73.5
California	60,901	83,301	-22,400	36.8	73.1
Total	90,638	144,127	-53,489		
Lamb and Mutton					
Montana	756	4,453	-3,697	489.0	17.0
Idaho	4,101	4,403	-302	7.4	93.1
Wyoming	1,102	2,178	-1,076	97.6	50.6
Colorado	76,201	11,576	+64,625	84.8	658.3
N. Mexico	4,951	6,277	-1,326	26.8	78.9
Arizona	3,282	8,594	-5,312	161.9	38.2
Utah	16,599	5,878	+10,721	64.6	282.4
Nevada	846	1,883	-1,037	122.6	44.9

TABLE VI. (Continued)

	Total*a/ Slaughter	Consumption**	Surplus or Deficit	% Surplus or deficit of slaughter	% Slaughter is of Consumption
	1,000 lbs.	1,000 lbs.	1,000 lbs.		
Washington	8,168	18,831	-10,663	130.5	43.4
Oregon	12,113	11,673	+440	3.63	103.8
California	126,872	103,734	+23,138	18.2	122.3
Total	254,991	179,480	+75,511		
Hogs					
Montana	39,662	39,069	+593	1.5	101.5
Idaho	27,384	38,630	-11,246	41.1	70.9
Wyoming	6,142	19,111	-12,969	211.2	32.1
Colorado	88,934	101,554	-12,620	14.6	87.6
N. Mexico	14,834	55,064	-40,230	271.2	26.9
Arizona	20,317	75,395	-55,078	271.1	26.9
Utah	40,774	51,567	-10,793	26.5	79.1
Nevada	1,308	16,516	-15,208	1,162.7	7.9
Washington	105,964	165,201	-59,237	55.9	64.1
Oregon	65,181	102,407	-37,226	57.1	63.6
California	225,164	910,026	-684,862	304.2	24.7
Total	635,664	1,574,540	-938,876		

* Source: Agricultural Marketing Service, Supplement for 1960 to Livestock and Meat Statistics, Statistical Bulletin No. 230, United States Department of Agriculture, June, 1961.

** Source: See Table IV.

a/ Includes estimated farm slaughter.

state with a surplus of hog slaughter. Montana has a farm slaughter of 37,000 hogs, largest of any of the Western states. Lamb and mutton slaughter also exceeds consumption in the West; Colorado, Utah and California slaughter more lamb and mutton than they consume.

Value Added to Product

Meat packing concerns increased the value of the livestock products in Montana by a little over $4 million in 1958 (Table VII). California had over 45 percent of the total value added to meat processing in nine of the eleven Western states and had 45 percent of all employees. Average wage rates for production workers in California was $2.82 per hour, highest in the Western states--lowest hourly wage was $1.84 per hour in New Mexico (Table VII). Average wage for the nine reporting states was $2.41 per hour. Montana's hourly wage was $0.20 below the nine state average and $0.61 less than California's.

A comparison of labor rates between Montana and the Pacific Coast states reveals a differential in favor of Montana packers by at least $0.30 per hour in 1958. One of the factors of production, labor cost, provides a locational advantage to Montana greater than seven of the nine Western states reporting in 1958.

TABLE VII. MEAT PACKING PLANTS, NUMBER, ALL EMPLOYEES, PRODUCTION WORKERS AND VALUE ADDED TO PRODUCT, ESTIMATED HOURLY WAGE, ELEVEN WESTERN STATES, 1958.*

State	No. of Plants	All Employees	Production Workers	Value Added to Product	Estimated Average Wages/Hr. Prod. Work
		Number	Number	$1,000	Dollars
Montana	23a/	649	522	4,274	2.21
Idaho	38	674	502	7,499	2.26
Wyoming	8	N O T A V A I L A B L E			
Colorado	45	3,050	2,447	29,628	2.58
N. Mexico	14	457	326	4,548	1.84
Arizona	19	678	526	6,117	2.32
Utah	28	1,189	853	10,795	2.56
Nevada	6	N O T A V A I L A B L E			
Wash.	59	2,204	1,614	25,258	2.53
Oregon	68	1,518	1,073	15,351	2.55
Calif.	122	8,564	6,122	91,308	2.82
Total	430	18,983	13,985	194,778	

* Source: U.S. Department of Commerce, 1958 Census of Manufacturing, Bureau of the Census, U.S. Government Printing Office, Washington, D.C., 1961.

a/ This does not include many of the one and two man plants in Montana. This is probably true for the other states also.

Growth and Expected Changes in the West

Statistics presented show that slaughter of beef in Montana and in the Western states about balances consumption. Montana packers must look to out-of-state markets if any significant expansion is to take place. These are highly competitive markets; other areas in the West are also looking at these markets as a potential for their expansion. Future competition is likely to become even keener. 10/

Nevertheless, these markets are growing and competitive positions

10/ Harston and Menzie, Op. Cit., p. 5.

are changing. It is estimated that about 14 percent more dressed meat will be required to supply the increased population in Montana by 1970. Coastal states are growing at a much faster rate. If the growth to 1970 continues at the same rate as for the past 10 years, an increase of nearly 40 percent will be required for other Western states to meet the population growth. 11/ This does not take into account increases in per capita consumption which Figure 1 revealed are likely to be associated with increased incomes over the next 10 years.

Structural Changes in the Meat Packing Industry

The number of meat packing plants has increased steadily since the turn of the century (Figure 3). Rapid increases in number of plants occurred during World War II. In the period 1950-60, as shown in Table VIII, the total number of plants dropped slightly. By 1955 the entire reduction was accounted for by the reduction in number of plants slaughtering less than two million pounds liveweight annually. The large nonfederally-inspected increased during the same time period by nearly one-third and only a slight increase of federally-inspected plants occurred. Total number of plants decreased from 1955-60, however, the reduction occurred in both the large and medium noninspected plants while federally-inspected plants increased by one-sixth. This increase in numbers could possibly be the result of the large plants shifting to federal inspection. Thus it is possible that a much larger share of the federal-inspected plants in 1960 were independently owned as contrasted to 1950.

11/ Ibid., p. 5.

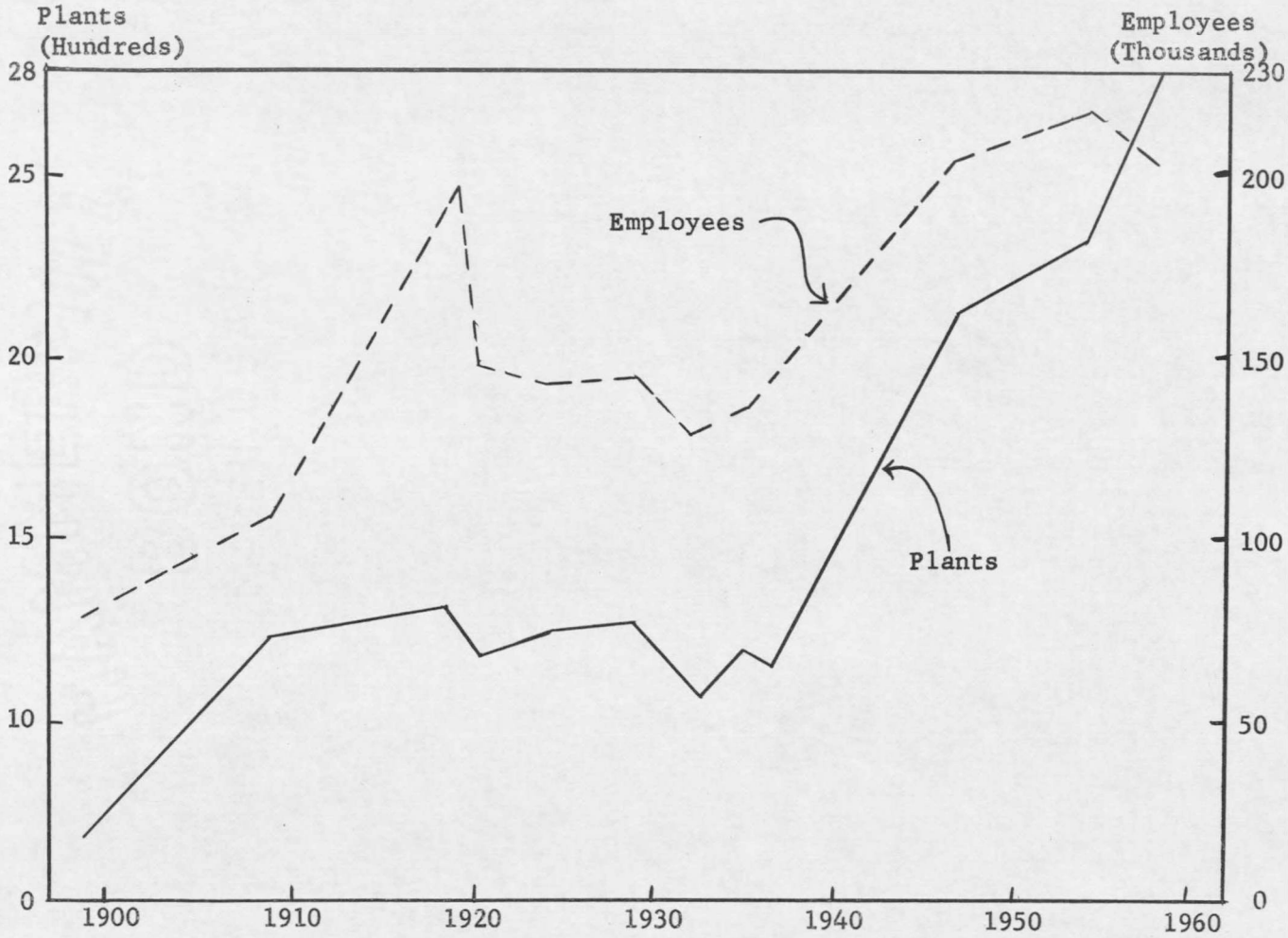

Figure 3. Meat-Packing Plants: Number and Number of Employees, a/ United States, Selected Years, 1899-1958.

Source: United States Bureau of the Census, United States Census of Manufacturers, 1958.

a/ Does not include many of the one-and two-man plants.

TABLE VIII. NUMBER OF MEAT PACKING PLANTS BY TYPE AND PERCENTAGE CHANGES, 1950-55-60, UNITED STATES.*

Type of Plant	Number of Plants			Percentage Change		
	1950	1955	1960	1950-55	1955-60	1950-60
Federally Inspected	441	455	530	+3.2	+16.5	+20.2
Large a/	725	952	902	+31.3	-5.3	+24.4
Medium b/	2,072	1,810	1,712	-12.6	-5.4	-17.4
Total c/	3,238	3,217	3,144	-.6	-2.3	-2.9

*Source: Number of Livestock Slaughter Establishments, March 1, 1950, 1955, 1960, by AMS, U.S. Department of Agriculture, Washington, D.C.

a/ Includes nonfederally-inspected plants slaughtering over two million pounds liveweight annually.

b/ Includes nonfederally-inspected plants slaughtering less than two million pounds liveweight but more than 300,000 pounds annually.

c/ This includes some of the smaller plants that are not included in Figure 3.

Since 1950 numbers of packing plants operated by the dominant firms, the so-called national packers, have remained substantially unchanged or have declined in most parts of the nation. Two of the four largest firms have gone through retrenchment programs in which some plants were closed and others declined in volume. 12/

A market trend toward geographic decentralization in the meat-packing industry has been in process for many years. Slaughter volumes in Chicago, eastern slaughtering centers, San Francisco, and certain other large metropolitan centers have dropped sharply. Livestock slaughter in outlying areas, meanwhile, has increased even more sharply. 13/

12/ Willard F. Williams, Structural Changes in the Meat Wholesaling Industry, Journal of Farm Economics, Vol. XL, No. 2. May, 1958, p. 317.

13. Ibid., p. 318.

Concentration in the meat-packing industry is less of a factor today than at any time in the last half century, and the percentage of commercial cattle slaughter accounted for by the four leading firms in the U.S. has declined about 43 percent in relative position since 1916, three-fourths of which has occurred since 1935. 14/ Thus, the independent packer has enjoyed a consistent growth in the past decade. There are possible advantages held by these smaller firms under certain conditions. These advantages and disadvantages should be made known to anyone interested in the economic potential of small meat-packing firms. The relationship between size and economic opportunities may be crucial knowledge valuable to all concerned.

Adjustments by firms, in response to changed competitive conditions are being required, and adjustments in a dynamic economy lead to additional counter-adjustments. Both national and independent packers have been seeking cost reductions through specialization, automation or other means. Counter measures taken by national packers include efforts to set aside the consent decree which prohibits a few national packers from engaging in retailing activities, decentralization of the decision-making process through establishment of regional offices, and massive merchandising programs designed to promote and expand the sale of branded frozen meat products. 15/

Other intrafirm adjustments took the form of integration. For a time, retail chains as well as packers were induced, in the West particularly, to begin integrating back toward the producer level by acquiring feed lots and feeder cattle. Merchandising policies of retail chains had resulted in general increases in the quality of beef sold at retail in deficit as well as surplus feed areas. Integration in the West, a feed deficit area, stemmed mainly from the desires of packers and food chains to assure

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14/ Ibid., p. 318.

15/ Ibid., p. 329.

themselves of regular and continuing supplies of high quality beef. However, the growth of independently owned commercial feeding establishments was also stimulated. As the supply of high quality beef has increased in the West, the trend toward backward integration by packers and chains appears to have come to a halt, and at least in some areas, to have been reversed. 16/

How do the above conditions fit the Montana economic scene? Have our packing and feedlot operations grown enough in Montana so that it is no longer necessary for the packers to maintain their own feedlots? Or, are Mr. William's observations acceptable only in states other than Montana? Are the packer-operated feedlots adequately described for Montana and do they still play a key role in the operation of slaughter facilities? Further research into these questions is essential.

The opinion that Montana has unlimited agricultural resources such as feeds, feeder cattle, management, labor and fixed investments stimulates considerations for further exploitation of these resources. Farm labor requirements are also declining and encourages search for alternative employment. Value may be added to the raw materials by increasing the services and processing applied. Increasing the services and processing has a multiplying effect of providing employment for more people which increases the buying power of the state and encourages establishments of other firms parallel and somewhat dependent upon a prosperous processing industry.

Rather than exporting Montana's raw materials to other states for further processing, why not gain the added value from further services in Montana? Research designed to measure the economic results of in-state processing plants is desirable in that it would contribute to the knowledge necessary to determine the relative competitive position of Montana plants. This type of research could provide part of the information upon

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16/ Ibid., p. 329.

which further economic development might be based. When a nucleus of economic development has been established, there is a cumulative effect which intensifies the development and makes inroads on the earlier concentrated areas of processing and trading.

There is no single formula or rule for economic development. Development hypothesis come from many sources including production workers, management, administrators, planning boards and professional research workers. The fact that there is no set formula does not mean there is no uniform procedure for working on development problems. Some of the critical steps are (1) discussion and development of goals, (2) survey of the resource base by professional research workers, (3) identification of the region of development potential, and (4) search for development hypothesis from all sources. 17/

Application of economic development procedures to Montana's meat industry are attempted in this research project. Research work can contribute to the wise development of small meat-packing businesses in the West. Existing plants may use the research findings to increase their security, stability and efficiency. They will be better able to contribute to the economic adjustments needed in a changing society.

Objectives

This project has been set up with four primary objectives:

(1) To determine the impact of the supply characteristics on the operation of meat packers located near the production areas.

(2) To analyze the problems faced by small meat packers associated with a small, scattered local demand and a highly competitive distant market.

(3) To analyze the alternative managerial, financial, contractual and other market arrangements available to small meat-packing firms.

17/ F. D. Sargent, Six Principles of Rural Development, Canadian Journal of Agricultural Economics, Vol. IX, No. 2, 1961, p. 20.

(4) To determine what economies exist between different size plants and what effect percent of capacity has on economy of operation.

Procedure

The personal survey method of research was used in this study. Fifty-five of the 60 meat packers in Montana were interviewed. In addition a few selected plants were studied in greater detail. Secondary data and informal interviews were also sources of data.

Personal interviews provided information on organization of plants throughout Montana. Procedures used in purchasing and selling livestock were also investigated. Processing services, distribution of meats and importance of by-products were discussed and analyzed from the data included in the complete population.

Cost data and structures were gained from personal interviews with a selected sample of packers. An estimate was made of the economies of size, if any, in the Montana packing businesses.

CHAPTER II

STRUCTURE OF MEAT PACKING IN MONTANA

There are 60 licensed slaughtering firms in Montana, 55 of which were interviewed in this study. These firms vary in size from small butcher plants killing a few each week up to federally-inspected plants that kill for out-of-state shipments.

Montana packing plants are classified into four different size groupings for purposes of this study. In 1961 Montana had five federally-inspected packing plants. Each of these firms slaughter over two million pounds liveweight annually, have federal meat inspectors and therefore can participate in interstate trade. (In further discussion these plants are referred to as federally-inspected plants.) There were twelve medium sized non-federally inspected plants who each slaughter over two million pounds liveweight annually, but do not have federal meat inspectors. (In further discussions these plants are referred to simply as the medium plants.) Another 20 plants are classified as small non-federally inspected plants who slaughter more than 300,000 but less than two million pounds liveweight annually. (These plants are referred to as small plants.) The remaining 23 plants in Montana are classified as local butchers and they slaughter less than 300,000 pounds liveweight annually. (Reference to these plants will be local plants.)

Generally speaking, the slaughter establishments in Montana are well dispersed throughout the state (Figure 4). However, the western half of the state has more of the larger volume plants. The Great Falls, Billings and Butte areas account for nearly three fourths of the slaughter volume for packing plants in Montana. The other plants scattered throughout the state serve a much more localized area.

Plant Ownership and Management

Packing plant owners, as do other businessmen, have a choice of

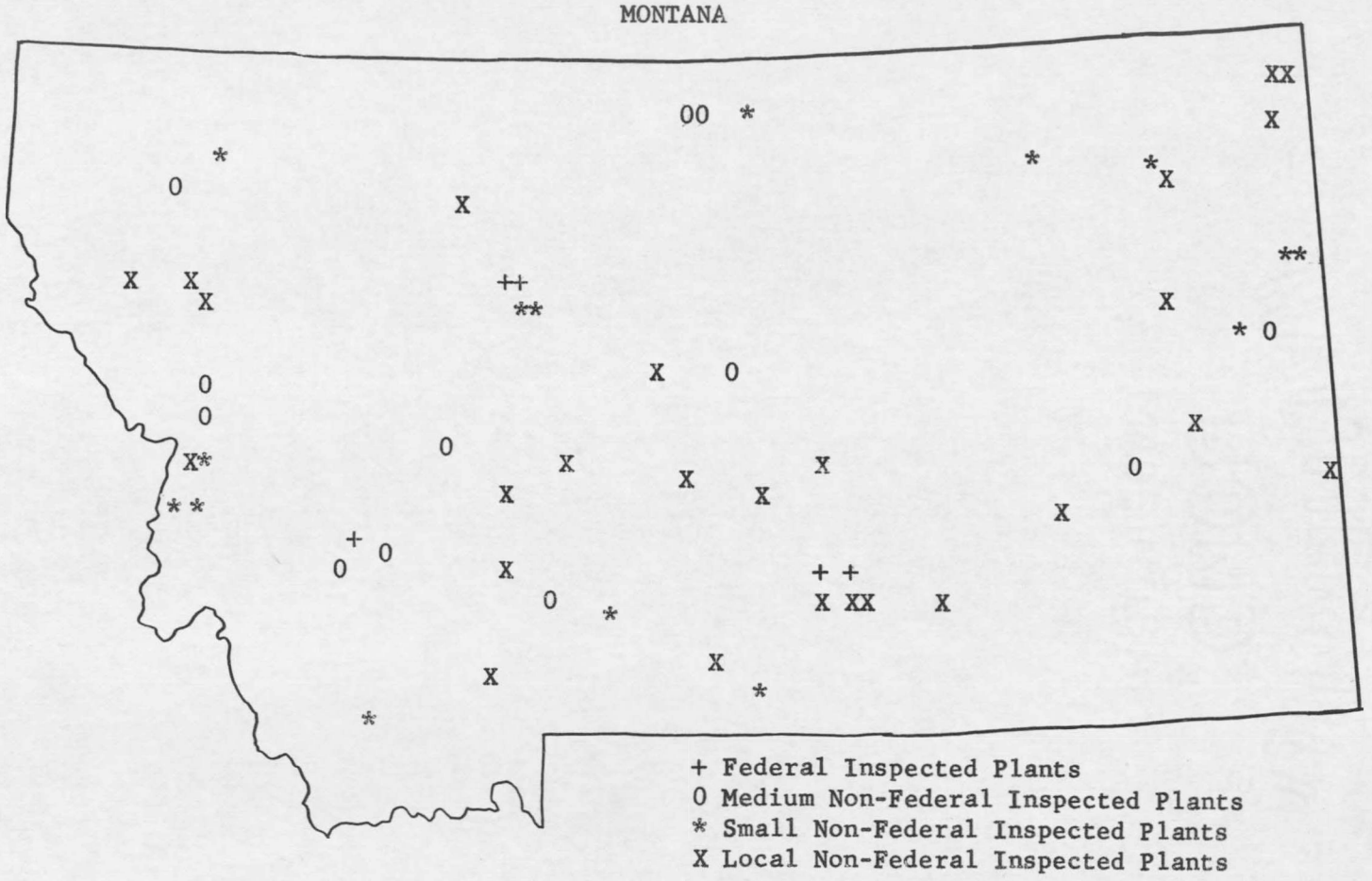

Figure 4. Location of Meat-Packing Plants in Montana, 1960.

Source: Agricultural Marketing Service, Montana Crop and Livestock Reporting Service, Montana Department of Agriculture, Helena, Montana.

several types of business organization. They may incorporate, operate as partnerships, cooperatives or as private individuals. Nearly a third of all plants in Montana were operating as corporations in 1960 (Table IX).

TABLE IX. TYPE OF MEAT PACKING PLANT OWNERSHIP IN MONTANA, BY SIZE GROUP, 1961.

Size of Plant	Type of Ownership		
	Single Proprietorship	Partnership	Corporation
	Number	Number	Number
Federal Inspected			5
Medium	2	1	9
Small	12	5	3
Local	13	3	2
Total	27	9	19

All of the federal-inspected plants and two thirds of the medium plants are incorporated. About 55 percent of the small plants and local butchers are single proprietorships. This indicates that as slaughter volume increases the more likely the business will incorporate. The manager is part owner in 64 percent of the combined federally-inspected and medium plants (Table X). A salaried manager operates only five of the total 55 plants observed in this study. When all plants are considered, nearly 85 percent of the managers are tied directly to the business as either the sole owner or part owner. With this type of management, the manager in the course of production, directly assumes the risk involved from his management decisions. The management factor, considered as a factor of production, plays a key role in the operation of the packing business and has a decided effect upon its success or failure.

Single proprietorships account for 40 percent of all plants. In a

proprietorship and a partnership, assets used to conduct the business are raised by the owner. All liabilities are the sole responsibility of the manager and the profits or loss are his alone. If the proprietor cannot pay his debts, his creditors, by resorting to the courts, may levy against any assets in his possession whether they are used in connection with his business or not. Thus, the owner of a sole proprietorship places all of his personal assets in jeopardy when he goes into business for himself. Therefore, small and local packers who have a single proprietorship or a partnership are taking a risk that would be desirable to avoid. However, each plant is an individual case and there may be a variety of reasons why a particular plant does not incorporate.

The next most popular form of plant ownership is the corporation. A corporation is a legally created entity empowered to hold assets, owe debts, and carry on a business. The owners of the corporation contribute

TABLE X. TYPE OF MEAT PACKING PLANT MANAGERS IN MONTANA, BY SIZE GROUP, 1961.

Size of Plant	Manager Sole Owner	Manager Part Owner	Manager Salaried
	Number	Number	Number
Federal Inspected		2	3
Medium	2	9	1
Small	11	8	1
Local	13	5	
Total	26	24	5

funds to it. Unlike a single proprietorship the owners of a corporation do not own its assets directly. They are separate and distinct from the corporation itself. As stockholders they stand to gain if the corporation earns a profit, but if the corporation fails, and the creditors sue for payment of amounts due them, it is the corporation (the legally created

entity) which is responsible for the debts and not the stockholders. By investing in a corporation an investor may limit his amount of risk to what he has invested in a particular business. His other investments are not in jeopardy.

Another advantage of a corporation is the continuance aspect. When one stockholder dies his stocks may be sold by the estate without disturbing the corporation. This places a corporation in a better position to accumulate assets over a prolonged period of time than a single proprietorship.

Of the 18 packing plants incorporated in Montana, 15 have managers who have stock in the corporation. With this type of management any profits that come to the corporation are of direct benefit to the manager which should stimulate him to tax his managerial ability in an attempt to guide the business to the most profitable end. Of course, the single proprietorship also has the incentive of making the most profit because he acquires this directly, therefore the management incentives of the incorporated, single proprietorship and partnership plants in Montana are very similar.

Age of Plant

Montana packing plants included in this survey range in age from 3 years to 76 years, with an average age of 19½ years (Table XI).

TABLE XI. AGE OF MONTANA MEAT PACKING PLANTS BY SIZE GROUP.

Size of Plant	Age in Years						
	0-10	11-15	16-20	21-30	31-50	51-75	76 over
	No.	No.	No.	No.	No.	No.	No.
Federal Inspected		1			2	1	1
Medium	4	2		2	3	1	
Small	8	4	4	3	1		
Local	3	8	3	2	1		
Total a/	15	15	7	7	7	2	1

a/ One plant was unable to furnish this information.

The federally-inspected plants as a group are the oldest plants, however, three of them have recently remodeled and two have plans to remodel providing capital can be obtained. In the medium and small group 80 percent of the plants are younger than 10 years of age. This growth of independent non-federally inspected plants reflects the tendency towards decentralization in the packing industry of the United States.

The trend toward decentralization began about the time of World War I and has continued to the present time. Decentralization in location is associated with decrease in size of individual plant operation. Equipment and tools of the physical plant are now made in sizes and quantities that are available for plants with wide ranges in volume. Thus it is possible for an independent operator planning on a limited market area to build and equip a plant that will handle efficiently his anticipated volume. Plant layout and design have been geared not only for the mass production techniques employed by plants of large scale operation but also for the small scale operation. Small population concentrations in Montana determine the size of a plant which depends upon a local market. Growth of medium and small plants in Montana depend upon such a market structure. Federally-inspected plants with sales that cross state boundaries have a different market structure.

With a rapidly changing technology in the meat industry even the newest plants may not be considered modern for long unless a progressive forward planning attitude is taken by the management. Several of the plants in Montana reflect this type of management. Others are in a management transition period and are desirous of remodeling their present facilities and equipment. As some of these older plants attempt to reorganize their business it will require relatively long-term financing. Financing may be the biggest deterrent to modernization faced by the plants in Montana.

Turn-over of Ownership and Management

The plants included in this survey have been under the present

ownership an average of 13½ years. The federally-inspected plants have been under the present ownership an average of 29 years indicating a considerable degree of stability in ownership. Lest the aforegoing statement be too misleading, it should be mentioned that one of the five federally-inspected plants has changed ownership within the last five years (Table XII) and one is listed for sale, but the other three plants have been under their present ownership or in the same family since they began operations. At the time of this survey (1961) four of the federal-inspected plants had never changed ownership (Table XIII). Over one half of the plants included in this study had never changed ownership. In light of the average age of the plants this once again illustrates relative stability of the plants and their ownership.

TABLE XII. LENGTH OF TIME UNDER PRESENT OWNERSHIP, MEAT-PACKING PLANTS, MONTANA, 1961.

Size of Plant	Years						
	0-5	6-10	11-15	16-20	21-30	31-50	51-75
	No.	No.	No.	No.	No.	No.	No.
Federal Inspected	1		1		1	1	1
Medium	2	3	3			3	1
Small	5	8	3	3	1		
Local	6	4	6	1	1		
Total	14	15	13	4	3	4	2

Employees

Montana packing plants included in this study had a total of 787 full-time and 61 part-time employees in 1960 (Table XIV). The federally-inspected plants had 60 percent of the total full-time employees and the large plants had 27 percent of the full-time employees in 1960. This adds evidence to the proposition that the federal-inspected and the large non-inspected plants are the dominant influence in the Montana meat-packing industry.

TABLE XIII. CHANGES IN OWNERSHIP, MONTANA MEAT PACKING PLANTS.

Size of Plants	Number of Times Ownership Changed			
	Never	Once	Twice	Three Times
Federal-Inspected	4	1		
Medium	5	3	1	1
Small	13	2	1	1
Local	8	4	2	1
Total	30	10	4	3

a/ Eight plants were unable to furnish this information.

TABLE XIV. NUMBER OF EMPLOYEES, FULL AND PART-TIME, MONTANA MEAT PACKING PLANTS, BY SIZE GROUPS, 1960.

Type of Employee	Size of Plant				
	Federal Inspected	Medium	Small	Local	Total
	Number of Employees				
Full-time	466	219	71	31	787
Part-time	8	12	22	19	61

All of the firms surveyed said they operated only one shift per day and in most cases this was on the basis of an eight-hour day. Work is usually divided so that no one person worked at a specialty job throughout the week. Less than 15 percent of all the plants interviewed killed five days a week (Table XV) indicating that workers should be skilled in more than one job within the packing plant. When workers are forced to become trained in more than one skill within a plant, the marginal efficiency of labor is likely to be reduced causing a corresponding increase in the marginal cost of output. A plant large enough to allow specialization of its workers should have an opportunity to increase production efficiency and reduce cost. If their marginal costs are lower due to the larger

volume they are in a much better competitive position for pricing and furnishing volume sales.

TABLE XV. NUMBER OF DAYS PER WEEK SLAUGHTERING EACH TYPE OF LIVESTOCK, MONTANA MEAT-PACKING PLANTS, 1961.

Size of Plant and Livestock Killed	Number of Days Killing Each Week				
	1	2	3	4	5
			Number of Plants		
Federal Inspected:					
Beef		2			3
Hogs		1	1		1
Medium:					
Beef		7	3	1	1
Hogs	5	4	1		
Sheep	1				
Small:					
Beef	8	5	3	1	3
Hogs	13	5			1
Sheep	2	1			
Local:					
Beef a/	5	3			1
Hogs a/	8	2			

a/ The other small plants indicated they would kill any day depending upon demand.

Thus the small plant with workers doing a variety of jobs more than likely is at a disadvantage from the production efficiency point of view. Plants with this type of structure also have physical facilities which are idle when workers switch from one job to another within the plant. These plants then are not only operating at lower efficiency of labor but also the efficiency of capital is reduced when capital goods are idle part of the normal operating period.

Slaughter Volume

The 55 plants included in this study had a total kill in 1960 of

100,319 beef, 2,817 calves, 6,683 sheep and lambs, and 262,753 hogs (Table XVI). The federally-inspected plants had an average annual kill in 1960 of 11,500 beef. This average excludes one plant that was operating only part of the year. Only three federally-inspected plants were killing hogs, and they had an average annual kill of about 59,000. Contrast the foregoing volumes with the local plants who had an average annual kill of only 138 beef and 183 hogs for 1960.

TABLE XVI. LIVESTOCK SLAUGHTERED AND AVERAGE PER PLANT, MONTANA MEAT-PACKING PLANTS, 1960.

Size of Plant	Total Beef	Average/ Plant Killing Beef	Total Calves	Average/ Plant Killing Calves	Total Sheep	Average/ Plant Killing Sheep	Total Hogs	Average/ Plant Killing Hogs
	No.	No.	No.	No.	No.	No.	No.	No.
Federal Inspec.	51,542	11,529	356	178	241	120	176,546	58,848
Medium	32,371	2,697	2,311	231	5,910	537	67,184	6,107
Small	14,059	703	346	38	1,358	97	16,270	903
Local	2,347	138	28	9	173	24	2,753	183
Total	100,319		2,817		6,683		262,753	

Estimated Physical Plant Limitations

Packing plant owners and operators were asked for their estimates of the potential annual capacity of their plants. Capacity is here defined as the amount of volume the physical structure of a plant could produce. In 1960 only 27 percent of the plants interviewed were operating at 95 percent or more of their physical plant limitations (Table XVII). Only two of the federally-inspected plants were operating at or near plant limits while three of them were operating between 76 and 85 percent of their physical limitations. All plants were operating on the basis of one eight-hour shift per day. If these plants were operating at their

volume potential the total cattle kill could be increased by an estimated 9,000 head annually. All federal plants killing hogs were operating at the limit of their hog killing and processing facilities.

TABLE XVII. PERCENT OF PLANT CAPACITY AT WHICH MONTANA MEAT-PACKING PLANTS ARE OPERATING, 1961.

Size of Plant	Percent of Capacity						
	0-45	46-55	56-65	66-75	76-85	86-95	95-100
	Number of Plants						
Federal Inspected					3		2
Medium	2	3	2	2		1	2
Small	1	8		2	1		8
Local a/	4	5	1		1		3
Total	7	16	3	4	5	1	15

a/ Four of the local plants were unable to furnish this information.

Only three of the medium plants were operating over 75 percent of their capacity (Table XVII). This suggests that these plants have considerable physical room for volume expansion. If the medium plants were operating at physical plant limits they conceivably could increase their total kill by an estimated 22,000 beef, 1,800 calves, 2,900 sheep and lambs, and 40,000 hogs annually. The above data indicates that "if" the federally-inspected plants and the medium non-inspected plants were utilizing their physical volume potential, then cattle slaughter in Montana could be increased by nearly one-third but hog slaughter would increase only about one sixth of the present volume.

Cooler Space

Plant owners and operators were asked if they kept their cooler space fully occupied. All of the federally-inspected plants were operating their coolers at capacity (Table XVIII). However, they felt that this was not

necessarily the limiting factor in the physical plant, increased volume could be achieved by moving the carcasses to markets immediately after chilling. About one third of all the plants kept their coolers fully occupied. The reason given by many of the smaller plant operators for not having the cooler full was a result of the once or twice weekly killing schedule and the seasonal slack in volume. Therefore, oftentimes, the cooler was nearly empty for two or three days a week but full the rest of the time.

TABLE XVIII. MEAT PACKING PLANTS WITH COOLER SPACE FULLY OCCUPIED, MONTANA, 1961.

Cooler Space Fully Occupied	Size of Packing Plant				
	Federal Inspected	Medium	Small	Local	Total a/
	No.	No.	No.	No.	No.
Yes	5	3	4	6	18
No		9	15	12	36

a/ One custom killing plant was unable to provide this information.

Only one federally-inspected plant aged beef in its cooler--the others moved it as soon after chilling as markets were available. About 95 percent of the small and local plants aged beef six days or longer (Table XIX). These plants had more direct contact with the consumer and therefore were providing this added service of aging beef. The federally-inspected and many of the medium plants were not dealing directly with the consumer, but rather with an intermediary and therefore aging in the plant was not a necessary consideration.

Seasonal Volume

Commercial livestock slaughter in Montana had considerable monthly fluctuations in 1960. In Figure 5 it may be seen that the total cattle

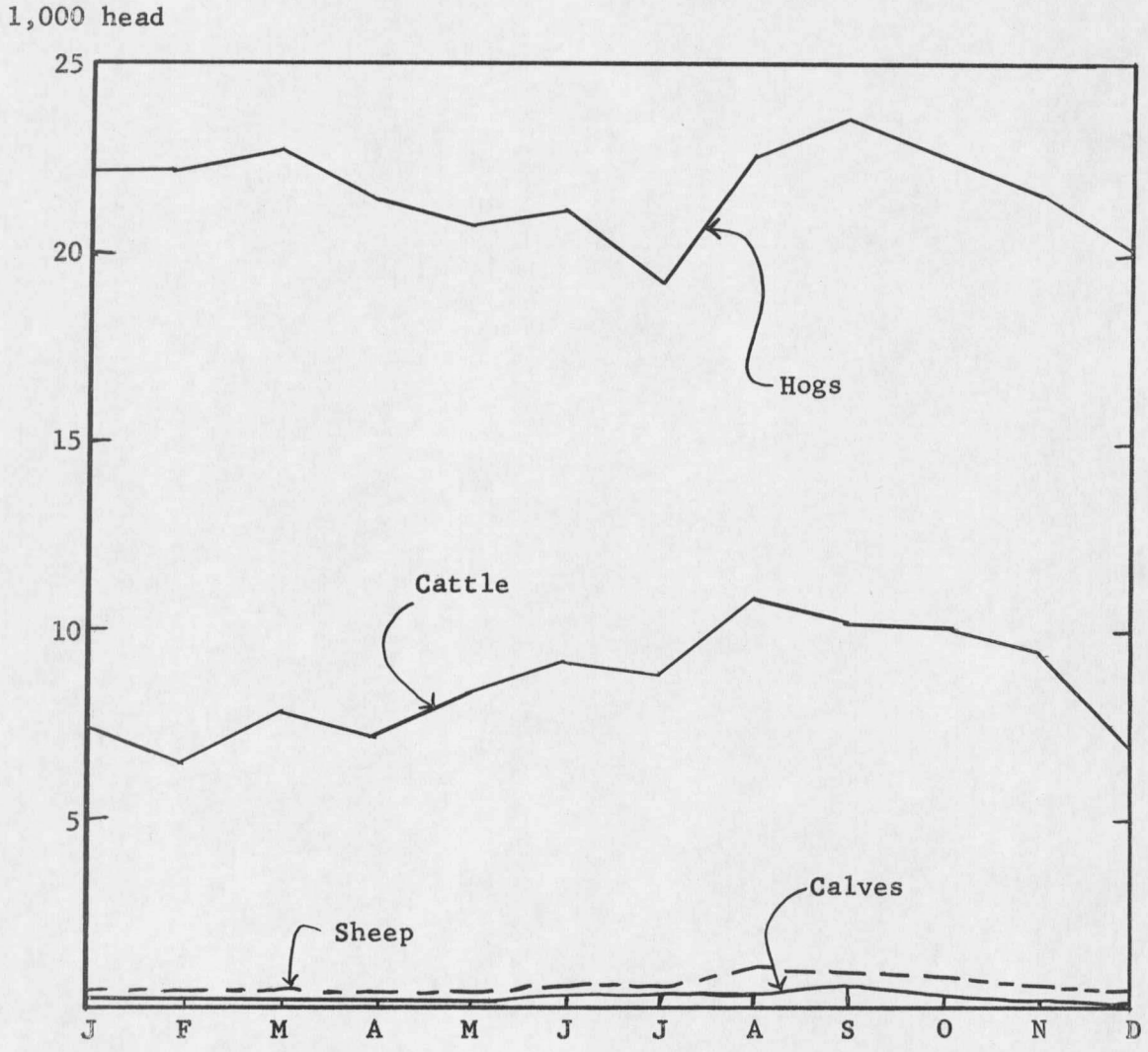

Figure 5. Commercial Livestock Slaughter in Montana by Months, 1960.

Source: Agricultural Marketing Service, Supplement for 1960 to Livestock and Meat Statistics, Statistical Bulletin No. 230, USDA, June, 1961.

TABLE XIX. BEEF AGING, NUMBER OF DAYS, MONTANA MEAT-PACKING PLANTS, MONTANA 1960.

Size of Plant	Days 0	1	2-5	6-9	10-14	Over 14	Total
	No.	No.	No.	No.	No.	No.	No.
Federal Inspected	3	1		1			5
Medium			4	6	2		12
Small			2	7	8	3	20
Local				5	10	3	18
Total	3	1	6	19	20	6	55

slaughtered in 1960 varied from a low of 6,600 in February to a high of 10,900 in August. Hogs reached a peak in September of 23,700 and a low in July of 19,300. Slaughter of calves and sheep varied only slightly with their total volume accounting for only a small portion of the total slaughter. This monthly fluctuation represents part of the reason why plants are not operating at physical plant capacity for the year. The monthly fluctuations in slaughter are a result of lack of demand for meat and a lack of supply of killing quality live animals.

Custom Work

Custom slaughtering was negligible in the federally-inspected plants; in the medium plants it is more important (Table XX), in the small and local plants custom work has a considerable degree of emphasis in the plant operation. In most cases the small and local packers are dealing with localized clientele where service to the consumer and development of regular customers are important not only for plant growth but for survival. The small and local packers who kill only a few head a week are in a better position to handle custom slaughter

than the plants killing 25 or more head per week. The smaller the volume the more opportunity to provide individual attention to the customers' wants. A one- or two-man operation can adjust to special orders and can give personalized attention to custom orders. It is also easier to age beef in a small operation. On the other hand, a plant of this size has difficulty in handling seasonal peaks in custom service. The nature of their equipment and the absence of routine limits efficiency in killing and handling for sustained orders. When side businesses are operated in conjunction with the slaughter plant attention is often diverted and the carcass might not receive the careful attention that is desirable. Sanitary conditions are often inferior to the conditions in larger plants.

TABLE XX. CUSTOM KILLING, MONTANA MEAT-PACKING PLANTS, 1960.

Size of Plant	Custom Killing as Percent of Volume						
	0	0-1	2-10	11-25	26-50	51-75	76-100
	Number of Plants						
Federal Inspected	2	2		1			
Medium		2	4	3	2		1
Small			3	3	5	4	5
Local				1	5	5	7
Total	2	4	7	8	12	9	13

Packing Plants Operating Other Businesses

Over three fourths of Montana packing plants operate some other business besides meat packing (Table XXI). Type of other business had a high degree of variation. Many of the small and local plants had their own retail stores and locker plants, others conducted a farming operation or had a small cattle feeding enterprise. Most popular was the locker plant; two thirds of the local plants and one third of the small plants operated a locker plant, but only one medium and no federally-inspected plant had

customer locker service. Nearly 40 percent of the local and small plants had a retail outlet as part of their operation. Federally-inspected and medium plants did not operate retail outlets. The federally-inspected and the medium plants had a wide variation of other types of business with no one particular enterprise being more popular than the other.

TABLE XXI. NUMBER OF MEAT-PACKING PLANTS OPERATING OTHER BUSINESSES, BY SIZE GROUPS, MONTANA, 1960. a/

	Size of Plants				
	Federal Inspected	Medium	Small	Local	Total
Packing Business only	2	4	4	2	12
Operating Other Business in Addition to Meat-Packing	3	8	16	16	43

a/ The data excludes rendering facilities.

Operating other businesses is a form of reducing the risk that is involved when there is only the slaughter plant operation. Federally-inspected plants operated feedlots to assure a ready supply of slaughter beef. Operation of a retail outlet for plants of lesser volume offers them an opportunity to present their product directly to the consumers in an effort to develop consumer acceptance for their product.

Slightly over half of the federally inspected and the medium plants had rendering facilities in conjunction with their packing plant enterprise. Only one rendering plant was operated by packers in the small group and none by the local slaughtering establishments. This suggests that smaller plants are unable to utilize the by-products of their business and must overcome this loss somewhere else in their meat business. Where this is an owner-operator situation, he may discount the returns to his own labor

or oftentimes he works longer hours than the standard eight-hour day, in an attempt to receive a desirable return for his business. A local plant rarely incurs the transportation costs that the others have. Local plants usually have the animals delivered to the plant and their customers pick up the meat and meat products at the plant. A local operation does not have the selling costs that larger volume plants do. A local plant depends on regular customers, therefore advertising costs are negligible. These summarize some of the ways in which the small and local plants are able to overcome some of the by-product loss in their business.

CHAPTER III

LIVESTOCK SOURCES AND PURCHASING METHODS

Five percent of the 100,000 cattle slaughtered were brought in from out of state. On the other hand, 40 percent of the hogs slaughtered by commercial plants came from out-of-state markets. The federally-inspected plants went over 200 miles to purchase nearly 65 percent of their hogs (Figure 6) whereas no other group of plants had to go beyond 200 miles. Nearly all of the hogs purchased beyond 200 miles were purchased from another state. About 24 percent of the hogs purchased by federally-inspected plants were from Minnesota, 24 percent came from Nebraska, 13 percent from South Dakota, and 2 percent each from Iowa and North Dakota. Heavy seasonal marketings and lack of quality hogs in Montana are the primary reasons the packers were forced into other states to purchase hogs.

The smallest number of hogs purchased out of state in any one month during 1960 was 7,000 head in January and the largest number was 11,000 in September. The seasonal fluctuation of out-of-state hog purchases in 1960 may be readily observed in Figure 7. Hogs bought out of state are a constant proportion of the total hog kill throughout the year, rising when total kill increases and falling when total kill decreases.

Almost 58 percent of the beef slaughtered in Montana during 1960 was purchased within a 25-mile radius of the packing plant. The local plants purchased 81 percent of their beef kill within 25 miles of the plant and the medium plants, 42 percent within this distance (Figure 8).

The distance packers go after livestock indicates that they are located near the source of supply for cattle or are limited to the local supply. The source of hogs is a different situation. The hog procurement problem is basically an inadequate local production of quality hogs. Large volume packers were critical of the quality on local hogs. Montana hog producers are providing more meat-type hogs than in the past but there are still too many of the fatter, wastier hogs. Meat-type hogs provide lean pork products with the least amount of waste. When a packer is forced to buy fat-type

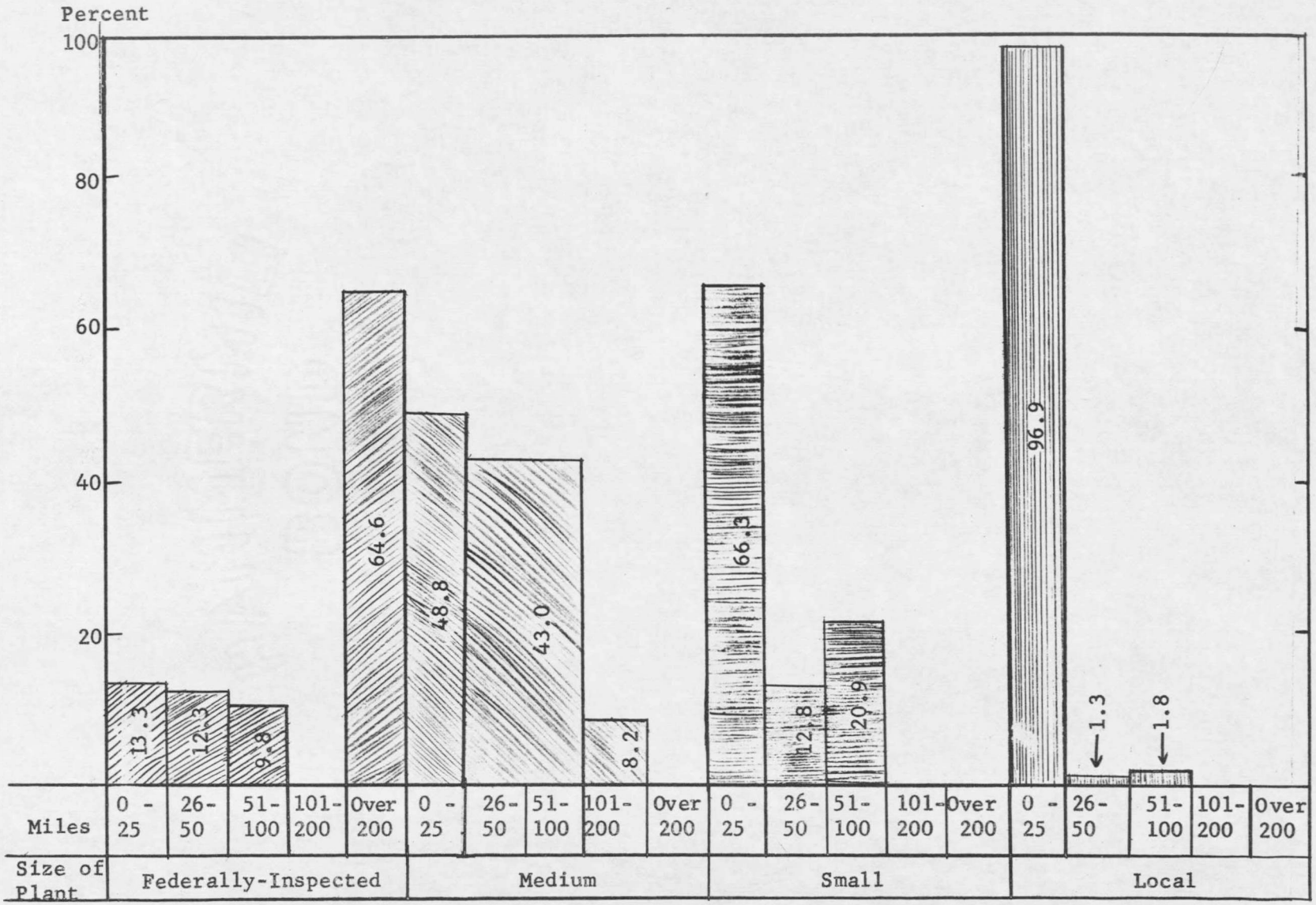

Figure 6. Percent of Hog Purchases Within Various Distances from the Plant, Montana Meat Packers, By Size Groups, 1960.

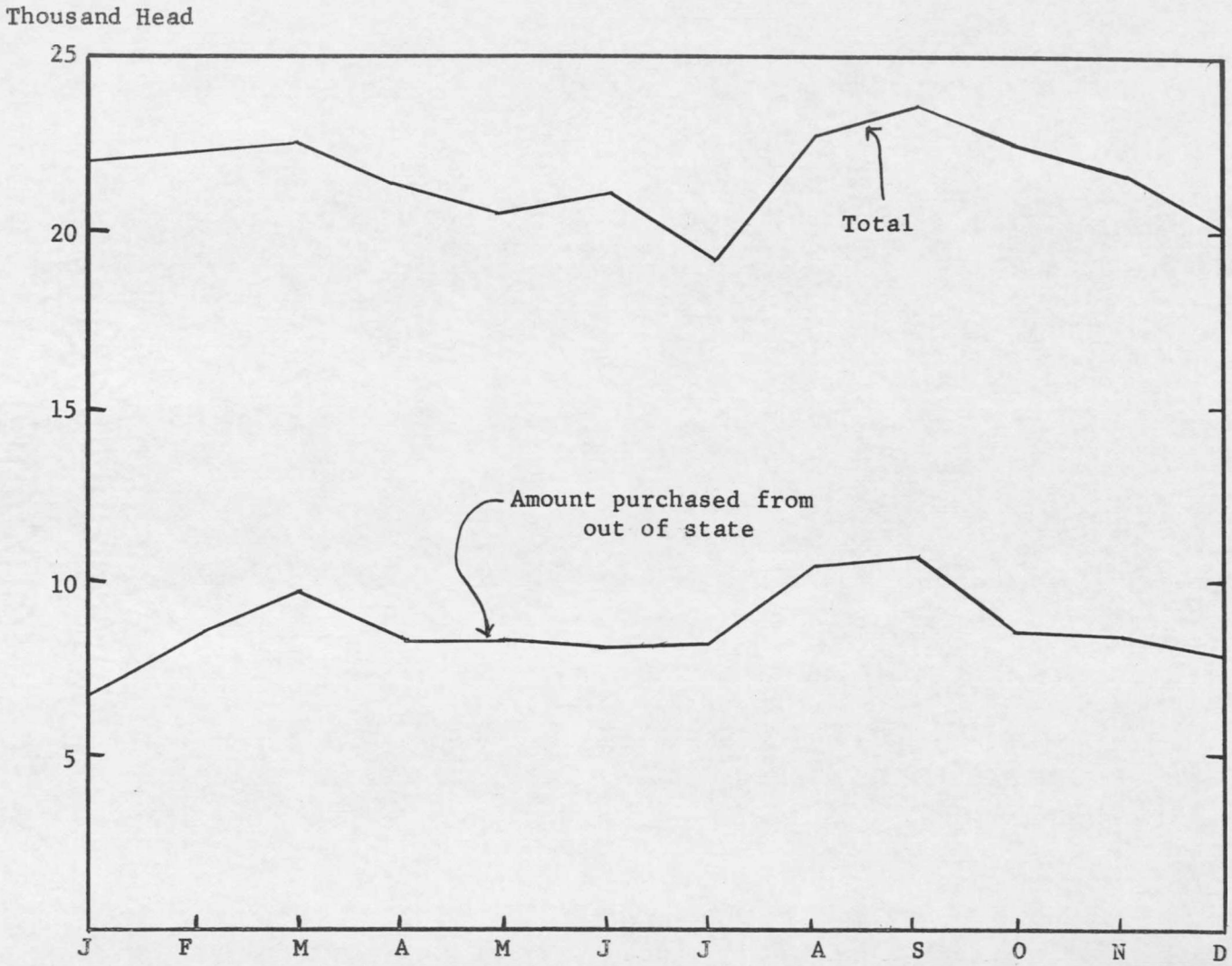

Figure 7. Hog Slaughter, Number Purchased Out of State and Total, By Months, Montana Packers, 1960.

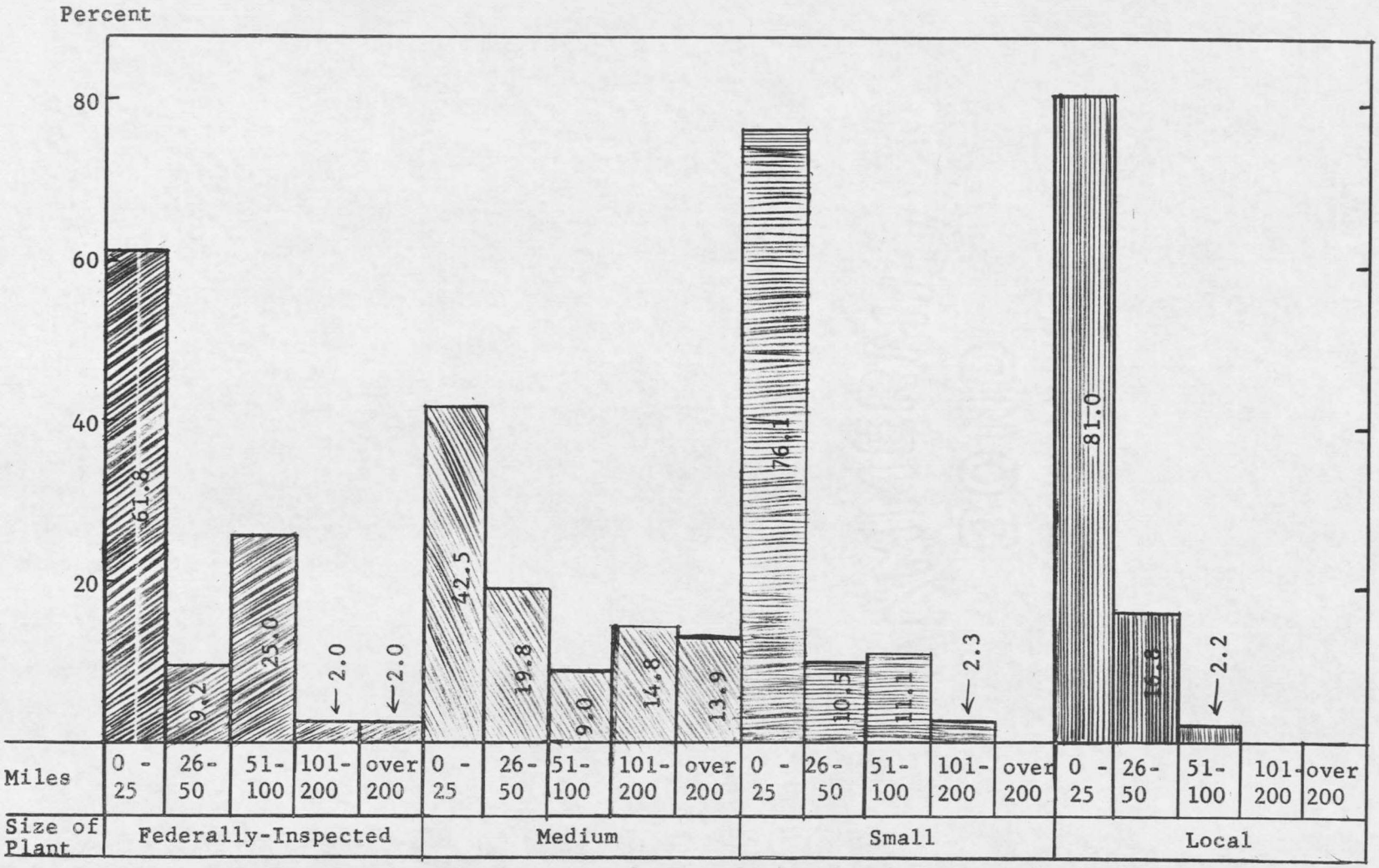

Figure 8. Percent of Cattle Purchased Within Various Distances from the Plant, Montana Meat Packers, By Size Groups, 1960.

hogs and trim the pork cuts, cost of processing goes up. Present lard prices should tend to discourage lard production.

Montana farmers who are looking for alternative or additional enterprises should seriously consider the possibility of establishing a hog enterprise. Before starting a hog enterprise it would be of benefit to both farmers and packers, if the farmer would visit with one or several of the Montana packers in an effort to decide the type of hog setup to have and the type of hog to produce. Packers visited seemed anxious to have Montana hog production increase and expressed interest in working with producers.

Dressed and Liveweight Purchases

The buying of live animals for slaughter is a highly specialized job. The buyer must try to predict both the dressed weight (or dressing percentage) and the grade of the carcass. Noone can be 100 percent accurate regarding these two important value-determining characteristics.

When an animal is sold on the basis of the carcass weight and grade, the buyer and the seller agree on the prices to be paid per hundred-weight for the carcasses of the various weights and grades. The specific price to be paid for each animal is not determined until the animals are slaughtered, weighed and graded. This method of sale is advocated by many authorities in the livestock marketing field as the method most adaptable to measuring the actual value of animals sold. 1/

Montana packers were asked what percent of their purchases were on a dressed weight basis. Only 16 percent of the cattle purchased by federally-inspected plants was by the dressed weight method, however, most of these purchases were made by one firm that claimed to buy 90 percent of their beef on a dressed basis. Two other plants purchased some cattle by this method. The percentage of beef purchased on the

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1/ Stewart H. Fowler, The Marketing of Livestock and Meat, The Interstate Printers and Publishers, Inc., Danville, Illinois, 1957, p. 347.

dressed weight basis for the different sizes of plants are:

Size of Plant	Percent of Beef Purchased by	
	Dressed Weight	Liveweight
Federally-Inspected	16 percent	84 percent
Medium	35 percent	65 percent
Small	12 percent	88 percent
Local	25 percent	75 percent

Nine out of the 12 medium packers bought some of their beef on a dressed weight consideration, one of the nine bought approximately 75 percent of its beef this way while one purchasing the least bought only 5 percent on a dressed weight basis.

All hogs were bought liveweight with the exception of two local plants with a small volume who bought a portion of their hogs by the dressed weight method.

Procurement Procedures

A packing plant operator may acquire livestock by using one of several different buying procedures. He may have his own packer employee who specializes in the purchasing of livestock. National packers and other large scale plants have their own buyers who specialize in buying only one kind of stock. They may have a different buyer for cows, one for bulls, another for fat cattle, a hog buyer and a sheep buyer. Plants in Montana who had their own packer buyer were not this complex and oftentimes the manager did the buying on a part-time basis or one buyer bought all species of livestock.

Order buyers may also be utilized by meat packers in purchasing livestock. The packer usually calls the order buyer and tells him what type of livestock they want, when and how many and what prices they are willing to pay. The order buyer then goes out in the yards, if he is at a terminal market, or into an auction ring or contacts producers direct to buy the livestock desired by the packing plant. This type of

buyer is especially useful to packers who are at a distance from the market. The packer can cover several different markets or market areas just by using the telephone and will have the services of a competent buyer. The order buyers are usually individuals or partnerships, or occasionally a firm and they charge a commission for their services.

Country dealers are still active in buying and selling livestock on a full-time basis but usually they combine some other enterprise with their livestock enterprise. Dealers usually buy direct from farmers and ranchers within a certain area. Most dealers regularly attend auction markets and have extensive contacts with the farmers and ranchers and know when and what livestock is available. Slaughter livestock usually are bought direct from the farmers, ranchers, and feeders and sold direct to the packers.

Only one of the Montana meat packers interviewed used an order buyer for beef cattle, the rest had their own buyers, usually the owner or the manager. Two plants said they bought all of their hogs from livestock dealers, one used a commission man and all other plants did their own buying of hogs.

Weight Preference

About half of the Montana packers preferred their steer and heifer beef to weight between 800 and 900 pounds liveweight (Table XXII). Another 30 percent of the plants preferred them 900-1,000 pounds. When viewed as a percent of total packer volume, about half of the steers and heifers were desired in weights of 900 pounds or less. Less than 10 percent were preferred over 1,000 pounds liveweight.

In 1960 Montana slaughter cattle had an average liveweight per head of 985 pounds contrasted to a per head average of 1,004 for the total

United States. 2/ From these data it is evident that packers are killing heavier cattle than they prefer.

TABLE XXII. LIVEWEIGHT PREFERENCE FOR STEER AND HEIFER BEEF AND HOGS, MONTANA MEAT PACKERS, 1961. a/

Beef b/ in Pounds Liveweight			
Size of Plant	801-900	901-1000	1001-1100
		Number of Plants	
Federal Inspected	2	2	1
Medium	8	2	2
Small	12	3	1
Local	6	9	
Total	28	16	4

Hogs in Pounds Liveweight			
Size of Plant	175-200	201-225	226-250
		Number of Plants	
Federal Inspected		1	2
Medium	2	8	
Small	2	8	4
Local	6	4	5
Total	10	21	11

a/ Six plants were unable to furnish this information.

b/ Killing beef only: two federally-inspected, two medium and two local plants.

Packer preference for lighter weight cattle, are a direct result of consumer demand for the cuts from the lighter weight animal. Some of the local plants reported that the lighter weights were better for their

2/ Agricultural Marketing Service, Livestock and Meat Statistics, Statistical Bulletin No. 230, United States Department of Agriculture, Washington, D.C., June, 1960, p. 87.

custom trade interested in filling the average size locker or home freezer.

Fifty percent of the plants reporting desired hogs from 200 to 225 pounds (liveweight), with about 25 percent above and 25 percent below this weight (Table XXII). However, in terms of volume, packers would want 60 percent from 226 to 250 pounds (liveweight), 29 percent from 201 to 225 pounds and only 11 percent less than 200 pounds. Average liveweight per head of commercial hog slaughter in Montana during 1960 was 232 pounds (liveweight); the average for the United States was 236 pounds. 3/ This indicates that Montana packers are killing the weight hog they prefer even though they may have to search for them when buying. In the 11 western states only New Mexico had a heavier per head average on hogs killed than Montana.

Federally-inspected plants in Montana have a procurement problem. Two of the five said they had difficulty obtaining the desired weights and a third one claimed that sometimes it takes considerable time searching for the right kind of livestock. To aid in avoiding this problem some of these plants have their own feedlot to help supply the desired animals when needed. About 40 percent of the medium plants also reported difficulty in obtaining desired weights of livestock. One plant reported an adequate supply of beef but had trouble getting hogs of the right weight. The local plants as a group found it difficult to obtain the desired weights. This can be explained by the dispersion of these plants into the limited and non-feeding areas of the state. In such situations oftentimes the beef is grass fed and hogs have to be brought in from a distance. To supply their local demand for pork many of the local plants bought hog carcasses from larger plants and processed them according to customer specification. They felt this arrangement saved procurement time and provided their customers with a higher grade meat product than might be possible if the local packer had

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3/ Ibid., p. 89.

to kill local hogs. In areas of scarce hog production cost of procuring live animals is sometimes excessive especially if the local packer is at considerable distance from any regular market. Buying hog carcasses from a packer who delivers once a week affords the local plant an opportunity to provide better service more efficiently than searching out live hogs of killing quality.

From the preceding discussion it is evident that the feeders of cattle and hogs, in Montana, are not producing enough of the type animals desired by packers who are sensitive to the meat demands of their customers. This suggests that the farmers and ranchers who produce the livestock and the packers who eventually must process them have failed to have adequate communications as to the type of product that is necessary to satisfy today's consumer. Perhaps changes in consumer tastes and demands are rapid but this should stimulate the producer to be better informed and more flexible in his operation. The packers must also do their part by adopting a buying practice, which would encourage production of a top quality animal. The price differentiation is not large enough at present to encourage producers to shift production to better animals.

Types of Markets Where Purchases Are Made

Direct purchases from commercial feedlots and farmers are sources for the largest share of the steer and heifer beef bought by the federally-inspected and the medium packers (Figure 9). Auction markets are next in importance for the medium plants but for the federally-inspected plants the terminal market is third in importance as a source of steer and heifer beef. Small plants purchased nearly the same amount from the commercial feedlot and the auction market. Purchases direct from farmers are considerably less important. The local plants purchased more steer and heifer beef direct from farmers than all other sources combined.

About 37 percent of all the steer and heifer beef slaughtered in Montana are purchased from commercial feedlots, almost 23 percent direct

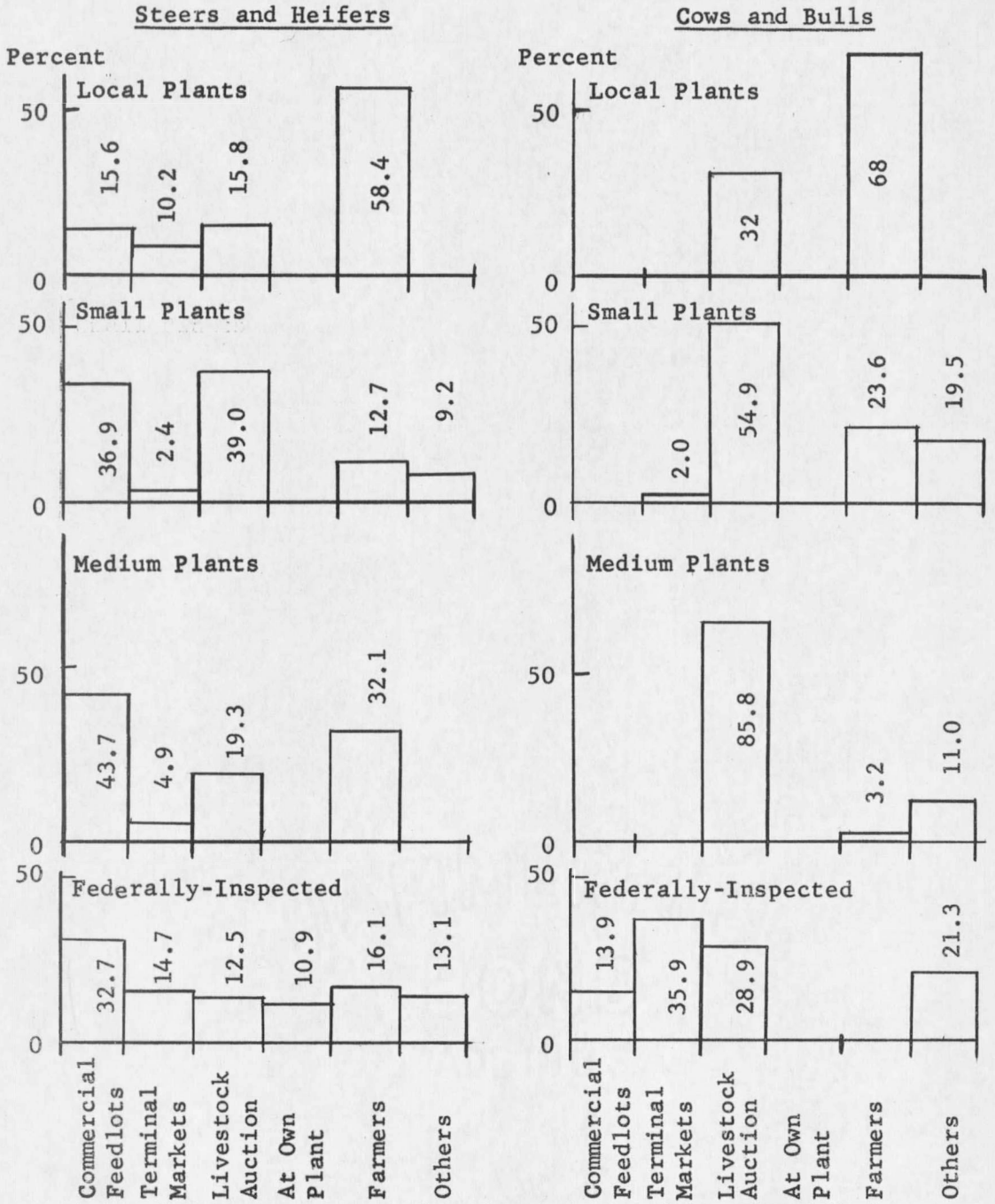

Figure 9. Market Source for Slaughter Beef, By Size of Plant, Montana Meat Packers, 1960.

from farmers and 19 percent comes from the auction markets. Cows and bulls are nearly one third of all the beef slaughtered by Montana meat packers. Primarily this meat is used in hamburger, franks, luncheon meats, and other sausage kitchen products. Auction markets are the source for 43 percent of all the cows and bulls purchased. However, as seen in Figure 9, terminal markets are the most important source used by federally-inspected plants but terminals are unimportant as a source for the other plants.

Data on where hogs were purchased was available for about half of the annual slaughter volume in 1960. This information (Figure 10) indicates that direct purchases from farmers are the most important with auction market purchases second. This suggests farmers are satisfied to sell hogs direct instead of going through auctions or terminals.

The largest killer of hogs in the state kills about 45 percent of all hogs and was unable to provide a breakdown of the market source for these hogs. However, about 70 percent of his hogs are bought out of state from various types of markets.

Supply and Quality of Local Livestock

As previously stated, over half of the beef purchased was within 25 miles of the packing plants and less than 5 percent of them were purchased out of state. This indicates that the supply of beef to the packers was adequate in volume but as discussed earlier the beef were heavier than desired. In terms of a desirable carcass about two thirds of the plants felt that local beef was equal to beef purchased at a distance and another one-fourth felt that local beef was better. Only about 8 percent of the total thought local beef volume yielded a less desirable carcass than beef bought at a distance.

These comparisons made by the packers indicate that local beef is about as good as any. But, as previously mentioned, the packers are desirous of a lighter beef animal than what they have been getting. This suggests

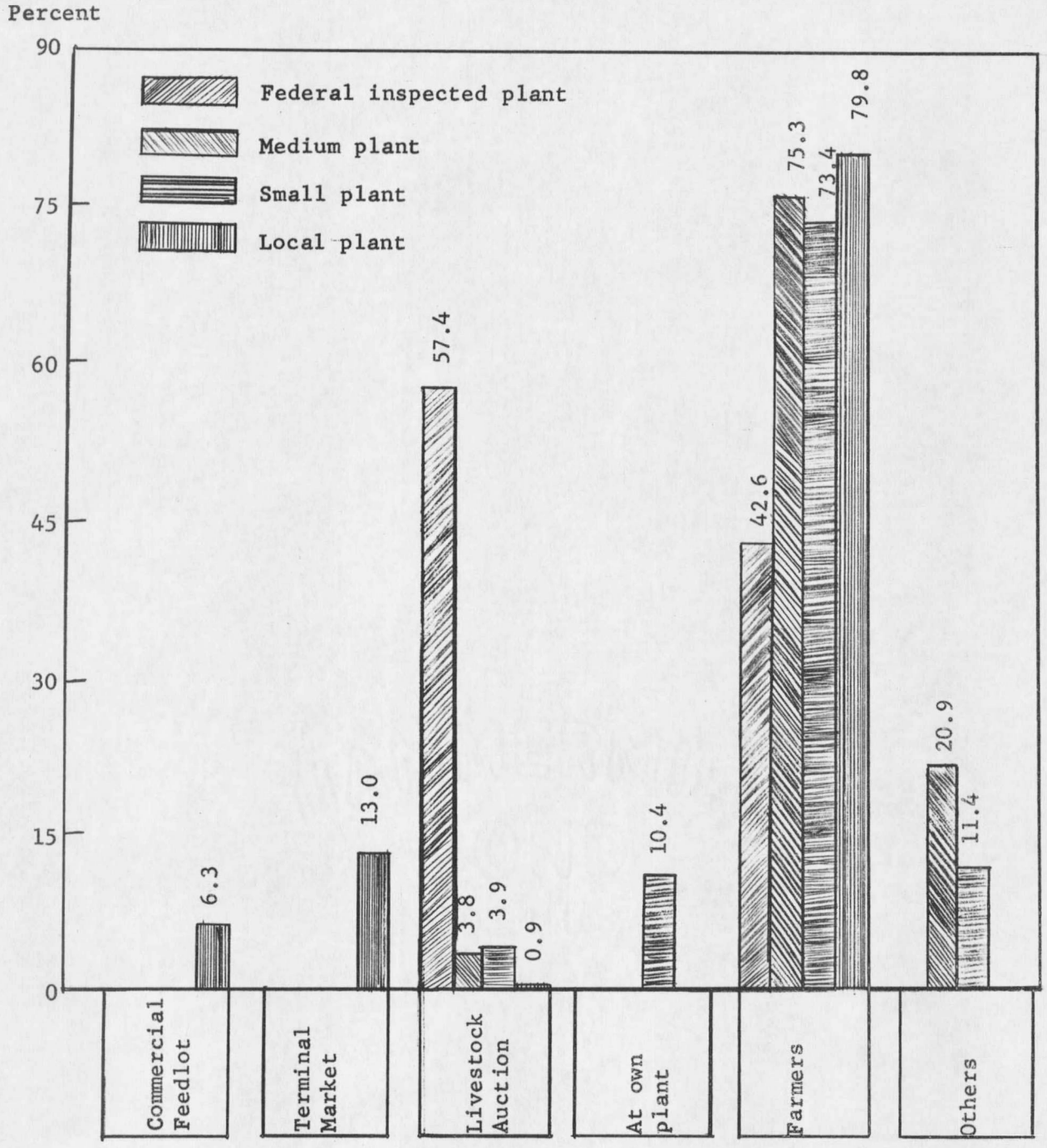

Figure 10. Market Source for Hogs Purchased by Size of Plant, Montana Meat Packers, 1960. a/

a/ Not all meat packers were able to give this breakdown.

that beef producers in the United States, in general, are not providing the desired animal and that Montana farmers and ranchers are providing about the same beef animal as other states.

Only 20 percent of the plants felt that local hogs were not as good as hogs elsewhere, however, these plants accounted for two thirds of the hog slaughter within the state. This suggests that a rather large share of Montana hogs do not yield the carcass desired by Montana packers.

Packer-Feedlot Integration

The importance of a feedlot to a packing plant is indicated by the number of plants operating their own feedlots. There were 29 plants operating their own lots and 5 plants having contracts with feeders (Table XXIII). An estimated 25,000 head of cattle were fed by Montana packers in 1960, or approximately 20 percent of all the cattle fed in Montana that year. A little over 3,000 head or 1 percent of all hogs slaughtered were fed in packer operated feedlots, which is insignificant.

When asked why they operated a feedlot most packers said it was to insure a source of supply when needed. Operation of their own feedlot affords an opportunity to have a ready supply of the type of cattle the packer desires. At the time he purchases feeder cattle the packer begins exercising quality control over the livestock that he will eventually slaughter. During the time the packer is feeding cattle he has submitted to the added risk of owning the livestock for a longer period of time. He must be willing and able to absorb the consequences of any fluctuations in prices, quality and the risk of disease. The management of the feedlot operation requires additional skills which may have to be hired. Once the know-how of cattle feeding is acquired the packer is in an excellent position to keep feedlot operating costs at a minimum. The feedlot affords him the opportunity to buy cattle that are in various stages of finish and place them in his own yard until they reach the

TABLE XXIII. FEEDLOTS OPERATED AND LIVESTOCK FED BY MEAT PACKERS AND CONTRACTS WITH OTHER FEEDERS, MONTANA, 1960.

Size of Plant	Plants with Feedlots	Number of Beef Fed	Number of Hogs Fed	Number of Plants having Contracts with other Feeders
Federal Inspected	3	20,000		1
Medium	4	4,250	1,600	2
Small	15	1,225	1,405	1
Local	7	55	277	1
Total	29	25,530	3,282	5

condition that he prefers for slaughter. It allows him to make any opportune purchase larger than necessary and the overflow may be placed in the feedlot. Some packers were quick to point out that they did not have to kill all the cattle in their own lots but had the alternative of shipping to distant markets if such action made larger profits.

The federally-inspected plants fed 20,000 head of cattle in their feedlots (Table XXIII). When these packers started their feedlots, they said there were not enough fed cattle available. The feedlots have proved to be a profitable undertaking and even though cattle feeding has been increasing in Montana these packers plan to continue operating their feedlots.

Contracts with feeders were usually oral and informal. In most cases it was for topping out a feedlot or a source to fall back on in case there was a limited supply elsewhere.

Packers reported that contracts with farmers for fat stock were unsatisfactory because of incomplete control over the quality of livestock turned out of small farm feedlots and the lack of control over time of delivery. Even if a farmer delivered on the contract date the

packer may be inconvenienced because his forecast of supplies for future dates is imperfect.

Feedlots operated by packers to insure a source of supply for slaughter suggests that cattle feeders in Montana are not aggressive enough in providing adequate uniform supplies of livestock to packers. However, this lack of aggressiveness may be due to unfavorable cost structures, lack of feeding experience or other related factors. Research currently being conducted at the Montana Experiment Station should provide some insights into reasons for the type of feeding structure that exists within the state.

CHAPTER IV

PROCESSING AND DISTRIBUTION OF MEAT

Slaughter volumes of livestock by plant size group are presented in Table XVI, Chapter II. The slaughter volume presents only a portion of the work that packing plants handle. Other things such as boning, curing, sausages, weiners, custom slaughter, cut, wrap and freeze and cutting for retail trade, are also part of the work that a packing plant may perform. The aforementioned services may be an important part of the business depending upon the size, location and emphasis of the individual packing plant.

Sausage and Other Specialty Work

Size of plant has little effect upon services that are provided in addition to slaughter. Over 70 percent of all Montana plants include boning and curing services, 64 percent make sausages, 36 percent make weiners, 50 percent make deliveries to retailers and about 50 percent cut, wrap and freeze meat (Table XXIV). The last service is provided mostly by the small and local plants in conjunction with their custom work and locker service.

Original equipment cost for the sausage kitchens and smokehouses are comparatively high unless a steady flow of product is maintained. It was in the operation of the sausage kitchen where a wide variation in practices seemed to exist. Some plant managers claimed a sausage kitchen was necessary to hold customers who desired a complete product line in their retail outlet. Several in the small and local plant groups would eliminate the sausage kitchen and concentrate on providing the right kind of carcasses, breaking them to retail specification, if they could hold their customers by such a move.

The sausage kitchen in the federally-inspected and medium plants is about the brightest corner of the plant. In no other portion of the

plant do they have a similar opportunity to add value through manufacturing. In this operation the packer is free of the profit restriction imposed by a raw material cost of 75 to 80 percent of each sales dollar. Raw material cost here is lower than in almost any other operation in the plant. In the sausage kitchen much of the cost is controllable and provides an excellent opportunity for an adequate profit. Sausage kitchens are more

TABLE XXIV. SERVICES PROVIDED BY MEAT-PACKING PLANTS IN ADDITION TO SLAUGHTERING, MONTANA, 1960.

	Size of Plant				
Services Provided	Federal Inspected	Medium	Small	Local	Total
	Number of Plants				
Boning	5	12	11	12	40
Curing	4	8	15	14	41
Sausage	3	8	12	12	35
Weiners	3	6	7	4	20
Specialty Products	2	4	2	5	13
Delivery to Retailers	3	7	13	5	28
Cutting for Retailers		5	9	7	21
Cut, Wrap and Freeze		5	10	12	27
Others	2	1	2	2	7

adaptable to automation and mechanization than other packing-plant operations. Fixed costs make it extremely difficult for plants of the small and local size to own sausage equipment if they operate the kitchen only a few hours per week. As volume of the plant increases the installation and use of a sausage kitchen becomes more profitable. Small and local plants who have had their sausage equipment for several years, and have it paid for at lower than today's costs are operating the kitchen at a

profit. Plants who are not operating a sausage kitchen waste some raw material that could be used in the sausage process.

Custom Slaughtering

Custom slaughtering is important to the small and local packer as evidenced by the data presented in Table XX, Chapter II. Charges for custom slaughter had a wide range; Figure 11 demonstrates the concentration of custom slaughtering rates for Montana meat packers. The most popular rate for cattle was $5.00 per head plus the hide. A charge of $3.00 for hogs under 250 pounds was most common but $4.00 and $5.00 were also common charges. The medium and the federally-inspected plants had a higher average custom charge, due to their lack of emphasis on custom work and in some cases actually an attempt to discourage custom killing. In these volume operations with a full product line individual custom killing becomes a nuisance. Instead of refusing to do custom killing, the plant merely raises the custom price higher than their smaller competitors.

Marketing of Meats

For the most part Montana packers are orientated toward local sales. The large chain stores have enormous influence over the market with their buying strength. Packers are quick to criticize chain store buyers for their volume purchases from the lowest priced supply source. Packer's depending on sales to chains oftentimes found themselves without a market. The problem has not been with the chain anymore than the lack of a well-developed marketing organization by the packers. If Montana packers developed a marketing organization then they would be in a more favorable position to bargain with the retail chains on volume sales which could provide outlets for an increase in meat packing.

Most plants sold the bulk of their products within a 25-mile radius

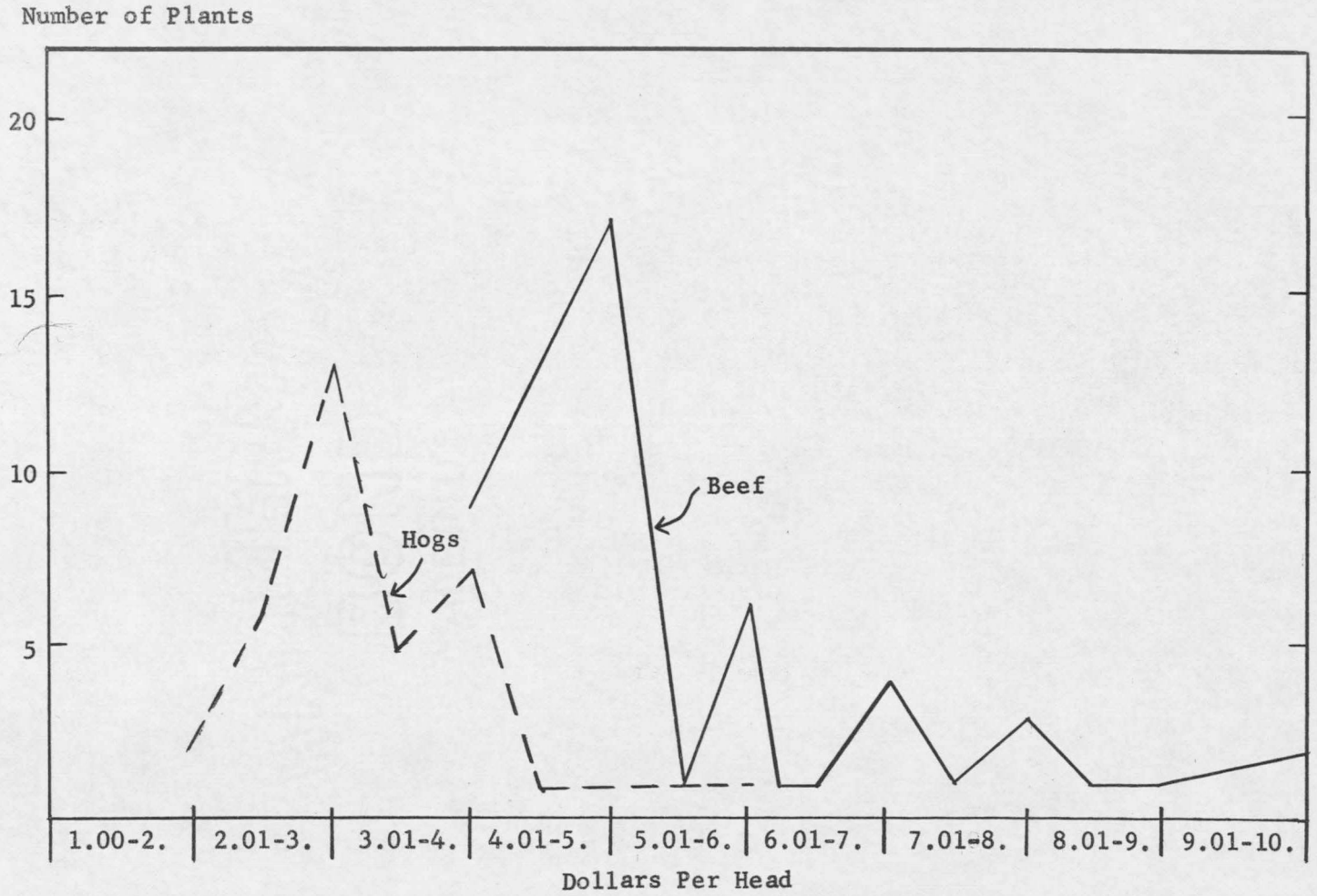

Figure 11. Custom Slaughter Rates, a/ Number of Plants at Each Rate, Montana Meat Packers, 1961.

a/ Packer usually keeps the hide in addition to the cash rate.

of their plant. Seldom did any of the small or local plants sell beyond this radius. All but three of the medium plants sold more than 50 percent of their meat within 25 miles of their plant, one medium plant sold 100 percent of its volume within this radius and only one sold anything beyond 200 miles. This evidence suggests that the medium, small and local plants are situated near their consumers. However, as might be expected the federally-inspected plants with their larger volume must be willing to take their product farther distances for an acceptable market. The total product sales for federally-inspected plants are broken down by volume into the following estimated distances:

Federally-Inspected Plants Combined Beef and Pork Volume	Distance Marketed from Plant
1000 pounds dressed weight	miles
15,844	0-25
8,178	26-100
5,111	101-200
21,977	out-of-state

The large movement out of state suggests that any expansion by these plants would depend quite heavily upon out-of-state demand for meat and meat products. The question: Can the Montana packer compete for the out-of-state market? The packers almost all agree that the out-of-state market competition is extremely keen. The perishability of the product and the distance to the market forces the independent packer into some acute management decisions concerning out-of-state sales.

Sales Outlets

Information on volumes sold to various outlets was not complete for all plants, only four federally-inspected plants were able to break down their sales. About 40 percent of the volume of the four plants

was sold to chain stores, another 40 percent to independent grocers and 20 percent went to various other outlets, including hotels and restaurants. In the medium group, nine plants were able to break down their sales. Total sales from the nine included 70 percent to independent grocers, only 10 percent to chain stores, 10 percent to local meat markets and 10 percent went to other outlets such as restaurants, individuals, etc. The small plants had a high portion of their sales going to independent grocers. In addition, 7 of the 20 plants had their own retail stores for an outlet. In the local group, 10 of 18 plants had their own retail outlet, and 8 of these retailed all of their products. The small and local plants also had a dependable restaurant trade.

The expressed concern about the difficulty of selling to chain stores may be associated with the lack of volume to meet chain store requirements. Rigid requirements on small lots may be prohibitive for the Montana packer.

Federal grading was used by all federally-inspected plants and as of June, 1961, seven of the medium plants in Montana had federal grading. Federal grades are based on definite federal grade standards and are applied by impartial, federal meat graders from the United States Department of Agriculture. They are applied in the same uniform manner from season to season and year to year without regard to supply and demand or other economic conditions. Meat grading is sometimes confused with meat inspection. The latter service is for sanitation and freedom from disease. These inspections are also conducted by the United States Department of Agriculture under the Meat Inspection Act of 1906. Meat that has been federally graded and inspected carries two stamps. The circular inspection stamp, which reads "U.S. INS'D," has no relation to grade. It indicates that as far as sanitation and cleanliness are concerned, the meat is acceptable for human consumption. The purple ribbon-like stamp with the grade name and the letters "USDA" in a shield denotes the grade and quality of the carcass.

The advantage to the packer of federally graded meats, are the opportunities it provides in selling to stores and markets that advertise and sell USDA grades of meat. This aids the independent packer in selling differentiated meats without his own brands and allows him to compete more effectively with the nationally advertised packers.

Theoretically the standardized USDA grades might be expected to:

1. Provide a framework by which consumers are assisted in selecting from among a wide variety of quality of grade differences the particular quantities of grades most desired;
2. increase or improve the precision with which preferences of consumers are transmitted through the marketing system to producers;
3. facilitate trading between buyers and sellers; and
4. assist producers in making decisions concerning the use of their productive resources. 1/

Federal grading provides part of the basis for quality control in buying and selling. Along with other specifications of the firm, federal grades are used as a criteria in determining acceptability of the product. Although many stores do not rely altogether on federal grading to control quality in procurement, it is perhaps one of the principal methods used.

Payment of the fee for grading in Montana is usually shared by more than one plant depending upon location of the plant to the nearest federal grader. Plants in eastern Montana did not have federal grading although some of them felt they met specifications required for grading but their volume was not adequate to pay the fee. The proximity of plants in the Great Falls, Billings and Butte areas allowed for a cheaper per pound cost of grading.

1/ Willard F. Williams, Earl K. Bowen, and Frank C. Genovese, Economic Effects of U.S. Grades for Beef, Agricultural Marketing Service, Marketing Research Division, United States Department of Agriculture, Marketing Research Report No. 298, January, 1959, p. 11.

Selling Techniques

Twenty of the 55 plants in Montana had at least one brand name (Table XXV). Some plants had two brand names, each denoting a different quality level.

TABLE XXV. MERCHANDISING CHARACTERISTICS OF MONTANA MEAT PACKERS, 1960.

Size of Plant	Brand Name	Market News	Advertising	Extending Credit	Total Plants
	Number of Plants				
Federal Inspected	5	2	5	5	5
Medium	8	3	9	10	12
Small	6	0	14	14	20
Local	1	0	13	16	18
Total	20	5	41	45	55

Market news was provided by two federally-inspected plants and three medium plants. Media used for market news by four of the plants was radio and the other plant used newspapers and newsletters.

Advertising was used by 75 percent of all plants. About the same percentage of plants in both the small and local size groupings are advertising. The media most frequently used are newspapers and radio. The variety of media and their use are illustrated in Table XXVI.

The extension of credit to customers was common among Montana packers. Of the 55 plants contacted, over 80 percent of them extended credit to their customers. Many of the local operators expressed concern about extending credit because of the difficulty in collecting from individual customers with small accounts. One plant said that if he were able to

TABLE XXVI. ADVERTISING USED, MONTANA MEAT PACKERS BY SIZE GROUP, 1961.

Media Used for Advertising a/	Federally-Inspected	Medium	Small	Local
	Number of Plants			
Radio	1	6	9	4
Television	2	2	1	3
Newspaper	3	3	10	9
Billboard		2		1
Phonebook		1	3	1
Gift Boxes	1			
Selling Specials	1	2		
Retail Stores Campaigning	1			

a/ Does not total because some meat packers use more than one media and some do not use any.

collect the notes due him he would have no problem modernizing his plant. This suggests that plants dealing with family or similar size orders should do business on a cash basis. This would provide the small or local packer an opportunity to make periodic improvements in his physical plant which would provide better service and contribute to the economic well-being of the community.

Full-time salesmen were used by all of the federally-inspected plants and by seven of the medium plants. Federally-inspected plants had 22 salesmen and medium plants had nine. No other plant size had full-time salesmen but did have someone who devoted a portion of their time to selling, such as the manager or office clerk. The telephone and personal contact were the two techniques most often used by plants without salesmen.

Competition

All except four Montana meat packers said they could compete with

large distant packers for the local meat market. Their reasons for a favorable competitive position were varied. The most frequent explanation was a quality product, immediate service and a freight rate advantage.

Plants selling in a neighboring town were able to compete with the packers in that town if they supplied a better quality product or a more sustained supply.

Plants supplying local market areas have certain advantages that national packers do not have. The transfer cost per pound of the perishable product is thought by most Montana packers as their biggest advantage. Small and local plants that are servicing a localized clientele often buy their sausage line and occasionally carcasses from the medium and federally-inspected plants. This mutual interdependence is helpful to all plants providing more flexibility in operation.

Businesses are usually assumed to be operating with a goal towards profit maximization. Firms who are not using the profit motive as their primary goal consider it as a secondary objective. Nevertheless, some plant owners in Montana put considerable emphasis on other factors. For maximum profits an investor, prior to building a new plant, should estimate the potential demand for meat at all locations in the state, the supply of cattle for all locations, and the cost of transportation for the meat products and livestock. The profit associated with each location could be estimated. Few packing plant owners in Montana went into this much detail in deciding where to locate their packing operation. Decisions to locate in an area were usually based on the notion that local demand was large enough to provide a profit with little consideration for profit potential in other locations.

Differences in profit can result from locational differentials related to: (1) volume of output from given methods of production, (2) supply of live animals including transportation costs, (3) location of interdependent markets--the degree to which location increases control

over these markets, and (4) demand for meat and ease of demand influence. The rational firm tries to locate where its operation, given fixed factor-cost, demand and production functions, give it the widest and most certain control over profit-affecting functions. 2/ "The theory of firm profit policy in many markets separated by space, time or other attributes, and with control over profit determinants varying with structure of competition, indicates what the firm must know and do if the most desirable of available locations is to be chosen. Actual firms may neither want nor be able to obtain these data or make these calculations." 3/

Small and local plants usually have a lower overhead than larger plants and during rush periods the owners and their families work extra hours without overtime wages that larger plants are forced to pay if they extend the period of the working day. Items such as these help the small and local plant to maintain a competitive position even though he may be at a locational disadvantage. Pride of community and close knit family and religious ties are social factors that could influence the decision of where to locate just as long as the plant received a profit large enough to provide an adequate living for the owner-operator and his employees. The term adequate living is not easily defined; it all depends upon the individuals involved, their wants and desires.

Contracted Agreements

Only five plants had any type of formal selling agreements with meat brokers, restaurants, chain stores or independent grocers.

Contracts to do killing or processing for other packers have been entered into by six packers. These agreements are for short

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2/ Reavis Cox and Wroe Alderson, Theory in Marketing, Richard D. Irwin, Inc., Chicago, Illinois, 1950, p. 133.

3/ Ibid., p. 134.

periods of time. Two plants have contracts periodically renewed for curing meats of another packer. More contracting would be of considerable benefit to the plants with smaller volumes and likely to plants of all sizes. Certainly it is an arrangement that could be more thoroughly explored as a possibility of reducing per unit cost of curing and processing to the smaller volume plants.

CHAPTER V

BY-PRODUCTS

By-products of the meat-packing industry over a period of many years have become symbols of industrial efficiency. The developing of new products, improving old ones and finding new uses for them, have given rise to the expression that "the packer saves everything but the squeal."

In its trade use, the term "by-product" includes many things, from the sheep skin and wool of biblical days to the ultra-modern nugget-like pinial gland from the brain lobe of a steer. It is easy to point out such products as blood meal, glue, and bone meal as examples of what by-products are and just as easy to mention by-products are not pork, beef, lamb and smoked meats. Other products such as hearts, liver and lard are not as easily classified. In general, by-products are considered by the meat packer to be everything of value, except dressed meat, produced from any part of a meat animal.

By-products are classified into two general divisions, "edible" and "inedible." The edible products include livers, brains, heart, kidneys, ox tails, tongues and fats. The inedible products include hides, pelts, hair, hoofs, bone and inedible fats.

Historical Development

In the early 1800's hides and tallows were vitally important to world needs. There were no large meat packing plants where the tanning and soap industries could obtain their raw material. At that time in history the hides and tallows constituted primary industries allowing incredible waste and inefficiency of operation. History books and glamorized western stories depict the slaughter of millions of mammals exclusively for their fats or hides. The whaling industry off the New England coast and the decimation of the bison herds here in the American west are examples. It was not the meat appetite of the white or red

man that brought the bison to near extinction but rather the value of the hides. 1/ As these sources of supply disappeared the hide and soap industries began looking elsewhere. In the meantime, advancing technology and a growing population brought the meat-packing industry into rapid expansion and centralization. During this period of rapid growth there grew up around the national packers a number of industries which bought the raw by-products from the plants. Large refineries took the non-uniform steam-rendered lard of meat packers, refined and bleached it and sold it on the open market. Oleomargarine manufacturers used neutral lard and aleo oil from meat-packing plants in the manufacture of oleomargarine. Fertilizer plants used the pressed tankage and raw or pressed blood and manufactured fertilizer from them. The hide and tallow trades began buying their raw materials from the meat-packing industry instead of wastefully draining them direct from nature. 2/

In time, the production of many of these by-products was taken over by the packing industry. Many plants began to perform a series of integrated services. For many years economic growth within the United States assured a market for these by-products and allowed the hide and grease trade to continue on what was basically a wasteful status. 3/

The advent of synthetic detergents almost eliminated rendering's major market, the soap industry. With this single major outlet gone, the rendering business was forced into a research campaign to develop a better product and seek out new markets.

As meat-packing companies began the search for new products, it became evident that there was a vital need for chemists, bacteriologists, and laboratories, in connection with the processing of raw

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1/ H. L. Rothra, Meat Industry Trends 1961, Meat, 59 East Van Buren Street, Chicago, Illinois, p. G-1.1.

2/ American Meat Institute, By-Products of the Meat Industry, Institute of Meat Packing, University of Chicago, Chicago, Illinois, 1950, p. 2.

3/ Rothra, op. cit., p. G-1.

materials. Growth had been so rapid that the main effort was placed on primary products, and some by-products were discovered only by accident. With the application of bacteriological and chemical control, processing was developed to the point where the value of by-products often was greater than all of the packers processing costs. 4/ Packers who were able to do this could pay the farmer as much or more for livestock than he received for meat sold, by-product receipts being sufficient to defray processing expenses and produce whatever profit was earned.

Today, synthetic substitutes for animal by-products are reducing the value of by-products recovered by the packers and their value may no longer pay the processing expenses. This means that the spread between livestock costs and meat prices may be widened, to the detriment of both meat consumers and livestock producers.

Requirements for Profitable Processing

There are several requirements that must be met before processing of by-products becomes profitable. First, a commercial process is a necessity. Second, actual or potential markets for the new or proposed products. Third, adequate supplies of the raw material, gathered in one place or capable of being collected at sufficiently low cost. Fourth, cheap and satisfactory storage for perishable materials. Finally, technically-trained operators are needed. 5/

Meeting the above requirements involves a volume operation. The largest packing plant in Montana does not have sufficient volume to provide adequate raw materials for the processing of certain pharmaceuticals. Size of packing plants in Montana makes them dependent

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4/ American Meat Institute, op. cit., p. 3.

5/ Ibid., p. 4.

upon larger packers outside the state to provide most of the new product research in the rendering industry. It is impossible for small and local plants in Montana to operate a rendering plant with by-products from their own plant. It would be possible if location allowed for several of them to combine by-products for one rendering operation. Rendering units are available small enough for most plants in the medium size group. Plant managers who had these units agreed they were a profitable operation.

Representative By-Products

By-products have a wide variety of uses. Some uses have decreased in importance; others have increased. General levels of increasing technology change the use and importance of by-products. Table XXVII lists representative by-products and some uses to which they have been applied. From this list, it is easy to understand how the expression, "the packer saves everything but the squeal," originated.

As mentioned earlier, Montana packers have been unable to manufacture a large variety of products in their rendering operation. Realizing they do not have the packing volume to maintain a complex rendering unit, most packers in the state are emphasizing the processing of lard, tallow and livestock and poultry feeds.

The proportion of income from by-products differs with each kind of livestock. The amounts which might be expected from a 1,000 pound steer are presented in Table XXVIII. The data is relative and minor changes in percent of total value occur as prices fluctuate. With hogs, the yield of lard is second in importance to the dressed carcass. As a share of total value lard has fallen from 17 percent of total hog value in the 1928 to 1937 period to only 10 percent in the 1948 to 1957 time span. 6/ The hide and variety meats are the most important by-products of beef in terms of value (Table XXVIII). The percentage

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6/ What Happens to Packinghouse By-Products, Armour's Analysis, Vol. 7, No. 1, April-August, 1958, p. 5.

TABLE XXVII. BY-PRODUCTS OF MEAT PACKING INDUSTRY AND SOME USES THAT HAVE BEEN APPLIED.*

Raw By-Product	Processed By-Product	Uses
----------From Cattle and Calves----------		
Hide	Leather	All types of leather goods
	Hair	Felts
		Plaster binder
		Upholstery cushions
Fats		
a. Edible	Oleo stock	
	Oleo oil	Oleomargarine
		Bakers shortening
	Oleo stearine	Candies
		Chewing gum
		Shortenings
		Candles
	Edible Tallow	Shortenings
b. Inedible	Inedible Tallow	Candles
		Industrial oils
		Soap and glycerin
		Lubrication
		Tanning
	Tankage	Livestock and poultry feeds
	Cracklings	Livestock and poultry feeds
	Stick	Livestock and poultry feeds
Blood	Blood meal (dried whole blood)	Livestock feeds
		Adhesives
	Blood albumin	Leather preparations
		Mordant
Bones	Hard bone	Buttons, chessmen
		Crochet needles, dice
		Knife and umbrella handles
	Ground hard bone	Mixed with pottery clay
	Dry bone	Glue
		Gelatin
		Hardening steel (ground bone)

TABLE XXVII. BY-PRODUCTS OF MEAT PACKING INDUSTRY AND SOME USES THAT HAVE BEEN APPLIED.* (Continued)

Raw By-Products	Processed By-Product	Uses
----------From Cattle and Calves----------		
		Refining sugar (pulverized and burned bone, bone charcoal)
	Bone meal (steam rendered bone)	Animal feed
		Fertilizer
Cattle feet	Neatsfoot stock	
	Neatsfoot oil	Fine lubricants
		Fine leather preparations
	Neatsfoot stearine	Mixed with tallow
Horns and hoofs selected		Buckles, combs, hairpins, Napkin rings
Unselected	Dried and ground	Plaster retarder, fertilizer, Foaming fire extinguisher
Calf and hide trimmings	Gelatin	Confectionary, ice cream, Jellied food products
Glands	Pharmaceuticals	Medicine
	Enzyme preparations	Industrial uses
Intestines	Sausage casings	Sausage containers
Stomachs from suckling calves	Rennet	Cheese making
----------From Hogs----------		
Fats		
a. Edible	Lard	Shortening

TABLE XXVII. BY-PRODUCTS OF MEAT PACKING INDUSTRY AND SOME USES THAT HAVE BEEN APPLIED.* (Continued)

Raw By-Product	Processed By-Product	Uses
----------From Cattle and Calves----------		
b. Inedible	Grease	Soap Industrial oils
	Tankage	Livestock and poultry feeds
	Cracklings	Livestock and poultry feeds
	Stick	Livestock and poultry feeds
Bones		
a. Edible	Rendered pork fat	Shortening
b. Inedible	Grease	Livestock and poultry feeds
	Bone meal	Livestock and poultry feeds
	Bone glue	Livestock and poultry feeds
Pork skins	Gelatin	Confectionary Ice Cream Jellied food products
	Tanned skin	Leather
Blood	Blood meal (dried whole blood)	Animal feeds Fertilizer, Adhesives
Toenails	Dried and ground	Fertilizer
Hair	Dried and curled	Upholstery and Insulation
Intestines	Sausage casings	Sausage containers
Glands	Pharmaceuticals	Medicines
	Enzyme preparations	Industrial uses

* Source: American Meat Institute, By-Products of the Meat Industry, Institute of Meat Packing, University of Chicago, Chicago, Illinois, 1950, pp. 6-10.

TABLE XXVIII. YIELD FROM 1,000 POUND STEER, RECOVERED IN VARIOUS FORMS AND PERCENT OF LIVE VALUE.*

Item	Pounds Per Head	Percent of Live Value a/
Dressed Carcass	590.00	91.49
Other Products		
Hide (green)	78.00	2.61
Fats for Edible Tallow	40.00	1.01
Variety Meats (heart, liver, etc.)	37.50	3.45
Glands	2.00	.67
Blood (liquid)	27.50	.03
Miscellaneous Items for Inedible Tallow and Tankage	83.00	.74
Unaccounted for Items (stomach contents, moisture, etc.)	142.00	----
TOTAL	1,000.00	100.00

* Source: What Happens to Packinghouse By-Products, Armour's Analysis, Vol. 7, No. 1, April-August, 1958.

a/ Based on a live market cost of $28.00 per cwt.

return for inedible by-products is greater for cattle, calves and lambs than for hogs, due to the value of the hide, skin and pelt respectively. On the other hand, the percentage return from all edible products is greater for hogs than for the other classes of livestock. 7/ This is due in part to the lard obtained from hogs. If the price of livestock to the producer was governed only by the price which the consumer is able and willing to pay for the edible products, the price of that livestock would be about 8 to 10 percent lower than it actually is. When the value of the by-products to the packer decreases, the price he pays the livestock producer must have a comparative decrease.

7/ American Meat Institute, op. cit., p. 12.

It is evident that research for new ways of utilizing animal by-products is of interest not only to the meat packers but also the livestock producers. Such research commands the support of the farmer, rancher and the meat packer. The benefits that may be derived by the consumer from the discovery of new products warrants their support.

Rendering in Montana

Less than 20 percent of Montana packers operated a rendering plant as part of their business in 1961. Sixty percent of the medium plants did not have a rendering plant. Several of these managers thought a rendering plant would help them to be more competitive while others were located within an area of an independent rendering establishment and found it more convenient to sell their by-products. Of the ten packer-operated rendering plants four were operated by federally-inspected plants, five medium plants and one was in the small plant group. Packer-operated rendering plants were unable to provide the annual output of their rendering operation; therefore, it is impossible to determine the out-of-state sales on a volume basis. Estimates were made by operators on their percent of sales out of state. Federally-inspected plants sold from 40 to 100 percent of their rendered products out of state. One medium plant sold 20 percent of its output out of state while all the others found markets within Montana for their product. Four plants had a brand name on their rendered product; these were plants selling all of their output within Montana.

Tallow is normally sold out of state and many of these shipments went to Mexico.

Six of the plants had trucks going into the country picking up fallen animals and also picked up scraps from meat markets. Some plants were picking up the offal from other nearby slaughtering establishments who did not have rendering facilities. Two plants had placed considerable emphasis on the operation of the rendering unit and were procuring 85 to

90 percent of their rendering volume from sources other than their own slaughtering operation.

Twenty-one packers, without rendering facilities, were able to sell their by-products to a rendering plant in the area (Table XXIX). A total of eight plants cook the inedible offal and feed it to hogs. Fourteen of the 18 local firms either bury or burn their inedible offal and two small plants follow the same procedure.

TABLE XXIX. METHODS OF HANDLING INEDIBLE OFFAL BY SIZE OF PACKING PLANT, MONTANA, 1961.

Size of Plant	Method of Handling			
	Rendered	Sold	Cooked Fed to Hogs	Bury or Burn
	Number of Plants			
FIS	4	1		
Medium	5	6	1	
Small	1	10	7	2
Local		4		14
All Plants	10	21	8	16

Nineteen packing-plant managers gave an opinion on how large they thought a meat-packing plant should be before it could singly support a rendering operation. The minimum estimate was at least 1300 head of beef per year and largest minimum estimate was 10,000 beef per year with quite a dispersion of estimates in between.

The initial investment in rendering facilities are high and require a skilled operator. One of the new rendering plants in the state said it required only three to four months to train a competent individual to operate their small plant. The greatest deterrent to installation of inedible rendering facilities would seem to be the initial cost of

the plant. Requirements for various size rendering facilities in Table XXX, indicate that the smallest unit available would cost about $32,000. This would probably be a sound investment, in the long run for plants in the medium size group. For most plants of this size the smallest rendering unit would be an investment of only 1/8 of the present value of their packing plant plus whatever the additional building cost might be.

Each packer has a different set of factors which control his desire or ability to expand his business through the additions of rendering facilities. The data in Table XXX are approximate and should only be used as a guide for a packer interested in the establishment of rendering facilities.

Close individual evaluations must be made to determine the profitability of the rendering operation to a specific plant. Financial institutions determine the amount which they are willing to lend to any single borrower at least in part, by estimating the prospective profitability of the investment for which the money is to be used. If the expansion of the individual packing business is obtained through the rendering facilities, the capitalization of the business increases and the ability to borrow additional funds at a later date increases. A profitable business with the larger capital assets will likely be in a better position to augment funds by borrowing as well as by accumulation for potential plant expansion than a firm that has not increased its capital assets. If plant managers feel they are temporarily limited in their sale of fresh meat and meat products perhaps they should direct their energies towards the establishment of rendering facilities.

Hides and Skins

Hides and skins have been articles of commerce from the dawn of history. The demand for buffalo hides, not meat, nearly caused the extinction of the bison. In the modern meat-packing plant the hides

TABLE XXX. INEDIBLE RENDERING REQUIREMENTS, DRY METHOD.*

Daily Raw Material a/ lbs.	Number and Size of Cookers Required b/	Space Required c/ Sq. Ft.	Men Required
Up to 12,000	1 small or 1 medium	1,000 - 1,100	1
15 - 20,000	1 large	1,400 - 1,500	1
30 - 35,000	2 large	1,700 - 2,000	2
45 - 50,000	3 large	2,400 - 2,600	2
55 - 65,000	4 large	2,800 - 3,200	3

(continued)

Electric HP Required	Boiler HP Required	Water Required Max. gph	Approximated Cost Equipment Installation d/ Excludes Building
75 - 80	40 - 45	5,600	$32 - 65,000 e/
85 - 90	60 - 65	6,000	$45 - 67,000 e/
160 - 180	80 - 100	10,000	$53 - 65,000
200 - 225	175 - 200	15,000	$80 - 90,000
250 - 300	225 - 250	20,000	$95 - 115,000

* Source: H. L. Rothra, Meat Industry Trends, 1961, Meat, 59 E. Van Buren Street, Chicago, Illinois, p. G - 8.

a/ Excludes blood.

b/ Exact dimensions of cookers varies with manufacturers. "Small" cooker is 4' x 8' or equivalent; "Medium" cooker is 5' x 9' or 5' x 10' or equivalent, and "Large" is 5' x 12' or equivalent.

c/ Space requirement is approximate space for cookers, hog, hasher-washer, percolators, presses and suitable conveyor equipment to connect them. Does not include storage space for either grease or cracklings.

d/ Includes no building or modification of existing building, merely FOB price of equipment plus 25 percent for freight and installation. The latter costs may vary widely.

e/ Wide variation covers optional inclusion of hasher-washer, hog and certain other equipment which is advisable but frequently left out of small packer rendering departments.

and skins are only by-products and depend upon the tanning and leather industries for their outlets. Synthetic substitutes have been making deep inroads on the leather market, reducing hide values. Today, only about one third of the shoe soles come from leather. Substitutes are not so widely used for shoe upper leather.

Packers may use a number of different marketing channels to place their hides in the domestic and foreign trade. The more important domestic channels are: (1) through direct representatives of the large tanning companies, (2) through a commission hide broker who represents several tanners, (3) through dealer companies which buy all types of hides for regrading and future sale, (4) to tanning companies which are subsidiaries of the packing companies, and (5) through dealers that collect country hides and skins. 8/

Hide buyers usually wish to obtain specific classes of hides that are suitable for the leather they produce and that are in demand by current market conditions. Hides are graded according to their origin. Packer hides are those hides taken off by packers large enough in which the division of labor is such that individual workmen become expert. Such hides are freer from cuts or scores and have a more desirable pattern than other hides on the market. Small packer hides are those taken off with more than usual care by small killers. They have a margin of price over the average country hide to pay the small killer for using careful methods of hide take-off. Country hides are hides and skins obtained from small local slaughter-houses, village butchers, farmers and ranchers. They are usually less desirable than packer hides. Packer hides are further divided by grade as follows:

"Steers - Native — Free of Brands, Salted in three weights,
58 pounds and up cured weight
48 to 58 pounds cured weight
30 to 48 pounds cured weight

8/ Stewart H. Fowler, The Marketing of Livestock and Meat, The Interstate Printers and Publishers, Inc., Danville, Illinois, 1957, p. 581.

Steers - Butt Branded	Steer hides similar to natives but having a small brand on the butt on either or both sides. Weights same as native steers.
Steers - Colorado or Side Branded	Steer hides branded on either or both sides, and occasionally on the butt. Weights same as native steers.
Steers - Texas	Hides that are branded on either side or both sides and occasionally on the butt, but narrow pattern and very plump. Weights same as native steers.
Cows - Heavy Native	Hides free of brands. Selected 53 pounds weight and up.
Cows - Light Native	Hides free of brands. Weight selection 30 to 53 pounds.
Cows - Branded	Any cow hide containing a brand, no matter where branded. Maybe out of Texas, Western or natives. No weight selection.
Bull - Native	Selection for grubs but no weights.
Bull - Branded	All brands, no matter where. Sold same as native bulls." 9/

Prices of hides are quoted on the basis of the packer grades. Differences in price of the various grades based on Chicago price are in Table XXXI. Each year the native hides of steers, cows and bulls command a higher price than the other grades. Depending upon the animal but in general a packer would be justified in paying 1/8 of a cent per pound less liveweight for branded cattle. This assumes the hide is perfect in all other respects.

From 1920 to 1927 hide prices averaged 156 percent of live prices for steers. This percent of the live prices has been steadily decreasing to only 58 percent in 1948 (Figure 12). During approximately the same

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9/ American Meat Institute, op. cit., p. 228.

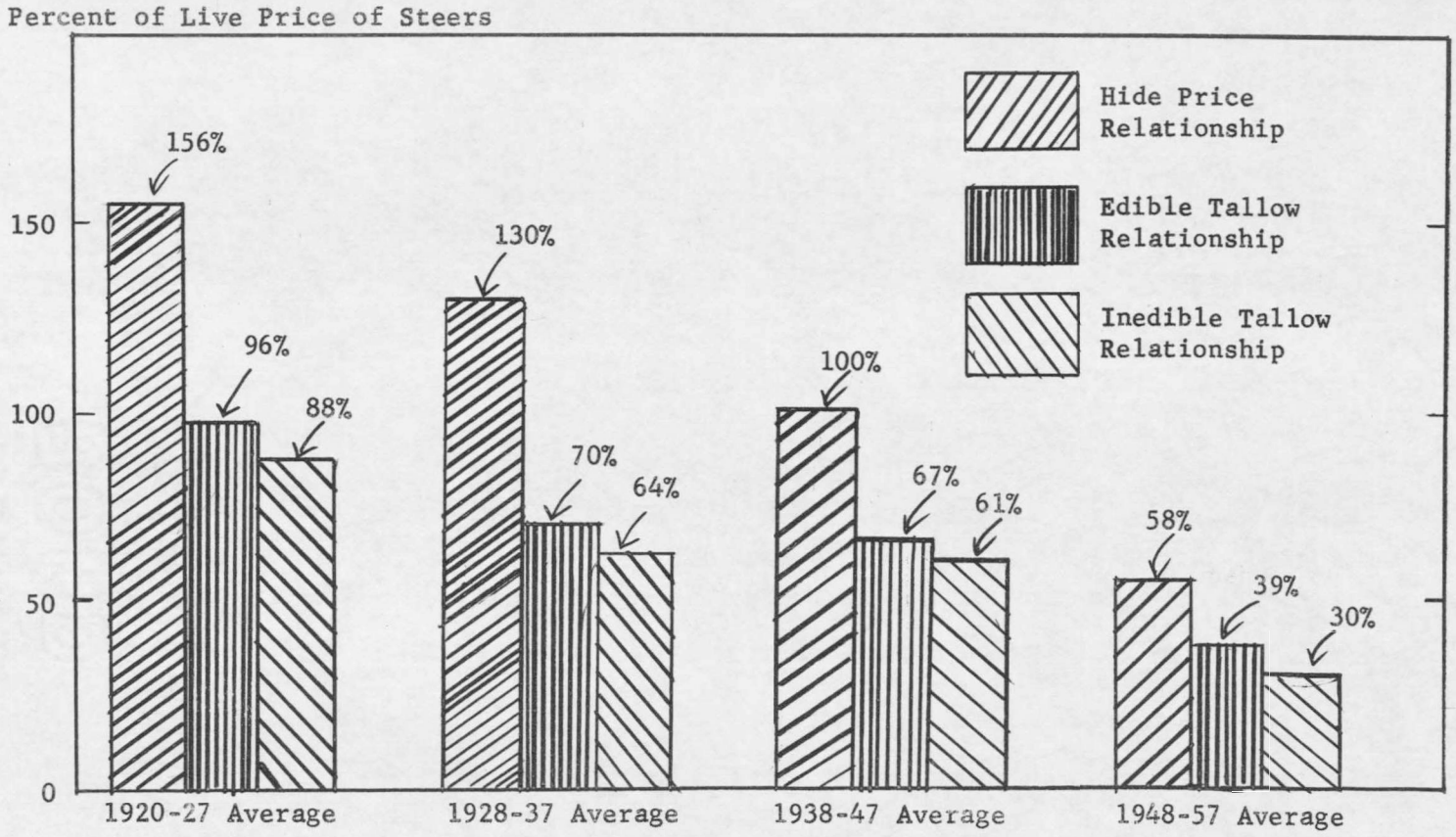

Figure 12. Cattle By-Product Prices Relative to Live Price, United States, 1920-57.

Source: Armour's Livestock Bureau, "Packinghouse By-Products," Armour's Analysis, Vol. 7, No. 1, April-August, 1958, p. 3.

time period United States export of hides increased from 2 percent of total supply to 16 percent of total supply (Figure 13). The largest single industry-making use of leather is the shoe industry. Other uses of cattle hide leathers are belting, harness and saddlery, bag and strap, upholstery, and luggage. Leather uses of hides varies with the breed, type, class and subclass. Some uses are as follows:

Butt branded steers	Bag strap, belting, and sole leather
Side branded steers	Sole leather
Light steers	Bag and strap, side upper and sole leather
Range cows	Bag, strap, side-upper, and sole leather
Dairy cows	Bag, strap, side upper, patent, glove and garment leather.

Handling Hides and Skins in Montana

Packing plants in Montana may sell hides green or salt and cure them before sale. In some cases the decision is made on the basis of the relative prices of green and salted hides. Some plants who do not maintain a hide cellar are usually forced into selling the hides green. Plants who maintain a hide cellar are in a flexible position concerning when and where to market their hides. One plant operator said that he was able to keep hides for a period of two years if the market was unfavorable.

Federally-inspected plants all sell their hides salted and cure them from three weeks to three months (Table XXXII). The medium plants who salted hides reported they cured them from one month to two years, depending upon the market. The other plants who salted hides reported an average curing time of about eight weeks.

TABLE XXXI. PACKER HIDE AND SKIN PRICES, AVERAGE CENTS PER POUND, CHICAGO, 1954-60.*

	1954	1955	1956	1957	1958	1959	1960
Steers							
Heavy Native	11.68	12.38	12.39	11.03	11.41	19.16	13.72
Heavy Texas	9.93	10.49	10.28	9.13	9.07	16.97	11.36
Butt Branded	9.93	10.51	10.28	9.13	9.35	17.22	11.77
Colorados	9.43	9.96	9.62	8.64	8.42	16.28	10.62
Cows							
Heavy Native	12.42	11.86	12.56	11.59	12.65	21.60	15.13
Light Native	14.25	13.51	15.95	15.65	16.57	25.61	18.81
Branded	11.10	10.59	11.87	10.75	11.73	20.45	13.58
Bulls							
Native	9.54	9.28	9.81	8.00	8.11	15.20	10.88
Branded	8.54	8.28	8.81	7.00	7.11	14.20	9.93

* Source: Agricultural Marketing Service, Livestock and Meat Statistics, Statistical Bulletin 230, United States Department of Agriculture, Washington, D.C., June, 1961.

TABLE XXXII. METHODS OF HANDLING HIDES, BY SIZE OF MEAT PACKING PLANT, MONTANA, 1961.

Plant Size	Sold Green	Salted
	Percent	Percent
Federally-Inspected		100
Medium	58	42
Small	90	10
Local	40	60
All Plants	58	42

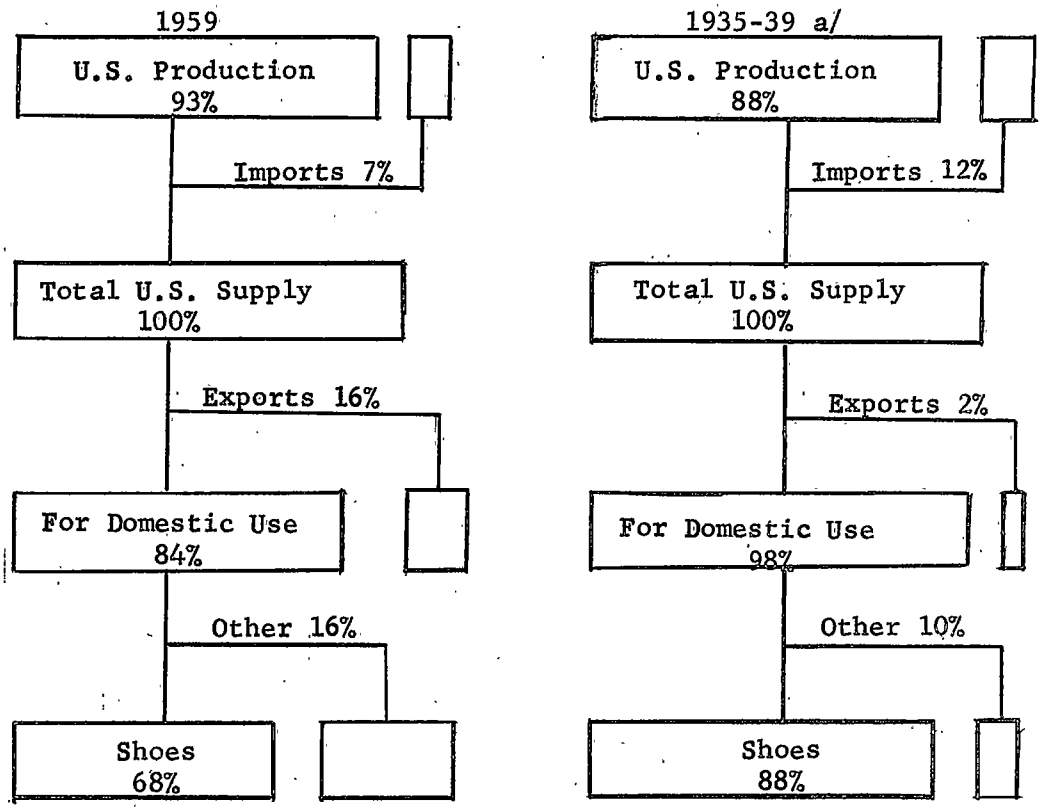

Figure 13. Approximate Distribution of Cattle Hides, Calf, and Kip Skins in the United States.

Source: P. J. Biaggi and A. B. Richards, Unpublished Report, Department of Agricultural Economics, University of California, Davis, California, 1960.

a/ Cattle hides only.

The use of hide cellars is an important element in the attempt to smooth out what could be some sharp fluctuations in hide prices. Hide prices do not react in a prompt and even fashion to their demand inasmuch as their supply is controlled by the demand for meat. Without the hide cellar a reduction in hide price would not result in a withdrawal of a proportionate part of the supply from the market, unless at the same time there was a decreased demand for the primary product, meat. The hide cellar does allow this withdrawal of the supply and thereby allows a favorable response to demand. Thus, it appears there are some profound economic advantages for a packing plant to maintain a hide cellar.

Market Problems

Over a period of years, competitive products have been developed so that now nearly every meat packing by-product is experiencing competition from a substitute or synthetic product.

In some cases the synthetic products are better for specific purposes than the natural products. Many synthetic products were developed during wartime when demand for certain products outstripped the supply from packing-house by-products. The synthetic product at first was used only to fill the gaps between demand and supply. In some instances the synthetic product may be inferior but is considerably cheaper than the packing-house by-product, such as artificial leathers. Cellulose casings for frankfurters are an example of a synthetic that exhibits the desirable characteristics of uniformity in size and adaptability to printing that the animal casings do not have. In general, synthetics are more uniform in quality than the meat packing by-products.

Pressure of synthetic product competition forces the meat packers to improve their product so as to better meet this competition. Reduction in final cost of producing the product may be achieved through automation. Automation in the hide cellar can be obtained in plants where the volume

justifies.

Salesmanship is a proven method though sometimes a costly method of informing the public of the superior qualities of a product. Some by-products of the meat packing industry are superior to their substitutes; this should be exploited when selling the products. An area that has been mentioned before and cannot be over-emphasized is new product research.

If the meat packing industry is to continue to market its by-products profitably, it must: (1) improve these products, (2) lower their final cost, (3) develop new products through research, and (4) inform the public of the superior qualities of its by-products. 10/

Montana packers, because of their relatively small size, may have limited opportunities for new product research but they should be able to make direct contributions to the other three areas mentioned. They must continue to improve their product, lower their cost and strive to inform the public about the quality of their product.

10/ Ibid., p. 418.

CHAPTER VI

THE NATURE AND OPERATION OF COSTS

Nationally, the meat packing industry is a large volume operation that survives on low profit margins. The non-livestock costs of packing plants are relatively fixed over wide operation ranges. This forces managers to operate as near to plant capacity as possible in order to reduce per unit costs and increase total profits. 1/ Nationally, earnings as a percent of sales were 1 percent or less during the 1950-60 period (Table XXXII) reaching a low of .4 percent in 1954 and a high of 1 percent in 1959. Total expenses increased about 6 percent during the same time period. Expenses increased from 20.6 percent of sales in 1950 to 26.6 percent in 1960, while cost of livestock and other raw materials decreased from 78.5 to 72.6 percent of total sales. The largest expense items are wages and salaries. These have steadily increased, forcing management to introduce automation into the plant wherever possible in an attempt to reduce costs. Other expense items are increasing but their proportion is much less than wages and salaries.

Mr. Clarence H. Girard, Director of the Packer and Stockyard Division, USDA, reported that an analysis of the 1960 annual reports of packers, as required by the Packer and Stockyard Act, revealed that more than 200 packers and provisioners were operating while insolvent. Nine packer registrants failed in the past three years, and at least 5 other packers are operating under voluntary bankruptcy agreements. 2/ A certain number of business failures are expected in any industry. However, when an industry with a steadily expanding volume has such a large number of firms experiencing financial trouble, a closer look

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1/ Paper presented by Elmer C. Hunter, at the Ranching Symposium of GP-2 Committee, Bozeman, Montana, May 24, 1962.

2/ Address of Clarence H. Girard, Director of Packer and Stockyard Division, USDA, at Urbana, Illinois, January 30, 1962.

TABLE XXXIII. ESTIMATED PERCENT OF TOTAL SALES, RAW MATERIALS, EXPENSES, AND NET EARNINGS OF THE MEAT PACKING PLANTS, UNITED STATES, 1947-1960.*

	Year						
	1947	1948	1949	1950	1951	1952	1953
Total Sales	100	100	100	100	100	100	100
Cost of Livestock and Other Raw Materials	80.5	81.3	79.5	78.5	79.6	77.9	75.8
Gross Margin	19.5	18.7	20.5	21.5	20.4	22.1	24.2
Expenses:							
Wages and Salaries	9.0	9.0	10.0	10.3	9.9	10.9	11.9
Supplies and Containers	2.9	3.1	3.3	3.5	3.5	3.9	3.9
Transportation	1.8	1.9	2.4	2.4	2.0	2.3	2.6
All Taxes	1.3	1.1	.9	1.0	1.1	1.0	1.2
Depreciation	.4	.4	.5	.5	.5	.5	.6
Interest	.1	.1	.2	.2	.2	.2	.2
Other Expenses	2.5	2.2	2.6	2.7	2.5	2.8	3.0
Total	18.0	17.8	19.9	20.6	19.7	21.6	23.4
Net Earnings	1.5	.9	.6	.9	.7	.5	.8

(continued)

	Year						
	1954	1955	1956	1957	1958	1959	1960
Total Sales	100	100	100	100	100	100	100
Cost of Livestock and Other Raw Materials	75.8	72.9	71.1	73.6	75.7	73.4	72.6
Gross Margin	24.2	27.1	28.9	26.4	24.3	26.6	27.4
Expenses:							
Wages and Salaries	12.0	13.0	13.8	13.0	12.0	12.6	13.1
Supplies and Containers	4.0	4.2	4.4	4.1	3.7	3.9	4.0
Transportation	2.7	2.7	2.9	2.6	2.3	2.3	2.4
All Taxes	1.0	1.4	1.5	1.1	1.1	1.6	1.5
Depreciation	.6	.7	.7	.7	.7	.8	.8
Interest	.2	.2	.2	.2	.2	.2	.2
Other Expenses	3.3	4.0	4.4	4.0	3.7	4.2	4.6
Total	23.8	26.2	27.9	25.7	23.7	25.6	26.6
Net Earnings	.4	.9	1.0	.7	.6	1.0	.8

*Source: 1960 Financial Facts About the Meat Packing Industry, American Meat Institute, 59 E. Van Buren, Chicago, Illinois.

at some of the forces operating within and without the industry is needed to understand its problem. 3/

Nature of Costs - Theoretical Considerations

The general idea of costs covers a wide variety of meanings, but there is one meaning that is common to all costs and is summed up in a single word, "sacrifice." 4/ The nature of the cost may be tangible or intangible, and for this reason the main problem for decision purposes is to represent costs by appropriate numbers that can be manipulated. It is usually best to avoid such concepts as psychic costs or sacrifices in the form of mental dissatisfactions and social costs such as the odor nuisance of a rendering plant. Much of the controversy over the existence of various kinds of costs disappears once it is realized that there are different kinds of problems for which cost information is needed and that the particular information required varies from one industry to another and may also vary for different sized firms within the same industry.

Cost concepts differ depending on managerial uses and viewpoints. Conventional accounting practices provide the necessary cost information but it is not always in the form that can be adapted to the problem. The classification of costs given below demonstrates that the most useful estimates are often those that are derived by combinations and adjustments in data, suggesting that in a well-managed firm the accounts are a source of basic information rather than an end in themselves.

"1. Absolute Costs and Alternative Costs. One of the most

3/ In the period 1950-60, the number of animals slaughtered nationally increased by 45 percent.

4/ Milton H. Spencer and Louis Siegelman, Managerial Economics, Richard D. Irwin, Inc., Homewood, Illinois, 1959, p. 233.

fundamental distinctions between two general classes of ideas of costs is that between absolute or outlay costs and alternative or opportunity costs. Absolute costs involve an outlay of funds. Alternative or opportunity costs, on the other hand, concern the costs of foregone opportunities.

2. Direct and Indirect Costs. Direct costs are costs that are readily identified and visibly traceable to a particular product, class of products, operation, process or plant. Indirect costs are costs that are not readily identified, not visibly traceable to specific goods, services, operations, etc., but are nevertheless charged to the product in standard accounting practice.

3. Fixed and Variable Cost. Economists generally distinguish between two major categories of cost as fixed cost and variable cost. Fixed costs, or "constant" costs, as they are sometimes called, are those costs that do not vary with (are not a function of) output. They are costs that require a fixed outlay of funds for each time period.

   Variable costs are those costs that are a function of output in the production period. Unlike fixed costs which are given off in a constant flow irrespective of the output quantity, variable costs emanate from the stock of services that are transformed or "used up" as output is produced.

   The sum of these two categories of cost, fixed and variable, at any given output level, yields the total cost at that output level, i.e., FC + VC = TC. When derived by successive levels of output, the resulting total cost series represents a functional relationship between total cost and output.

   Since variable costs are the only changing portion of total cost, any change in the aggregate will be equal to the change in variable cost. These changes due to changes in output, are called marginal costs. That is, marginal cost is the change in total cost (equals the change in variable cost) resulting from a unit change in output.

4. Short Run and Long Run Costs. Short run costs are costs

that can vary with the degree of utilization of plant and other fixed factors. The short run is thus a period in which fixed costs remain unchanged but variable costs can fluctuate with output.

Long run costs, in contrast, are costs that can vary with the size of plants and with other facilities normally regarded as fixed in the short run. Long run is an interval of time in which plant equipment, labor force, etc., can be expanded or contracted to meet demand requirements.

The distinctions between fixed and variable costs and between short run and long run costs are useful for predicting the effect of temporary and permanent output decisions on costs, prices, and profits.

5. Sunk, Shutdown, and Abandonment Costs. A past cost resulting from a decision that cannot now be revised is called a sunk cost. Costs that would be incurred in the event of a temporary cessation of activities and which could be saved if operations were allowed to continue are called shutdown costs. Unlike shutdown costs which are incurred because of a temporary suspension of activities, abandonment costs are the costs of retiring a fixed asset from service.

6. Urgent and Postponable Costs. Those costs that must be incurred in order to produce a finished product are classified as urgent costs. Costs that may be put off, at least within limits, are called postponable costs and include such expenses as maintenance of buildings and machinery.

7. Original Cost and Replacement Cost. In establishing costs an asset is conventionally valued on the books at its original cost rather than the cost of replacing it in the current market." 5/

Impact on costs as size of operations become larger are well-established in economic theory of the firm. Economies of size in this theory are explained in static terms. The theory assumes a given level of technology with a variety of techniques for performing specific

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5/ Ibid., pp. 234-241.

operations. Production at each level of output (or size) is assumed to be technically organized so as to minimize cost of output at that size. A known structure of prices for products and factor inputs exists that is either constant or functionally related to output of the good or goods under consideration. Variable factors are assumed to be homogeneous and perfectly divisible with some degree of substitutability among factors. Production and sale are assumed simultaneous so there are no storage or transit delays in disposal of the product which would involve additional capital requirements. A short run situation is recognized in which one or more factors of production are fixed and a long run situation exists in which all factors are variable. The long run permits variation in size of output while the short run permits variation in rate of output in a given plant through more or less intensive use of the fixed factors.

The above discussion accommodates the concept of a family of curvilinear short run cost curves for plants of different size. When represented in terms of total cost of different outputs and if constructed for plants of different size such curves might appear as in Figure 14. 6/ If many such curves are considered, an "envelope" curve may be visualized (Figure 14) which reflects cost volume possibilities (assuming minimum-cost output at any plant scale) in relation to scale of output. 7/ When expressed in terms of average total cost; as rate of output increases, unit cost decreases to an optimum plant scale at which unit cost is a minimum. Optimum plant size would be at output OL in Figure 15. Beyond this optimum scale of output OL, unit costs increase.

Observations are more numerous to substantiate the theory that as

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6/ L. L. Sammet, Structural Trends and Economies of Scale in Agricultural Marketing and Processing, a paper presented at the joint meeting of the Western Economic Association and Western Farm Economics Association, Pullman, Washington, August 13-15, 1958.

7/ Ibid.

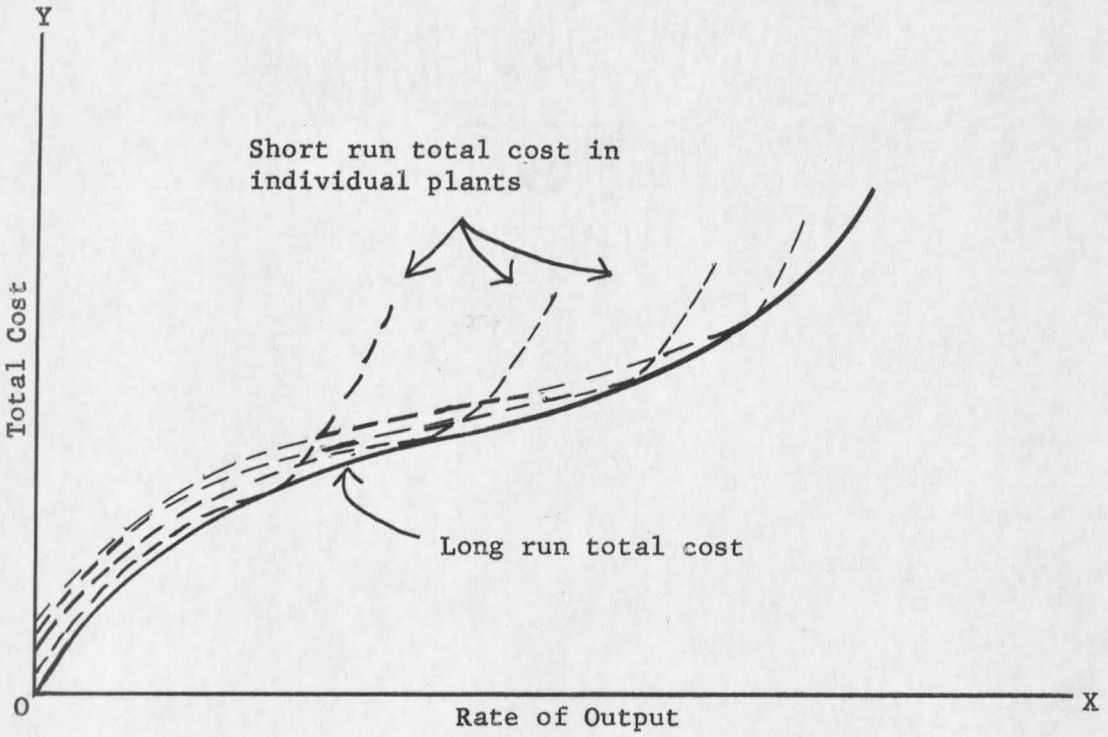

Figure 14. Total Long Run Cost Curves Based on Short Run Cost Curves as Developed in Conventional Theory.

Source: L. L. Sammet, Structural Trends and Economies of Scale in Agricultural Marketing and Processing, a paper presented at the joint meeting of the Western Economics Association and Western Farm Economics Association, Pullman, Washington, August 13-15, 1958.

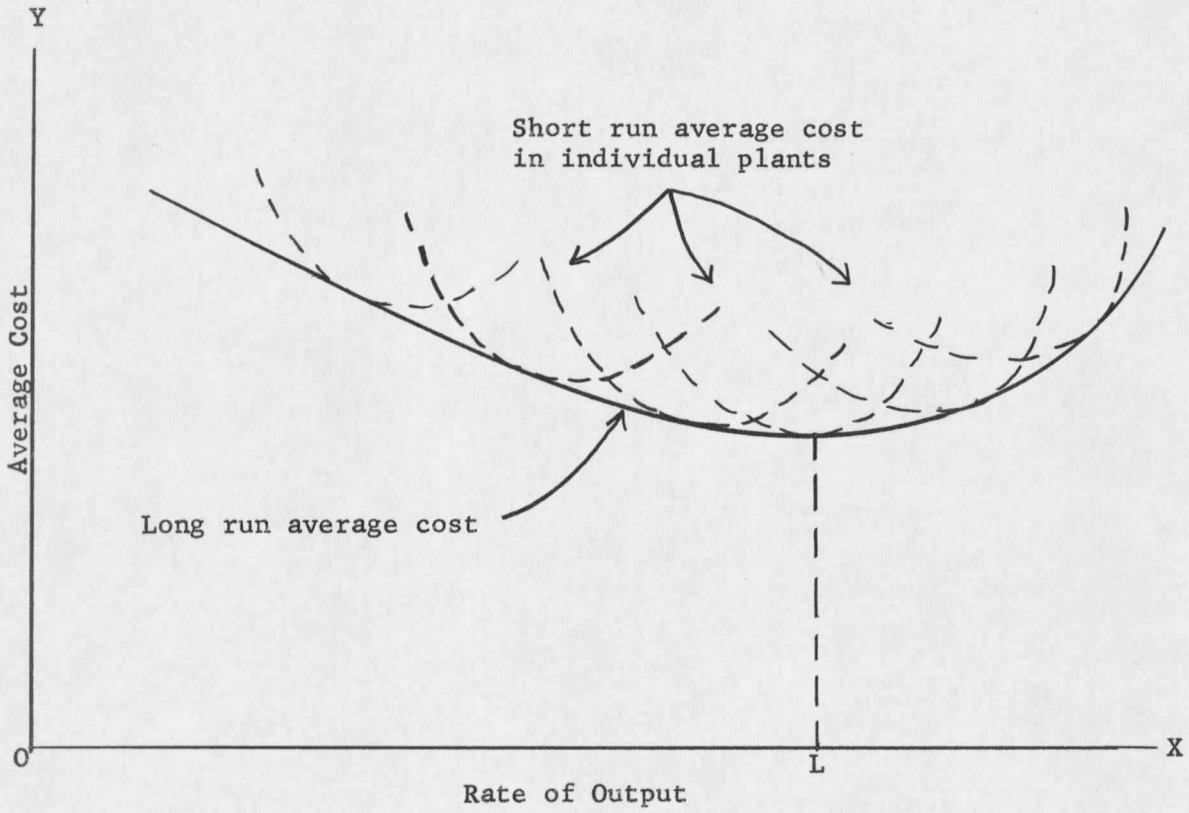

Figure 15. Average Long Run Cost Curves Based on Short Run Cost Curves as Developed in Conventional Theory.

Source: L. L. Sammet, Structural Trends and Economies of Scale in Agricultural Marketing and Processing, a paper presented at the joint meeting of the Western Economics Association and Western Farm Economics Association, Pullman, Washington, August 13-15, 1958.

size increases average costs decline than to substantiate the notion that beyond some scale, costs increase. It has been reasoned that management reaches the optimum and is largely responsible for the increasing costs. This is one of the intangible factors that is difficult to observe and measure. 8/ However, it has also been observed that as size of operations became larger the greater influence an individual firm has on its other factor costs.

If a firm increases in size until it reaches a monopsony position then the cost of input factors might be decreased under the strain of increased pressure by the larger firm. A surplus supply situation would permit this to happen with more ease than with a supply shortage. Observations suggest that the firm does not have to increase its size to a monopsony situation before it realizes certain benefits in factor costs. There are certain economies associated with large scale purchases that vary between industries and within industries. Few firms have reached a size where average costs are actually increasing as output increases. Where this does exist, it has been reasoned that management has reached its optimum and is largely responsible for the increasing costs. As mentioned earlier, this is difficult to measure and to observe.

Following this type of reasoning it is possible that the proportion of management to other inputs might be underworked in the smaller plant, and as size of plant increases management as related to other inputs reaches towards its optimum and thus contributes to decreasing average cost.

In any industry there are certain fixed costs. When these fixed costs are spread against a high unit volume their rate per unit decreases. Thus the higher the fixed cost the more important it becomes to maintain

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8/ Clive R. Harston, Discussion: Structural Trends and Economies of Scale in Agricultural Marketing and Processing, Discussion of L. L. Sammet's paper presented at the joint meeting of the Western Economics Association and Western Farm Economics Association, Pullman, Washington, August 13-15, 1958.

a high volume of output and sales.

Fixed costs vary between plants within the same general level of output. Two meat packing plants may be doing about the same volume of business and are earning about the same profit. However, a new business venture, such as opening up a new sales territoty may be a good risk for one plant but poor for the other. This might best be explained by the differences in the economic character of the two plants. Assuming one plant is operating with borrowed capital and has almost reached the limits of its borrowing capacity and the other plant is operating on its own capital. Their costs, when properly figured, should be about the same since the plant operating on its own capital should be charging interest on this capital against the cost of operation. However, the plant operating on borrowed capital is more vulnerable to failure of the new business venture. Its costs for the borrowed capital are urgent costs and must be met at a certain deadline. The plant financing its own venture is less vulnerable inasmuch as the loss would be of accumulated assets and therefore would not seriously imperil the continued success of the plant.

Every plant is more or less dependent upon maintenance or expansion of its sales volume and maintenance of its margins. However, there can be a significant difference in the ability of a particular plant to withstand rising costs or shrinking volume without being thrown into an operating loss position. In general, the meat packing industry would not be considered vulnerable because of its relatively low fixed costs. Its principle area of vulnerability lies in the fact that the spread between value of sales and "variable costs" is extremely narrow and variable costs can fluctuate enough to carry a firm, or the whole industry, into a losing position without any dimunition in volume. 9/

9/ Spencer A. Tucker, "The Break-Even Point," Meat Industry Trends, 1961, Meat, 59 E. Van Buren St., Chicago 5, Illinois, p. A-8.

The relationship between the fixed and variable costs presented in Figures 16 and 17 have been somewhat distorted for illustrative purposes. The hypothetical plant in Figure 16 has a volume limit which amounts to $5 million total sales, it has a fixed cost of $1 million and variable costs which are about 70 percent of sales.

Since $5 million sales are the current volume limits we want to establish a line that represents all the different volumes at which the plant can do business. Starting at zero, the sales line runs diagonally to the volume limit of $5 million. 10/ The slope of this line is determined by the ratio of change in revenue per unit change in output. Then the plant's expenses at every level of output must be charted. Since the firm has fixed costs of $1 million the expense or cost line starts at $1 million with zero volume. We then read upward to $1 million for fixed costs and an additional $3.5 million (70 percent of $5 million) for variable costs. Thus, at the plant's volume limit of $5 million, the total expenses are $4.5 million.

Point A, where the sales line intersects the expense line, is called the break-even point. With this particular firm the break-even point is about $3 1/3 million of sales. All sales made above $3 1/3 million realize a profit and all sales below this are made at a loss. The percent that profit is of sales increases as sales increase beyond $3 1/3 million. If we assume that the same relationship exists between the sales and expense line beyond $5 million, the percentage of profit to sales would become larger as volume continued to increase. This type of relationship provides a foundation for the idea that increased volume is the answer for increasing profits.

Figure 17 illustrates the problems associated with packing plants of the same volume but with quite different fixed and variable cost

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10/ Assumed complete divisibility of factors, therefore a straight line relationship can be illustrated.

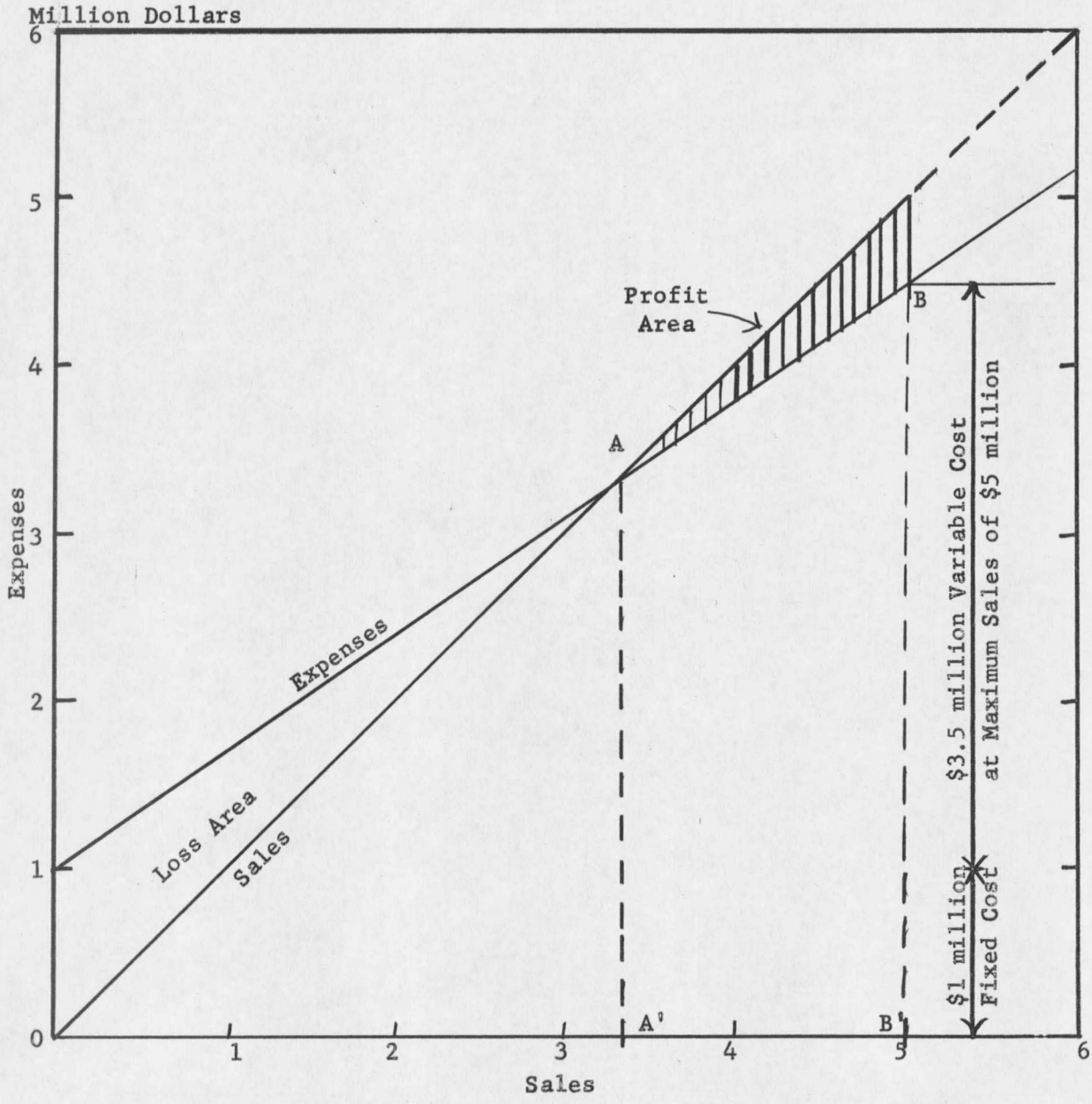

Figure 16. Break-Even Point of a Firm and Profits Added by Increasing Sales.

Source: Spencer A. Tucker, The Break-Even Point, Meat Industry Trends, 1961, Meat, 59 E. Van Buren St., Chicago 5, Illinois, p. A-9.

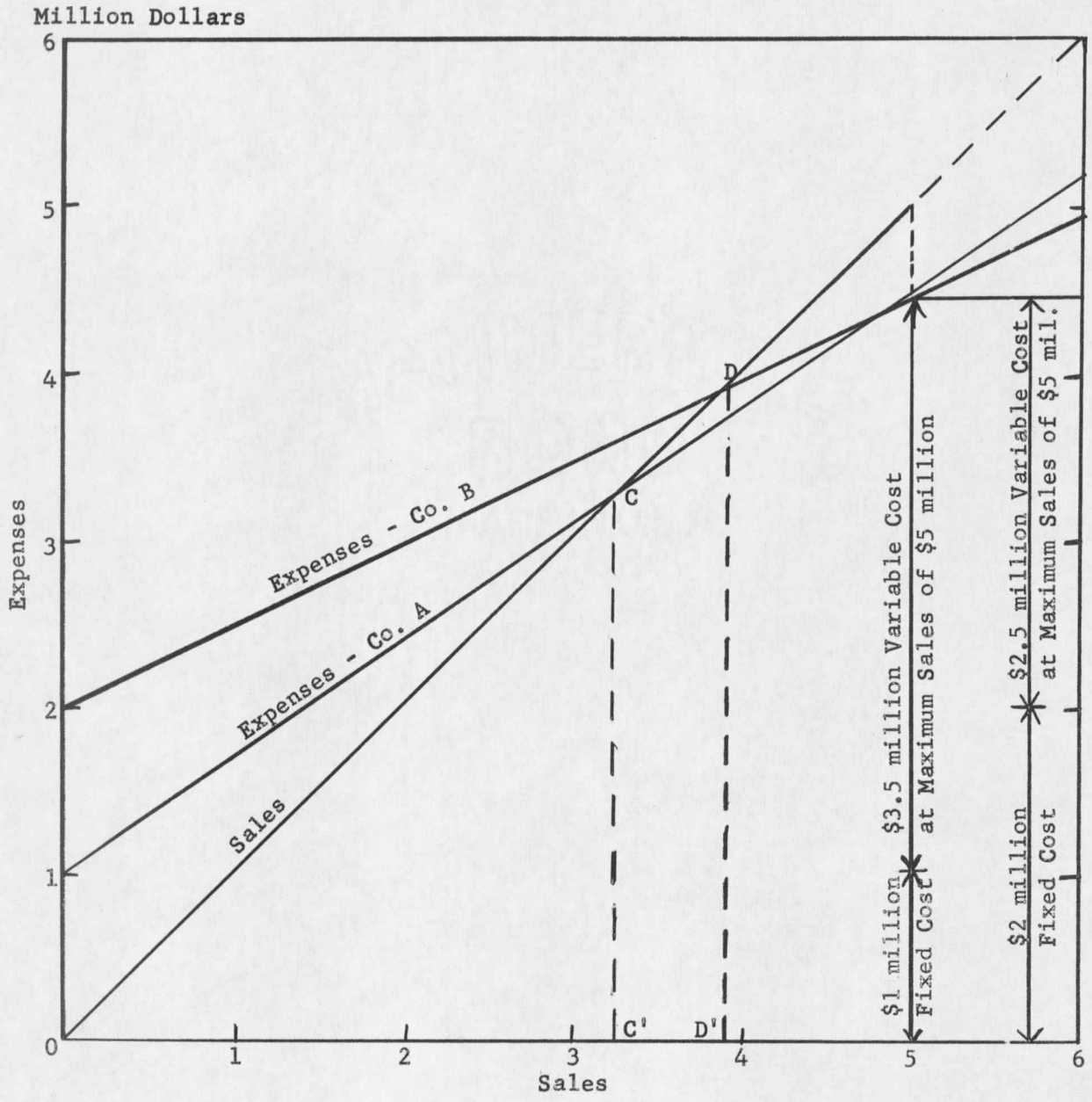

Figure 17. Effect of Fixed Versus Variable Costs on a Firm's Break-Even Point as Sales are Increased.

Source: Spencer A. Tucker, The Break-Even Point, Meat Industry Trends, 1961, Meat, 59 E. Van Buren St., Chicago 5, Illinois, p. A-9.

relationships. The data here is also distorted for illustrative pusposes. However, observations of Montana meat packers show that fixed costs vary from less than 10 percent of total cost to over 30 percent within the same size grouping. Therefore, the concepts in Figure 17 are applicable in isolating problem areas existing within the structure of meat packing plants.

Assume two packing plants with identical volume limits of $5 million sales. Company A has fixed costs of $1 million and variable costs that are 70 percent of sales. Company B has fixed costs of $2 million and variable costs that are 50 percent of sales. Following the same procedures used in Figure 16 we draw a sales line (which is the same for both firms) and an expense line for firm A and firm B (Figure 17). The break-even point for Company A is at point C and for Company B is at point D. Company A begins making a profit at a sales output of $3 1/3 million. On the other hand, Company B with its higher fixed costs does not begin realizing a profit until an output of $3.9 million in sales is obtained. If lack of demand for the product forces the two plants to operate at less than optimum output and cost relationships remain the same, then over any prolonged period of time Company A will be in a better survival position than Company B. Not only will profits be a larger percentage of sales for A but Company A can reduce operations to somewhere between OC' and OD' sales output and still have a small profit. Company B must operate at sales output of OD' to cover costs and more than OD' to obtain a profit.

The foregoing discussion places Company B in an unfavorable position. However, if the relationship between expenses and sales for both firms continues to exist as the firms expand beyond $5 million sales, then Company B will have a larger percent of its marginal sales as profits than will Company A. The further sales are extended beyond $5 million, profit margins would increase more for Company B whose costs are made up of a higher percentage of fixed items.

The relative position of Companies A and B are further illustrated numerically as follows: 11/

	Company A	Company B
	Millions of Dollars	
Present Volume Limits	5.0	5.0
Fixed Expense	1.0	2.0
Variable Expense (% of Sales)	70%	50%
Break-Even Point	3.3	3.9
Profit at Sales of: 12/		
$5.0 million	.50	.50
$4.5 "	.40	.25
$4.0 "	.20	.00
$3.5 "	.05	-0.25
$3.0 "	-0.10	-0.50
Profit at Increased Sales: 13/		
$5.0 million	0.50	0.50
$5.5 "	0.65	0.75
$6.0 "	.80	1.00

The various factors which have been expressed in Figure 16 and 17 can also be expressed as a mathematical formula which is an easy way to compute a proposed change. If B is the break-even point; F is the fixed costs in dollars and cents; V is the variable cost expressed as a percentage of gross sales; P is net profit before taxes and S is gross sales in dollars, then: 14/

$$B = \frac{F}{(1-V)}$$

$$P = S\ (1-V) - F$$

$$S = \frac{P+F}{(1-V)}$$

11/ Using same sales and expense relationships as presented in Figure 17.

12/ Assuming cost relationships do not change as output decreases from optimum.

13/ Assuming cost relationships do not change as plant expansion, beyond original optimum output, occurs.

14/ Tucker, op. cit., p. A-10.

In the meat packing business where profits are normally very low, about 1 percent of sales (Table XXXIII), and plants are seldom operating at physical production limitations throughout the year, it might be expected that relationships which are in effect at less than optimum outputs are more important to the individual meat packing plant. Therefore, packing plants who wish to maintain a favorable competitive position, especially those plants limited to markets within one state, should keep their fixed costs from becoming too large a percent of total sales. What is "too large" is difficult to determine, stages in development of the individual firm certainly have an effect upon this. However, if management is desirous of undergoing a major expansion program, it may be necessary to have a relatively high level of fixed costs during the initial growth period after which the ratio of fixed to variable costs should decrease.

Costs of Operation in Montana Packing Plants

The remaining discussion in this chapter will be concerned with the structure of "costs of operation" for meat-packing plants in Montana with comparisons.

Data were obtained from a second personal interview with a selected sample of nine Montana meat-packing plants. Seven of these plants were able to provide data that should be grouped at all levels of comparison. Data from the remaining two plants are incorporated in the analysis wherever applicable. Plants in the sample had a similar organization, and all but one maintained a rather complete product line. Plants interviewed are representative of Montana packers including the various plant sizes in the state.

Wages and Salaries

The largest annual cost item for meat packers are the wages and salaries of production and management workers. For the United States

meat-packing industry this item accounts for about 50 percent of the operational expense (Table XXXIV). It is higher for the local plants than for the national packers. 15/ The cost structure demonstrated in Table XXXIV suggests that any analysis of operation costs for an individual meat-packing plant should carefully ascertain and justify the financial outlay for wages and salaries in any attempt at a cost streamlining program.

Montana plants have a cost structure (Table XXXV) similar to others in the United States but there is a larger degree of variation between size groupings. Manpower costs in Montana's small plants are about 44 percent of the operating cost and 55 percent for federally-inspected and medium plants in comparison to 53 percent for similar plants nationally.

The spread of over 10 percent between total labor costs of small and other Montana plants may be partially explained by their accounting systems. Small plants are usually owner-operated and, therefore, management does not have a regular salary. Returns to management vary from year to year depending upon other financial obligations incurred by the plant in a given year. This variation in allocation of manager's labor could cause total labor cost to fluctuate considerably between years.

Production labor costs are less for small plants than for other Montana plants (Table XXXVI). A closer look at the structure of small plants reveals the nature of this advantage. In the small plants the owner-manager shifts from one job to another within the plant and does considerable work on the production floor. With such a situation it is not easy to ascertain an accurate accounting of his time to specific jobs, therefore, his production work is not always charged to production labor costs. Small plants located in the outlying communities of the state normally have a cheaper source of labor than federally-inspected

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15/ Plants termed "Local" in Table XXXIV are plants similar in size to the "Medium" plants in Montana as defined in Chapter II.

TABLE XXXIV. OPERATING EXPENSE BREAKDOWN OF PARTICIPATING MEAT-PACKING PLANTS, BY COMPANY CLASSIFICATION, UNITED STATES, 1960.*

Cost Item	Size of Meat-Packing Companies				
	National	Regular	Sectional	Local	All
	Percent	Percent	Percent	Percent	Percent
Wages and Salaries	48.2	49.7	52.9	53.3	48.5
Supplies and Containers	16.2	13.9	13.6	13.5	15.9
Transportation	11.0	7.4	6.5	4.2	10.5
Depreciation	2.5	3.0	4.1	4.4	2.6
Income Taxes	2.2	4.4	4.0	2.8	2.5
Other Taxes	1.1	0.9	1.2	1.3	1.1
Soc. Sec. Taxes	1.6	1.5	1.7	1.7	1.6
Retirement Program	1.1	1.1	0.8	0.6	1.1
Insurance Program	1.6	1.4	1.1	1.0	1.6
Interest	0.8	0.6	0.6	0.6	0.7
Miscellaneous	13.7	16.1	13.5	16.6	13.9
Total	100.0	100.0	100.0	100.0	100.0

* Source: 1960 Financial Facts About the Meat Packing Industry, American Meat Institute, 59 E. Van Buren, Chicago, Illinois. Data obtained from 102 cooperating meat-packing companies.

TABLE XXXV. PERCENTAGE BREAKDOWN OF OPERATING EXPENSES, BY SIZE GROUP, SELECTED MONTANA MEAT PACKERS, 1961.

Cost Item	Size of Packing Plant		
	Federally-Inspected	Medium	Small
	Percent	Percent	Percent
Wages and Salaries	55.5	55.2	43.9
Supplies and Containers	14.0	20.3	10.7
Utilities	3.8	3.9	7.3
Interest	3.9	0.1	2.9
Advertising and Public Relations	0.6	1.2	2.1
Transportation	4.3	1.3	4.5
Repairs and Maintenance	1.8	1.3	3.5
Insurance	2.7	0.5	3.4
Depreciation	3.5	5.9	9.1
Social Security	2.1	1.8	2.7
Hospitalization	1.1	0.7	0.9
Real Estate Taxes	1.3	2.3	1.6
Miscellaneous	5.4	5.5	7.4
Total	100.0	100.0	100.0

or medium plants.

Small plants appear to be making the most economical use of production labor but, on the other hand, their non-production labor costs are higher per pound of output than other Montana plants (Figure 18). 16/ This indicates they are unable to make economical use of delivery, clerical, and selling labor.

The eagerness of the small plant to provide extra service contributes to his higher non-production labor cost. When a regular customer calls in an order and wants immediate delivery the small plant will usually accommodate him even though it increases the per unit delivery cost. Small plants are normally located in towns of less than 4,000 population. This is somewhat restrictive and dictates that the size of delivery orders will normally be smaller than might be expected in larger more densely-populated communities. The clerical and driving time is about the same for an order that can be delivered in a pickup as it would be for an order delivered in a semi-trailer or large truck. Small plants usually substitute hand labor for mechanization in the loadout area increasing the time and cost of loading delivery trucks.

A combination of the non-production labor requirements helps contribute to the labor costs in small plants, making them more than double those of the federally-inspected plants.

Federally-inspected plants are the most efficient users of total labor with an average cost of 4.226 cents per pound of output. Medium plants had the highest total labor cost of 5.391 cents per pound of output (Table XXXVI). This provides evidence certain efficiencies of labor utilization are achieved in Montana plants when plant size either increases or decreases from the medium-size group. Federally-inspected plants are second to the small plants for utilizing production labor.

16/ Production labor is labor that is directly associated with handling livestock and meat within the plant. Non-production labor is normally indirectly associated with the plant business.

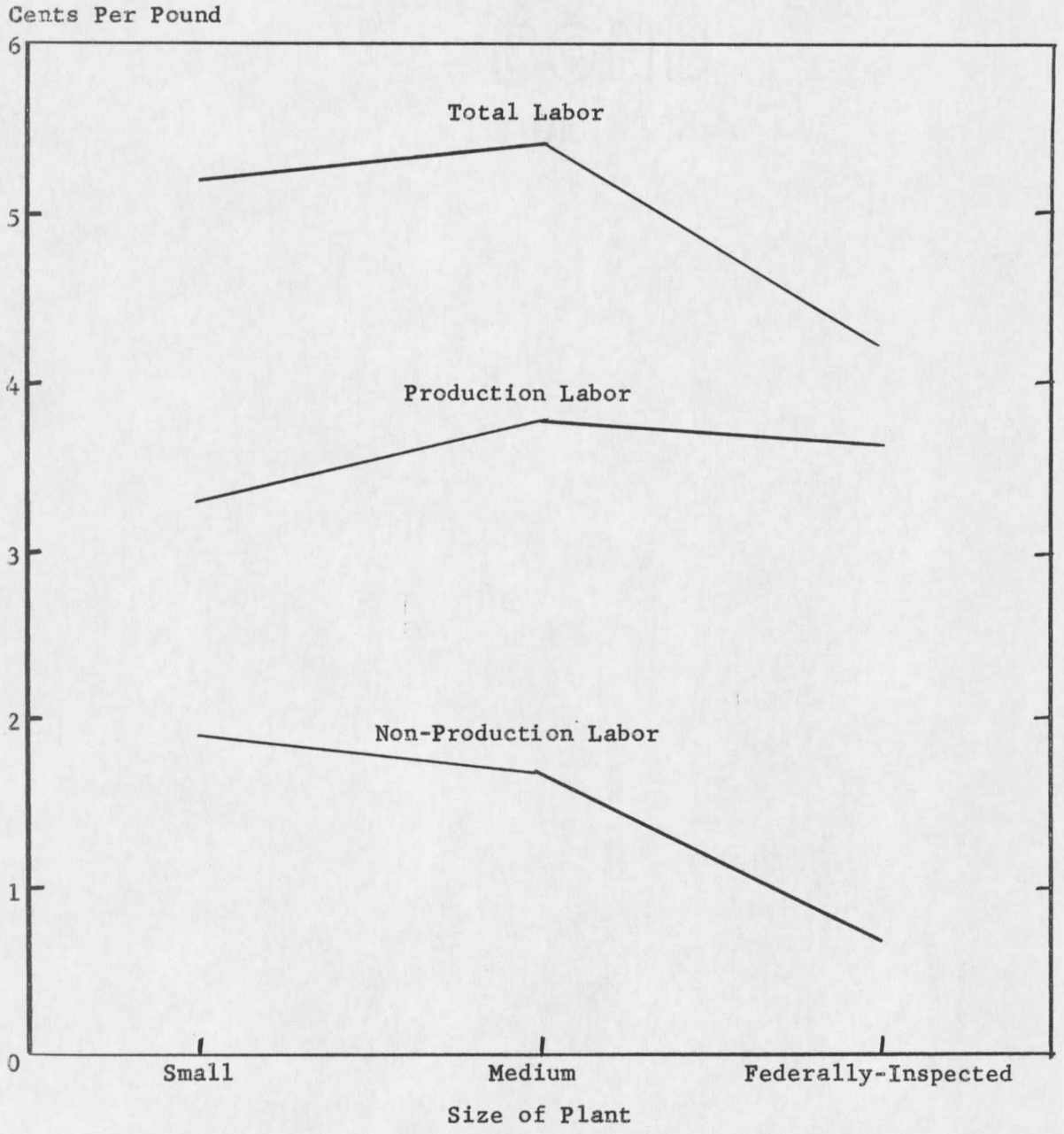

Figure 18. Average Cost Per Pound of Output, Total Labor, Production Labor and Non-Production Labor, Montana Meat Packers, By Size Group, 1961.

Source: Table XXXVI.

TABLE XXXVI. COSTS PER POUND OF OUTPUT, TOTAL LABOR, PRODUCTION LABOR AND NON-PRODUCTION LABOR, WITH PERCENTAGE COMPARISONS, MONTANA MEAT PACKERS, BY SIZE GROUP, 1961.

Size of Plant	Total Labor Cost/Pound of Output	Production Labor Cost/ Pound of Output	Non-Produc. Labor Cost/ Pound of Output	Percent Non-Production Labor Cost is of Total Labor Cost/ Pound of Output	Percent Production Labor Cost is of Total Labor Cost/ Pound of Output
	Dollars	Dollars	Dollars	Percent	Percent
Federally-Inspected	.04226	.03560	.00666	15	85
Medium	.05391	.03749	.01642	30	70
Small	.05220	.03325	.01895	36	64
All a/	.04913	.03571	.01342	27	73

a/ Average cost all plants combined (unweighted).

However, the federally-inspected have a very decided advantage in the non-production labor costs. This suggests that the federally-inspected plants make more economical use of management and clerical personnel, salesmen and truck drivers than do other Montana plants.

Salesmen for the federally-inspected plants cover a much larger territory than do salesmen for other plants. Flexibility of sales is greater for federally-inspected plants because it is the only size group that can compete for interstate sales, thus state boundaries are not a restriction in their search for potential markets. Salaries and commissions of salesmen in this size group are spread over a larger volume of sales thereby reducing the per unit selling costs.

Truck drivers handling full loads and using larger trucks are utilizing their time more economically for the federally-inspected plants

than are drivers for other Montana plants with lesser production volume. The federally-inspected plants normally have regularly scheduled delivery routes and do not deviate from it unless a particular order is of sufficient volume to justify a special run. Merchanization speeds loading time and reduces the amount of hand labor required per pound of product.

Clerical procedures become automated as plants increase in size. Observations of Montana packers indicate that federally-inspected plants have a higher degree of automation in their clerical departments.

Labor Turnover.--Plant operators feel production workers normally need a training period of almost a year to reach towards top efficiency of their job specialty. If they do not demonstrate the ability to develop into a first line worker within a year then the two alternatives for the packer are to release the inefficient individual or keep him and accept a lesser degree of efficiency. Either action involves considerable expense to the plant.

A series of two articles discussing the economics of labor turnover appear in the September and October, 1961, issues of 'Meat' magazine. The discussion mentions a Los Angeles study that found labor turnover costs in a typical manufacturing plant totaled $190 per employee. There is reason to believe that meat packers are not as susceptible to labor turnover as other processing plants. Assuming they are only 50 percent as vulnerable, their cost would be $95 per worker. Thus a plant with 50 employees would have $4,750 in labor turnover costs per year.

The articles define the costs involved in labor turnover as:

"1. Employment cost, as the total of all direct and indirect costs which are specifically chargeable as expenses brought about by the procurement, selection and placement of employees.
2. Break-in cost, due to substandard production of new employees while learning their job assignments and becoming adjusted to their work environment.
3. Breaking-in cost, the dollar value of time spent by supervisors and other employees who assist in breaking

in new employees on their job assignment.

4. Formal training cost, average cost to train one new replacement employee. This does not include on-the-job type training costs which are included under break-in and breaking-in costs.
5. Separation cost, lost hours of production due to separation processing, exit interviews, and time lost by other persons who are involved in the separation process.
6. Lost production and extra burden costs, resulting from under-staffing of company facilities due to labor turnover, part of which are the overhead burden rate of the company and its application against reduced units of production, and the additional overtime worked to maintain a normal production level.
7. Extra social security tax costs, labor turnover can result in a continuation of these tax payments beyond the period where they would normally cease.
8. Extra unemployment insurance tax costs, labor turnover can result in a continuation of these tax payments beyond the period when they would normally cease." 17/

The above-defined costs must be taken under consideration by the management to arrive at the decision of whether the marginal return will be greater by releasing the inefficient worker and training a new one, or will be less than the marginal cost of keeping the inefficient worker. Will the added return be more than the added cost of the action is the basis of marginal labor turnover cost analysis. Thus the cost of labor turnover presents a more complex problem than is recognizable at first glance.

Employee Benefit Programs.--Benefit programs for employees in the form of social security and hospitalization programs contribute over 3 percent of operating costs for the small and the federally-inspected plants in Montana (Table XXXV). For medium plants this cost is only about 2 1/2 percent of total operating cost, which is partly due to the nature of hospitalization plans. In most plants they are optional to the workers, one or all of whom may choose to participate. Workers

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17/ Meat, "The Economics of Labor Turnover," Meat, Vol. 55, No. 5, October, 1961, pp. 44-46.

in one of the plants included in the medium group chose not to participate in a hospitalization plan, causing a lowering of the cost for this size group. All other plants had some degree of participation in hospitalization plants by their employees.

Combining wages and salaries with benefit programs increases total labor costs in medium and federal plants to almost 60 percent of total operational costs. This provides more evidence to the argument that perhaps the best place to reduce costs is through a critical appraisal of labor needs and its use.

Supplies and Containers

The second most important cost of operation is the expenditure for supplies and containers. Montana's medium plants have a higher percent cost for supplies than do the other size groups (Table XXXV). The other plants compare favorably with plants in the United States (Table XXXIV) for this cost item. This cost category contains such items as salt, spices, casings, boxes, shrouds, labels, feed for holding pens, and laundry expense.

Meat packers with a complete product line handle such a diversity of products that small volume purchases of supplies may become costly. Some sort of packaging is necessary for nearly all products handled by federally-inspected and medium packers. It is an unavoidable cost and one that is dictated by the purchase price of the supplies in various lot sizes suitable to the volume of the packer. Most of the items in this category are disposable or consumable, therefore, it is understandable that their costs are a large share of the operating expense in the packing business.

Other Costs

Small plants have higher costs of utilities, advertising, transportation, repairs and maintenance, insurance, depreciation, and other miscellaneous items than do other plants (Table XXXV).

Interest as a percent of total operating costs was largest for the

federally-inspected plants owing to more financing than was common in the medium plants. Small plants had a relatively high interest cost due to recent remodeling of the plants included in this sample.

Real estate taxes for medium plants were a higher percent of operating costs than other sized plants. Real estate taxes are a function of plant location. Plants located within city limits have a different real estate tax structure than those located in rural areas.

The utility cost structure is almost identical for medium and federally-inspected plants. Small plants have a higher percent utility cost. Refrigeration requires from one half to two thirds of the electricity cost, in all plants. Small plants that age beef have electricity cost per pound of output greater than plants that only cool their beef.

Transportation as a percent of operational costs is about the same for federally-inspected and small plants. As stated earlier in this chapter small plants often make deliveries of small orders at a customer's request. Federally-inspected plants move their products greater distances than any other size group. They have an economy of size as far as truck drivers are concerned but moving the products greater distances adds to cost even though the movement is made via larger shipments. Transportation cost for Montana packers to west coast cities varies from $1.25 to $2.00 per hundredweight depending upon point of origin and point of destination and type of carrier agreement. In 1960 federally-inspected plants sold over 21 million pounds of pork and beef out of state. At the above transportation charges it is easy to realize the importance of transportation as a cost item. Three types of truck transportation are used, (1) the packers' own trucks, (2) leased trucks for out-of-state hauls, and (3) common carriers, the least-used transportation.

There were no reported movements of fresh meat by railroad from Montana plants.

Depreciation among the medium and small plants was a higher percent of cost than among federal plants. As a group, the medium plants are

newer and should have a higher depreciation schedule. The data presented here for the small plants is somewhat distorted due to the relative new structure of the small plants in this sample. Depreciation as a fixed cost varies with stage of development of individual firms. As a cost item, it should be considered as one of the five highest cost items that a plant has to contend with. As a monetary consideration, it varies with size and stage of development of the individual physical plant.

Advertising as a percent of operating costs receives varying degrees of emphasis between plant size groups.

Small plants are spending more, as a percent of operating costs, than are the other Montana plants. Operators of small plants said they were spending enough for advertising and public relations. The federally-inspected who, as a percent of operating costs, were spending the least on advertising, felt they should be spending from two to three times their current expenditure. Some medium plant managers thought they were spending an adequate amount on advertising, whereas others were of the opinion they should be increasing their advertising expenditures.

Some mangers were of the opinion that costs of advertising are high in Montana because population is scattered over a large area with no single newspaper, radio or television station reaching into all areas that a packer may wish to contact. In contrast, advertising in one metropolitan area in another state could potentially reach more people at less expense than a statewide compaign in Montana.

Repairs and maintenance should be somewhere between 1 and 2 percent of operational costs. This assumes that the physical facilities are constantly maintained. However, some managers find it convenient to have periodic repairs rather than annually. Thus, repair costs may be low for several years and then be unusually high in one year. This is one of the reasons for small plants, in Table XXXV, having 3.5 percentage repair and maintenance cost.

Fixed and Variable Costs

Observations were taken from a sample of eight Montana meat-packing plants. Wide divergence was found in both fixed and variable costs as a percent of total operational cost (Figure 19). There were three plants with a high percent of fixed costs. At least one plant with high-fixed-costs was found in each size group; demonstrating that high-fixed costs are not peculiar to any size group.

The fixed costs contained by Montana meat-packing plants are: (1) Interest on real estate and building loans, (2) insurance on buildings and equipment, (3) real estate taxes, and (4) depreciation. The plants observed reveal that high-fixed costs are influenced by age of plant, amount of financing required in building and repairing it and the plant's location. The variable costs are influenced inversely by some of the same factors, however, there are other numerous external and institutional factors that influence the variable costs and cause their variation between plants and size groups.

Variation of fixed costs between size groups are illustrated in Figure 20. Medium and federally-inspected groups had a similar fixed and variable cost structure. The small plants in this sample had a fixed cost that was over two-thirds larger than the fixed costs of the other two groups. This discrepancy could be due to the present stage in development of the small plants in the sample.

Total Costs

Observations of Montana meat-packers offers empirical evidence to substantiate the theory that as volume of output increases, cost per unit of output decreases (Figure 21). Economies of size associated with increases from the small to medium plants are about one tenth of one cent per pound of output. On the other hand, as size of plant increases to the federally-inspected group, costs are reduced three cents per pound of output which represents an appreciable savings in cost due to the large volume operation. This in turn places the

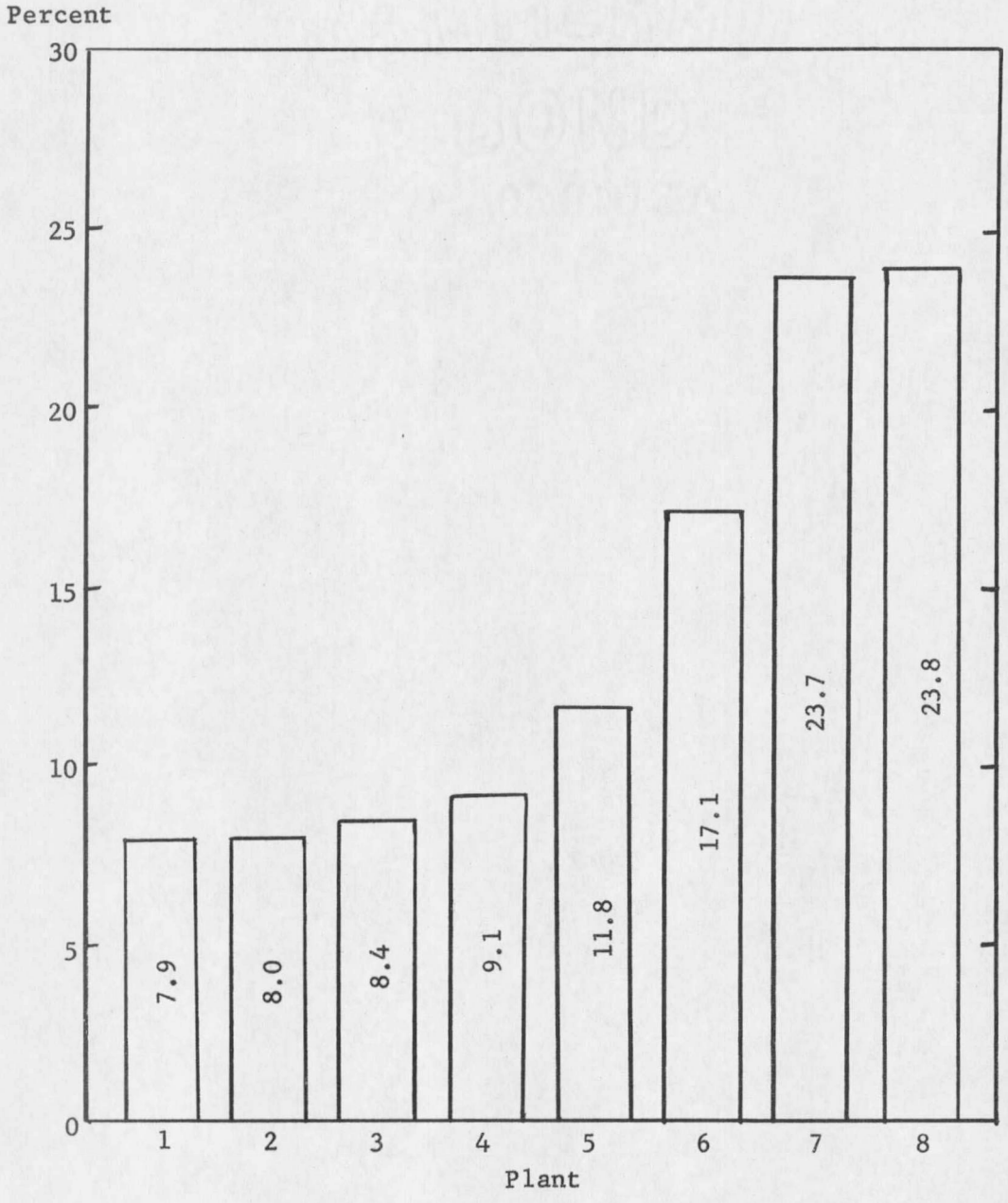

Figure 19. Percent Fixed Costs are of Total Operational Costs, Eight Montana Meat Packers, 1961. a/

a/ Fixed costs for these plants are: Interest, Insurance, Real Estate Taxes, and Depreciation.

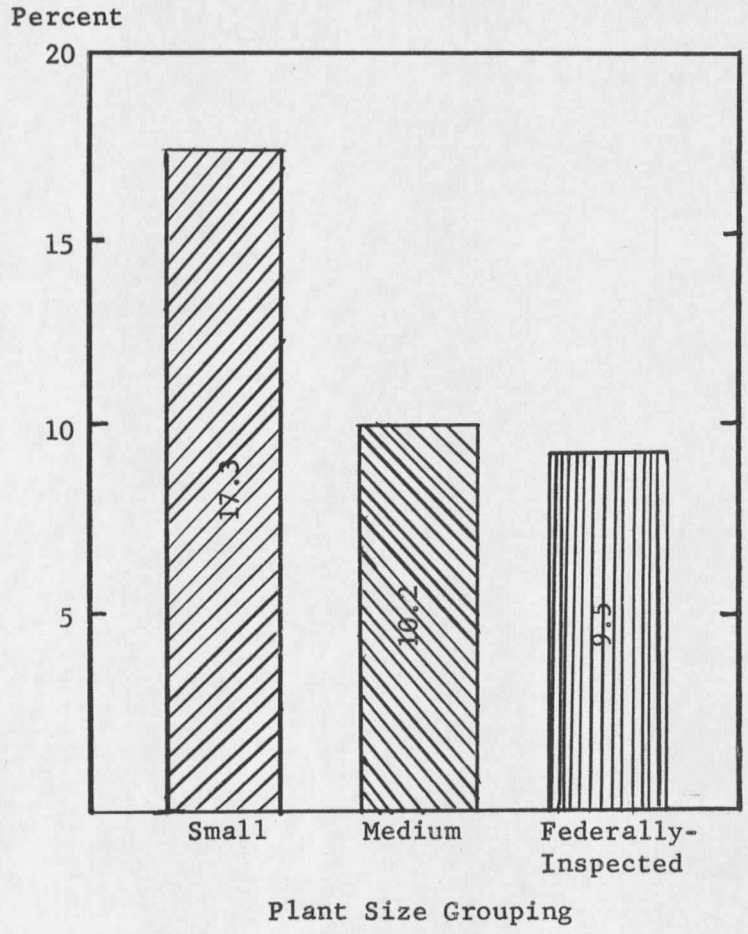

Figure 20. Percent Fixed Costs are of Total Costs, By Size Group, Montana Meat Packers, 1961.

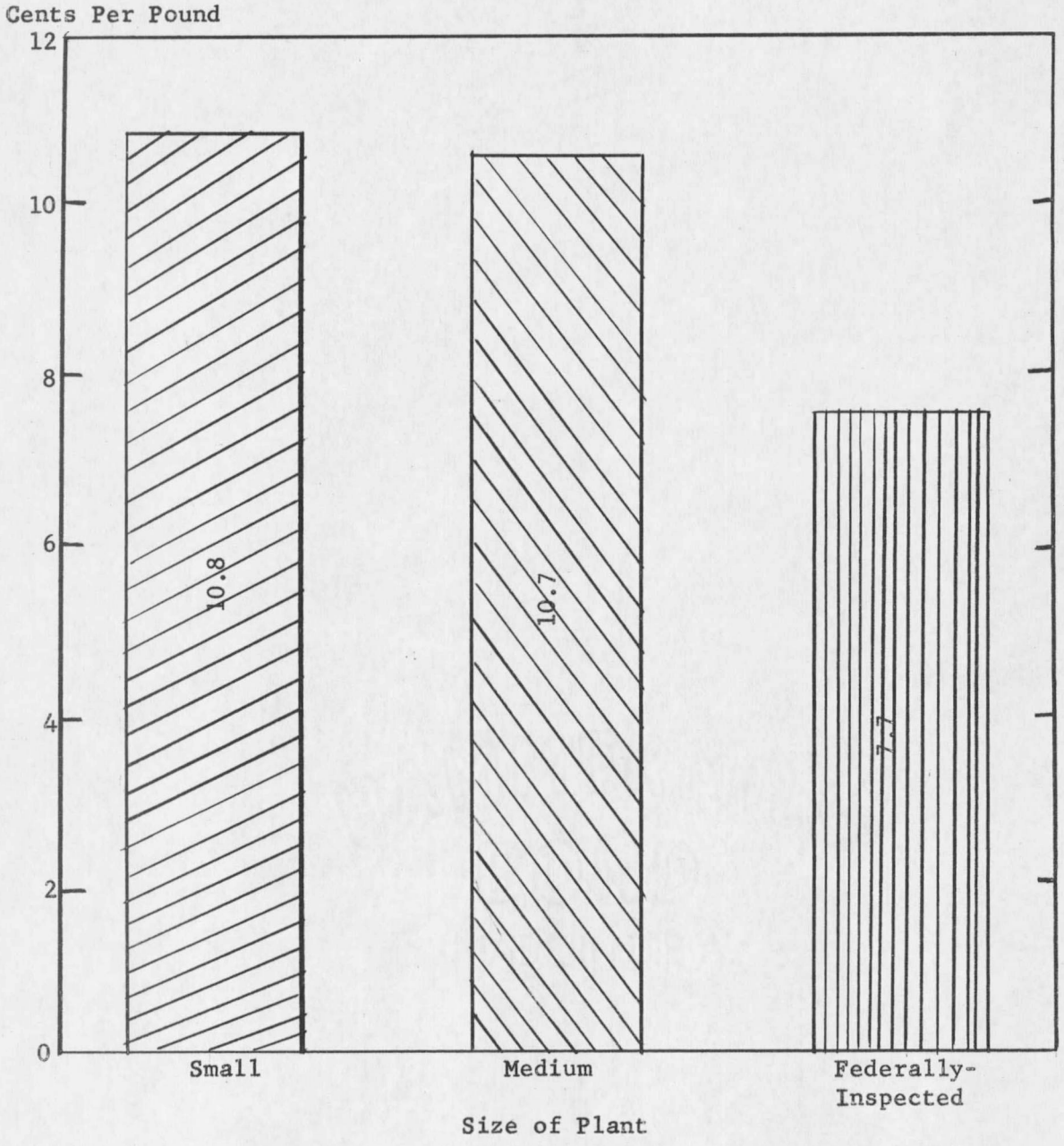

Figure 21. Average Operational Cost Per Pound of Output, By Size of Plant, Montana Meat Packers, 1961.

federally-inspected plants in a favorable competitive position as compared to the medium and small plants.

Keeping total cost per pound of output to a minimum helps enable the individual packer to maintain or improve upon his competitive position. The medium plants should be able to find some way to reduce their labor cost which is the highest for all size groups. It is possible that the medium plants are suffering from growing pains and have not been forced to keep as critical an eye on their labor force as plants in the other size groups, thus allowing their labor cost relationship to be unfavorable.

The expenditure for advertising brought active discussion from plant operators. A sharp difference of opinion was expressed as to what expenditure should or shouldn't be made on advertising. Generally speaking, most plants in the state would agree that they must carefully allocate their advertising dollar in order to gain the maximum benefit from it.

The plants with survival difficulty had a relatively high percent of fixed costs. When fixed costs are greater than 15 percent of total operational costs for an individual plant over any prolonged period of time the plant is apt to be heading for trouble.

CHAPTER VII

EXPANSION POSSIBILITIES FOR MONTANA MEAT PACKERS

Basic to past economic achievement has been the encouragement of men with new ideas and new products to establish or expand their own enterprises. Many of the national meat packers began as small-scale operations, and a majority of them are less than a century old. Such men as Swift and Armour, started around 1875, were followed by Cudahy in 1890, and Wilson in 1916. These four individuals displayed remarkable abilities for organization and enjoyed a phenomenal growth in the packing business. Eventually their organizations became known as the "big four" national packers.

Since 1950, two of the largest national packing firms have gone through retrenchment programs and closed some older plants. Slaughter volume in Chicago, eastern slaughtering centers, San Francisco, and certain other large metropolitan areas has dropped sharply.

Decentralization of the packing industry has provided some of the outlying areas (Montana included) with an opportunity for increased growth in meat packing. This chapter will deal primarily with the opinions of Montana packers concerning expansion of their meat volume and an evaluation of some of the problems concerning expansion in Montana.

The most limiting expansion factors in order of importance reported by Montana packers were lack of market, lack of cooler space, inadequate physical facilities and lack of available money (Table XXXVII).

Montana packers who were not operating at full capacity could undergo some expansion with present facilites. There are various ways they could do this. About half of the plants, excluding the local butchers, could increase volume by hiring more help. They could buy hog carcasses and process them, others would increase their hog kill, still others needed federal grading before expansion. Montana plant operators were divided in their opinion regarding the profitability of expansion as follows:

TABLE XXXVII. MOST LIMITING FACTORS TO EXPANSION OF PACKING PLANTS, MONTANA, 1961.

Plant Size	Limiting Factors					
	Lack of Money	Lack of Cooler Space	Lack of other Plant Facilities	No Federal Grading	Lack of Market	Other
FIS a/	2	1	1	0	1	1
Medium a/	2	4	2	1	3	1
Small a/	3	6	4	1	6	2
Local	2	5	5	0	7	1
Total	9	16	12	2	17	5

a/ Does not total due to more than one reason given per plant.

Reply	Federally-Inspected	Medium	Small	Local	Total
Yes	3	7	11	5	26
No		5	7	11	23
Undecided	2		2	2	6

The federally-inspected plants with a favorable cost structure expressed optimism regarding expansion. These plants were operating from 75 percent to 100 percent of their volume limitation. The medium plants, who have the most room for expansion with only five operating at 75 percent or more of physical plant volume limits, had seven who thought expansion of output would be profitable at this time. Three of the seven, who gave the yes reply, were operating at 90 percent of capacity. Again those with a favorable cost structure were optimistic toward plant expansion. This suggests that low cost of operation is associated with an optimistic view towards expanding output.

Although about one-half of the operators were optimistic about expanding local slaughter, many were contemplating expansion to neighboring towns and competitors customers. If only a few plants embarked upon this type of a program perhaps they could achieve some reasonable degree of individual success at someone elses expense, but, if all or even a majority of the plants were to get involved in this type of an expansion then some of the more inefficient plants (high cost) would be forced out of business. In the long run, such a change would be economic but it might not increase the level of economic activity in the state in the short run.

Only 40 percent of the packers reported that they would expand operations in response to a growth in local cattle feeding. Four of

the five largest plants would expand but only one third of the small and local firms would be influenced by cattle feeding. Demand for the finished product, however, would probably be lacking and a search for new markets would have to be undertaken which did not appeal to some of the managers especially in the medium size group.

Packing plants of all sizes reported difficulty in obtaining the type of financing suitable to their business organization. As a result of the inability to obtain capital funds, the opportunity for expanding an established firm is often lost. Oftentimes nationally, an established firm merges or integrates with a larger enterprise that can command the necessary resources. One of the means by which the growth of small businesses can be encouraged is to make available funds for expansion from sources outside the business and to help with expert management advice. 1/

Expansion of the meat-packing businesses of Montana will be dependent upon sources and types of financing. Two federally-inspected plants and two meduum plants listed money (TableXXXVII) as their primary deterrent to expansion. These firms contribute a large share of the state's total volume, therefore their problems are basic to the industry. The two larger plants with the lowest costs per pound of output would undertake an expansion and modernization program if money were available on a long-term basis. One of the two medium plants who listed money as a limiting factor, wanted to modernize and go into a limited expansion program, and the other was interested in a complete rebuilding program to expand volume. These plants presently have a cost per pound of output, almost one-third higher than the federally-inspected plants. An expansion and modernization program should reduce their per unit cost of output.

Under the assumption that livestock feeding would expand in Montana,

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1/ The Rockefeller Panel Reports, Prospect for America, Doubleday and Company, Inc., Garden City, New York, 1961, p. 284.

and the west coast population would expand at its current rate; almost 90 percent of Montana's plant managers thought increased slaughter should take place in Montana near the source of supply. The elimination of transportation costs on one end or the other, either live animals or dressed meat was of major concern. This type of decision should take into consideration the framework of the freight rate structure under which Montana packers are operating.

Variations in transportation costs of $1.25 to $2.00 per hundredweight for dressed meat from Montana packers to west coast destinations illustrate the flexibility in freight rates. This flexibility is due to the leasing agreements with independent truckers. It is difficult to tell what the actual rate on local truckers is for out-of-state hauls based on loaded mile rates. Most truckers have a rate to quote but it is subject to all sorts of conditions and bargaining within certain ranges. Hauls west and south have a higher charge. Part of this is due to inadequacy of rail service and part to the fact that truck competition does not seem to be as keen in the western part of the state. Most long distance truckers feel that back hauls are a necessity. As a result many apparently offer discounts to obtain them. Local haulers complain about out-of-state trucks doing this in Montana and upsetting the normal rate structure. 2/

On the basis of Menzie's 3/ data it appears that the meat packers in Montana are in a position to do a certain amount of bargaining within limits, over transportation rates. The truck rate on dressed meat to the west coast is indeterminate for the Montana packer but has been between $1.25 and $2.00 per hundredweight with the bulk of the shipments between $1.25 and $1.60 per hundredweight. A recent study by

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2/ Elmer L. Menzie, Unpublished Data, Department of Agricultural Economics and Rural Sociology, Montana State College, Bozeman, Montana, 1961.

3/ Ibid.

Bruce P. Lord 4/ of the Department of Planning and Development in Oregon, provides some comparative truck freight rates from other western points to the San Francisco and Portland market areas. The rates of Table XXXVIII do not place Montana packers at a particular disadvantage in transportation rates.

Montana packers have not been shipping dressed meat by railroad. Truck shipments are currently more adequate to meet their needs. Packers were quite emphatic that they did not consider rail services adequate for their meat movements.

Two thirds of the Montana meat packers thought that expansion in meat packing should come through existing plants. Some felt there are too many plants in existence and that additional plants are not desired.

Few Montana packing plants have made a critical analysis of their operation and what it might be if they began an expansion program. Expressions of concern were made over pressures national packers might exert if the Montana packers were to make a concentrated expansion effort. However, expansion aimed at the local market should not bring excessive competition from national packers, especially if the in-state plants were efficient. It is doubtful that Montana meat consumption is of particular importance to the national packers. Montana's livestock slaughter for 1960 was just less than one half of 1 percent of the nation's total and about 2 percent of the 11 western States. Nevertheless, Montana packers must be efficient to survive or competition from some source will perform the needed services. Although Montana packers have a locational advantage for in-state trade there is limited opportunity for expansion of this market. Expanded output must look to out-of-state markets. Doubling of Montana's output for out-of-state markets could add considerably to the well-being of Montana packers and the state in

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4/ Bruce P. Lord, The Potential for Meat Packing in Northeastern Oregon, Department of Planning and Development, State of Oregon, State Office Building, Portland, Oregon, October, 1961, p. 24.

TABLE XXXVIII. TRUCK FREIGHT RATES, FRESH BEEF, TO SAN FRANCISCO AND PORTLAND FROM SELECTED ORIGINS.*

From	To San Francisco		To Portland	
	dol./cwt.	Min. Lbs.	dol./cwt.	Min. Lbs.
Portland, Oregon	$1.20	30,000	--	--
Seattle, Washington	1.31	40,000	0.60	30,000
Boise, Idaho	1.33	38,000	1.22	23,000
Denver, Colorado	1.95	30,000	3.01	25,000
Reno, Nevada	0.78	20,000	2.84	21,000
Phoenix, Arizona	2.01	21,000	4.25	21,000
Yakima, Washington	1.72	34,000	0.59	21,000
Hermiston, Oregon	1.64	30,000	0.92	5,000
Pendelton, Oregon	1.64	30,000	1.11	21,000

* Source: Bruce P. Lord, The Potential for Meat Packing in Northeastern Oregon, Department of Planning and Development, State of Oregon, State Office Building, Portland, Oregon, October, 1961, p. 24.

general, however a similar expansion aimed at in-state markets would be disastrous simply because current slaughter equals current consumption.

Expansion programs of any size should be undertaken by federally-inspected plants or the medium plants who are willing to undergo the expense of remodeling their plants to federal specifications and pursue a vigorous program of both out-of-state and in-state marketing for their finished products. In-state markets have not shown a preference for buying from in-state packers, therefore, the packer must be competitive with outsiders for the markets in Montana.

Wholesale meat price changes are important in the decision of where to sell. A difference of 50 cents to a dollar per hundredweight on a semi-load of meat is certainly worth considering. Therefore, each shipment needs its own special attention. Montana's out-of-state sales have been mostly in San Francisco, Los Angeles and Seattle. Wholesale prices from 1956 through 1960 have averaged higher in the Seattle-Portland market area than those in California (Table XXXIX). On the basis of the wholesale prices and the truck freight rates it seems reasonable to conclude that the Seattle-Portland market area should be the most profitable if the Montana packer can furnish the quality and quantity of meat desired in that market area.

In discussing the Portland market, Lord states that one large retail grocery chain has established itself in a dominant position with respect to the retail market. This one organization with over 200 stores in the Northwest and its high volume of sales exerts considerable influence and is able to demonstrate leadership over the existing market structure especially in purchasing output of meat packers in that area. The chain pursues an avowed policy of local preference for buying meat and meat products but does not hesitate to make purchases outside the area if price is to their advantage without a loss in quality. 5/ A

5/ Ibid., p. 30.

TABLE XXXIX. WHOLESALE PRICES FOR DRESSED BEEF, FIVE MARKETS, 1956-60.*

Market	Year	Steer Beef 600-700 lbs. Good	Steer Beef 600-700 lbs. Choice	Heifer Beef 600-700 lbs. Choice
		Dollars/cwt.		
Denver	1959	40.62	42.79	41.79
	1960	37.95	41.24	39.72
Los Angeles	1956	33.08	34.96	-----
	1957	37.08	38.39	-----
	1958	44.04	44.58	-----
	1959	44.04	45.24	-----
	1960	40.87	42.39	-----
Portland-Seattle	1956	33.86	36.56	-----
	1957	36.99	39.43	-----
	1958	44.38	46.01	-----
	1959	44.89	47.11	-----
	1960	42.45	44.15	-----
San Francisco	1956	33.58	35.67	-----
	1957	37.08	38.72	-----
	1958	43.84	44.70	-----
	1959	44.61	45.45	-----
	1960	41.95	43.05	40.67
Chicago	1956	33.24	37.89	-----
	1957	36.22	39.38	-----
	1958	42.15	45.05	-----
	1959	42.81	45.24	-----
	1960	41.57	43.98	42.74

* Source: United States Department of Agriculture, Livestock and Meat Prices and Receipts at Certain California and Western Market Areas, 1961, Federal State Market News Service, California Department of Agriculture, Bureau of Market News Cooperating, March, 1962.

market structure of this type presents problems for plants outside of the area. Assuming a plant in Montana was selling regularly into the Portland market, and competing with local packers there, occasionally he would find himself without a market when the major buyer makes a volume purchase elsewhere. With the narrow margins in meat packing this is a risk that the packer must be willing to take if he wants to be competitive.

According to Lord 6/ there are several large chains in the Seattle area that demonstrate market leadership creating an atmosphere of intensive competition. This places the meat packer in a more effective sales position. Meat buyers for the chains will seek the best buy at the best price instead of consistently relying on any one supplier and purchases are made more often by telephone without great stress placed on individual selection. With this type of market structure, meat packers from outside the immediate area have more of an opportunity to compete effectively for a regular market if their costs of production are lower due to more efficient organization and operation than the plants situated in the immediate market area.

In the past, Montana packers have been able to compete to a certain extent in the Seattle market. Whether or not they are able to continue will depend upon plant efficiency and the product quality compared to Seattle plants.

California markets have had a steadily increasing in-flow of dressed meats from the Midwest. Montana packers may strive to compete for this market. Competitors are located not only in California but other Rocky Mountain states as well as in the Midwest. Colorado has the largest slaughter of any Rocky Mountain state. Their truck freight rate structure to California is slightly higher than Montana's. However, the difference is small enough that costs of production and quantity and quality of

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6/ Ibid., p. 31.

meat are likely to have more effect on its competitive nature than strictly freight rates.

Montana packers are located near the source of supply for feeder cattle but if the supply of fat stock is to be adequate for expanded slaughter the amount of cattle fed in the state would have to increase. The locational advantage Montana packers have for beef is partially offset by the locational disadvantage for hogs. In 1960, about 40 percent of the hogs slaughtered were shipped in from the western fringe areas of the corn belt. Nearness of supply, therefore, would not be an advantage for an increase in the slaughter of hogs.

Not all Montana plants are operating at their physical production capacities and if they were to increase to their maximum output, cattle slaughter could be increased by 31,000 head and hog slaughter by 40,000 head. Of this increase 22,000 head of cattle and 40,000 head of hogs would have to come from the medium plants who have an average total cost per pound of output of 10.7 cents as compared to 7.7 for federally-inspected plants. If the medium plants were to increase their volume of output by the amount of their excess plant capacity then they would distribute fixed costs over a larger volume thereby reducing the fixed cost per unit of output and gain some efficiencies in management. This would bring them closer to the lower cost of operation per unit of output that the federally-inspected plants now enjoy.

Montana meat packers usually sell direct to the retail outlets, therefore the buyers are usually imperfectly competitive. The price then becomes a competitively negotiated price settled on the basis of the bargaining power of the opposing forces. Lack of bargaining power resulting from small volume is the reason that Montana packers find difficulty in selling to large food chain buyers.

A method by which Montana's independent packers could increase bargaining power at only a slight loss of "independence" is to combine and employ a bargaining agent. The agent would negotiate with meat

buyers on price, quality and volume of shipments. The agent in order to be successful would require the cooperation of enough packers to allow him access to an adequate volume in order to meet the market demands of large chain stores and other volume purchasers of meat and of meat products.

Expansion of any plant will be based upon that plants ability to compete, which means the individual plant will have to have its costs of production the same as or lower than the competitors and a volume large enough with adequate quality to meet the demands of today's buyers.

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