OKLAHOMA LIVESTOCK AND MEAT MARKETING

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CHAPTER I

INTRODUCTION

Marked changes are taking place in the production and marketing of meat in the United States. In some areas the changes are far advanced, while in others they are only beginning to take shape. Oklahoma and the Southern Plains are areas in which only initial adjustments in production and marketing patterns and practices have appeared. The pressure of economic forces for additional changes, however, is evident.

A variety of forces are responsible for the revolutionary changes taking place. Included are changes at the consumer level in population, relative importance of consumption centers, consumer age distributions, consumer incomes, and income distributions and in shopping, consuming, and living habits. Technological improvements in transportation, refrigeration, intransit refrigeration, and communication have significantly affected the livestock and meat industry along with others. Many additional technological changes, both within and external to the livestock and meat industry, are among the generating forces of the transformation. Institutional and regulatory forces also are at work.

First effects of the change generating influences were upon performance, in terms of production, sales and profits, of some producers or marketing firms relative to others. Competitive interrelationships among firms, among areas of the nation, and among sectors of the production and marketing system accordingly, were altered. This led to changes in conduct,

particularly of marketing firms, and to basic changes in market structure.[1] Structural changes, in turn, led to further changes in conduct and performance in a self-generating cyclical fashion. The result is that a radically altered marketing system for livestock and meat is emerging.

In this dynamic framework of development and change, the nation has become one vast market for agricultural food products rather than an agglomeration of many relatively independent and isolated markets. This has brought all producers and marketing firms within given industries, such as livestock and meat, into close competition with one another. Competitive positions of individual firms, particular segments of the industry, and particular areas are vitally affected by events formerly considered insignificant. Almost instantaneous communication and rapid transportation, of course, are largely responsible for these developments.

The modern competitive climate requires constant vigilance, forthright decisions, and immediate adjustments to changes in competitive interrelationships. Marketing problems develop when some firms, some sector of the industry or some area (1) fails to recognize the change generating forces as they develop, (2) fails properly to evaluate the significance of the early indications of change or (3) fails to make adjustments required for attaining or retaining desired goals.

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[1] "Market structure" refers to those characteristics of organization among marketing firms which strategically influence the nature and intensity of competition. Relevant organizational characteristics of market structure are the number of firms, the size distribution of firms and plants, the distribution by type, and geographical location. Some common measures of market structures are: concentration ratios or percentages of volume accounted for by a certain number of the largest firms, degree of integration, the degree of product differentiation and price discrimination, profits and profit ratios, and conditions of entry to the industry by new firms. Few of these measures are available for use in this study. Many structural characteristics, however, are determined.

Descriptive findings are presented in this report which conclude the initial phase of a longer term study designed to determine the competitive positions and potentials of Oklahoma and the Southern Plains in the production and marketing of livestock and meat. The basic question at issue concerns the combination and relative importance of production and marketing activities consistent with general welfare of Oklahoma agriculture. A related question is whether or not Oklahoma is and must remain primarily a producer of raw materials, such as feed grain and feeder livestock, for use and finishing elsewhere or whether, in addition, it can become a producer, processor, and interstate distributor of finished livestock and meat products. The ultimate aim of this work is to arrive at recommendations designed to improve Oklahoma's competitive situation with respect to livestock and related products and increase aggregate incomes of Oklahoma farmers and farm product marketing firms.

Purposes and Objectives of the Study

The principal objective of this initial descriptive study is to provide basic information on livestock and meat marketing patterns and practices in Oklahoma. A closely related purpose is to reveal the present structure of markets for livestock and meat in Oklahoma and the extent of recent changes in this structure. Little information on Oklahoma of this nature has ever been brought together in a systematic and comprehensive manner. Although the findings are useful and revealing in themselves, their principal value is use in more detailed problem oriented research.

More specifically, purposes of the study are to:

1. Examine livestock production and marketing trends in Oklahoma and

in competitive areas and to ascertain economic conditions that may be responsible.

2. Determine types and availability to producers of markets and marketing agencies, the relative importance, and changes in the relative importance of these outlets in the marketing of livestock.
3. Describe the structure of the marketing system for meat giving special attention to changes that have taken place at the retailer, meat wholesaler, and meat packer levels.
4. Determine trends in population, consumer incomes and other factors affecting meat consumption in Oklahoma and insofar as possible, using readily available data, determine consumption trends and patterns for red meat.
5. Determine production - slaughter - consumption balances for Oklahoma by species and class of livestock and meat.
6. Develop a preliminary evaluation of Oklahoma's competitive situation and potentials in the production and marketing of livestock and meat and of structural adjustments that appear to be required for improvements in the present and prospective situations.
7. Delineate some of the more pressing and pertinent problems as suggested objects of future research.

General Theoretical Framework

Location theory provides the basic conceptual framework for the overall study as well as this phase of the work. Microtheory of the firm, macrotheory of aggregations of firms or industries, and market structure theory, however, also are employed. Although structural changes throughout

the livestock and meat industry are evident, these generally have been consistent with more rather than less competition. With the exception of the retail sector, the changes have been characterized by a larger number of more specialized firms, less product differentiation, and fewer restrictions on entry.[2] The general economic conditions of pure competition, therefore, are assumed. Departures from the purely competitive ideal in the form of institutional barriers and restrictions and structural characteristics of particular sectors or areas of the industry, however, are taken into consideration.

The study assumes economic rationality of producers and marketing firms. It assumes, further, that within reasonably short market periods price differences among markets approximate transfer cost differences. It, therefore, is hypothesized that livestock and meat products will flow to markets where net f.o.b. returns are highest. Again, however, effects of such factors as institutional barriers, market structure characteristics, differences in supplies and prices of necessary productive resources, differences in rates of technological innovation, differences in consumer tastes and preferences, and others are recognized.

The overall study was initiated with several hypotheses in mind. Some of these follow:

1. Oklahoma's principal customer for unfinished livestock and its' principal competitor in the production and distribution of finished livestock and meat products is the Central Corn Belt and contiguous areas of

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[2]Although more specialization and less product differentiation may appear theoretically inconsistent, both are evident in the meat industry. Trends toward increased use of specifications by retailers and of official grades by the industry largely are responsible.

the North Central region.

2. Competitive advantages of meat marketing firms in the Central corn Belt arise from (a) location with respect to the Northeast which is the nation's principal area of consumption, (b) the largest concentrated supply of relatively low cost slaughter livestock in the United States which tends to minimize procurement costs, (c) economies of scale in procurement, handling, processing and distribution, (d) additional economies arising out of specialization by plant or function and a relatively rapid rate of technological innovation, (e) some degree of product differentiation particularly in pork and sausage products, and (f) a location and market structure which permits some area price, service or product discrimination--preferred eastern markets possibly can be protected by sales of excess supplies at or near cost in Southern, Southwestern or far Western markets.

3. Competitive advantages of Oklahoma and Southern Plains meat packing, processing and distributing firms arise from (a) proximity to local consumer outlets, (b) ability to design some products and services to meet requirements of large numbers of smaller retail outlets, (c) nonunionization of plants permitting flexibility in the use of labor, (d) a lower than average level of wages, and (e) restrictions on interstate shippers arising from the Federal inspection requirements.

4. The outlook for the feeder cattle industry in Oklahoma is favorable. Basic resources for continued increase in production of fed beef in the state are available. Possible population increases, improvements in consumers real incomes, and shifts in consumers tastes and preferences may require substantial increases in the available supply of fed beef. Out-of-state markets possibly can be developed to absorb surplus fed beef produced in the state..

5. The Oklahoma population is too small and population growth potentials too limited, by themselves, to support large, specialized, low cost packing, processing and distributing firms. Absence of uniform quality slaughter livestock in relatively large volume, wide annual variations in slaughter livestock by grade and class, and the limited volume of consumption in Oklahoma require local plants to be diversified by species or product mix, function and type of outlet. This, together with the scattered nature of production which increases procurement costs, results in a relatively low level of physical efficiency which is offset only by lower wage rates, transfer costs from other areas, and institutional barriers, operation over a longer period of time each day, to spread overhead costs and use of family labor.

6. Most of Oklahoma's present sources of competitive advantage in meat packing, processing and distribution likely will become less important in the future and may disappear entirely within the next several years. Continued technological improvements are being made in highways and in other transportation facilities. In accordance with recent trends, transportation rates on dressed meat relative to rates applicable to slaughter livestock likely will fall. Labor unions are becoming a more important factor in Oklahoma meat packing and processing plants. Any mergers, consolidations, or plant construction which tended to increase average sizes and volumes of meat packing plants in Oklahoma, would tend to hasten unionization. These developments also would reduce number of hours worked, flexibility in use of labor, and reliance upon family labor and increase wage levels. Efforts at the Federal level already have been made to eliminate institutional barriers associated with Federal inspection. Large numbers of the smaller single unit retailers are disappearing

annually. Many of those remaining are joining cooperative or voluntary group buying organizations.

7. Oklahoma cannot develop a significantly larger and growing meat packing and processing industry unless adjustments are made such that the local firms can compete successfully on a volume basis for markets outside the state. Structural changes are evident at the retail level and at the producer level in the form of a growing number of commercial cattle feedlots and a few large scale hog producing units. Structural changes of any significance, however, have not taken place in the marketing system between the producer and the retailer.

8. Structural adjustments in the marketing of the type indicated and success in competing for markets outside the state would require (a) confidence by marketing agencies in the ability of producers to supply slaughter livestock in the volume, regularity and uniformity desired and through periods of drought and depressed economic conditions, (b) simultaneous development and growth within the slaughter livestock production sector and the meat packing and processing sector, (c) plants sufficiently large and specialized to enjoy economies of organization and scale, (d) an accelerated rate of technological innovation in both production and marketing, (e) by-product plants and other factor supply sources which provide external economies, and (f) employment of other means and methods of reducing production and marketing costs and improving efficiency.

9. Unless appropriate structural and organizational changes can be made in meat packing and processing, production of fed cattle and hogs will be severely limited. They will be limited to a portion of the quantity consumed in Oklahoma and the volume that can be shipped from the state in live form for slaughter elsewhere.

10. Unless the appropriate structural and organization changes can be made, the Oklahoma livestock industry might find it more profitable to concentrate upon production of feeder livestock and abandon attempts to establish fed cattle and slaughter hog industries.

11. Comparative disadvantages in sheep production, the small and scattered nature of sheep production at present, economic, and technical requirements of a profitable lamb slaughtering plant, and an exceptionally limited consumption potential for lamb all suggest that Oklahoma cannot become an important factor in lamb production and marketing within the forseeable future.

No formal attempts were made in connection with this report to test, adequately, any of these hypotheses. They serve, however, as points of departure and guides to the inquiry, the analyses, and the evaluations made.

CHAPTER II

LIVESTOCK PRODUCTION MARKETING AND SLAUGHTER AREAS - SHIFTS AND CHANGES

A variety of economic forces materially affect livestock and meat production, marketing and consumption. These include changes in population, population distribution, consumer income, consumer tastes and preferences, availability and prices of necessary production and marketing resources, market structure, and location, among others. No attempt is made here either to specify or analyze these factors in detail. Instead, shifts in location of production, marketings, and slaughter are discussed in this chapter. In the following chapter, cyclical patterns and basic trends relating to livestock production and consumption are described. Interrelationships among some of these, to a limited extent, are delineated and analyzed.

Recent Shifts and Changes

Livestock is found in all farming areas of the United States. In the past two decades, however, significant shifts in the location of production have taken place. Intra-area shifts as well as interregional adjustments among species and classes of livestock also are evident. Changes in regional production patterns, together with other forces, have generated shifts in the location of livestock slaughter.[1]

[1] See Appendix B, Figures 1 and 2 for identification of geographical areas used in this discussion.

Livestock supply areas are basically determined by the types of crops that can be most advantageously produced in a particular area. Location of hog and fat cattle production is primarily determined by supplies of corn and other carbohydrate feeds. Dairy cattle production is adaptable to areas in which pastures and forage crops are abundant. Areas where grazing pastures and hay are available generally are most suitable for the breeding and growing phases of sheep and cattle production. Other determinants of supply areas are (1) location relative to consumption; (2) accessibility to markets; (3) levels of technology available, and; (4) effects of weather and climate on feed-livestock transformation functions.

Cattle and Calves

Although cattle and calves are widely distributed throughout the United States, some degree of geographical concentration is evident (Table I). Beef cattle are heavily concentrated in the North Central region with additional relatively large numbers found in the South and West. Dairy cattle concentrations are found in the Lake States of the North Central Region and the Northeast. Large numbers of dairy cattle also are found near metropolitan centers in other regions.

The North Central region with 45 percent of the total cattle on farms in the United States, accounted for about half of the liveweight production and marketings in 1958-60, primarily because large numbers of cattle are fed in this area to relatively heavy weights. Since additional cattle are shipped to the North Central region for slaughter, this region was responsible for 56 percent of the cattle slaughter. The region accordingly, is a deficit area with respect to the production-slaughter balance. But with only 29 percent of the nations human population, it definitely is a

TABLE I

PERCENTAGE DISTRIBUTIONS FOR CATTLE AND CALVES OF JANUARY 1 INVENTORIES BY CLASSES, LIVEWEIGHT PRODUCTION, MARKETINGS, SLAUGHTER AND PERCENTAGE DISTRIBUTION OF THE HUMAN POPULATION, 1958-60

Region	Inventory January 1				All Cattle		Slaughter		Human Population
	All Cattle	Beef Cattle	Beef Cows	Dairy Cattle	Liveweight Production	Marketings (Liveweight)	Cattle	Calves	
	Percent								
South	31.4	34.2	44.1	25.6	28.1	24.4	15.3	45.6	30.7
Oklahoma	3.4	4.3	5.1	1.6	3.7	3.2	1.2	2.2	1.3
Texas	9.0	11.7	15.6	3.5	9.0	8.2	4.8	21.7	5.4
Other South									24.0
Northeast	5.6	.9	.6	15.0	3.6	3.3	8.9	16.1	25.0
North Central	45.3	43.6	32.3	48.7	49.0	51.3	56.4	30.7	28.8
West	17.7	21.3	23.0	10.7	19.3	21.0	19.4	7.6	15.5
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

surplus producer of mature dressed beef. Usually, it probably also has a small surplus of calf meat. Most regions, however, are about in balance with respect to slaughter and consumption of calf. In regions such as the South where the population is small relative to calf slaughter, per capita consumption of calf exceeds the national average.

The Northeast is the nations principal deficit area with respect to both the production-slaughter balance and the slaughter-consumption balance (Table I). Production of cattle for slaughter in this region consists principally of dairy calves and discarded dairy breeding stock. At one time this was the principal livestock slaughtering region in the United States. Relatively large numbers still are shipped into the Northeast for slaughter. Larger quantities of dressed beef, however, are imported.

The South with about one-third of the beef cattle and 44 percent of the beef cows accounted for substantially smaller percentages of the total liveweight production and marketings and only 15 percent of the slaughter. Much of the production in this region consists of calves and lightweight animals sold as feeders and shipped to other regions. The North Central region and feedlots in Arizona, California and other states annually receive large numbers of feeder cattle from the South. Increasing percentages have been moving West. Many cows also are shipped out of the South for slaughter elsewhere. With 30 percent of the nations population, the South, generally speaking, is a deficit mature dressed beef area. Most dressed beef shipped into the South originates in the North Central region.

Many of the statements made about the Southern region are also true of Oklahoma. With 4 percent of the nation's beef cattle, 5 percent of

the beef cows and only about 1 percent of the total slaughter of mature beef, it is a heavy surplus producer of live cattle which are sold mainly as feeders. With respect to total slaughter and consumption, it is a deficit area for the higher grades of dressed beef.

Substantial changes have taken place during the past two decades in location of cattle inventories, production, marketings and slaughter (Table II). General increases in inventories of beef cattle have taken place in all regions of the nation. Significantly large increases are apparent for the Southeastern portion of the nation and the North Central region. Despite the large percentage changes in the Southeast, the North Central region increased its share of the total inventory of beef cattle from about 38.5 percent in 1937-39 to 44 percent in 1958-60. Percentagewise, increases in beef cattle production were relatively large in the Northeast during 1937-39 to 1958-60 but production in this region remains insignificant at less than one percent of the national total.

Numbers of dairy cattle declined in all regions except the Lake States, a principal area of milk production for manufacturing purposes, the Central Corn Belt, and regions affected by substantial population increases. These latter areas include the Appalachian area, the Northeast and the Pacific Coast.

Changes in liveweight production and marketings of cattle largely reflect inventory changes. Some exceptions, however, are evident. Introduction and growth of a feedlot industry in the West greatly affected liveweight production and marketings in that region relative to inventories. Trends toward production of lighter-weight cattle in the North Central region resulted in relatively small increases in liveweight production and marketings in that area.

TABLE II

PERCENTAGE CHANGES IN JANUARY INVENTORIES OF CATTLE BY CLASSES, LIVEWEIGHT PRODUCTION, MARKETINGS AND COMMERCIAL SLAUGHTER BY REGIONS, UNITED STATES, 1937-39 TO 1958-60

Region	Percentage Changes, 1937-39 to 1958-60						Percentage Changes[a] 1947-49 to 1958-60	
	Inventory, January 1				All Cattle		Commercial	
	All Cattle	Beef Cattle	Beef Cows	Dairy Cattle	Liveweight Production	Marketings	Slaughter Cattle	Liveweight Calves
	Percent							
South	42.3	99.1	172.4	-19.7	109.7	95.5	29.2	-5.5
Appalachian	52.6	146.2	555.4	7.4	95.2	84.2	30.3	-8.9
Southeast	76.7	180.4	274.3	-13.5	243.2	274.5	34.5	-0.6
Delta	54.1	156.8	294.7	-21.7	135.0	159.2	66.6	-0.7
Southern Plains	22.1	56.6	91.5	-49.2	84.1	64.8	17.9	-7.2
Oklahoma	42.8	141.0	227.7	-65.2	82.8	56.2	-9.3	-49.6
Texas	15.8	38.9	68.5	-45.8	84.5	68.4	27.0	1.3
Northeast	7.8	38.4	368.8	4.8	26.0	30.2	17.3	-17.1
North Central	44.4	130.8	201.4	-23.9	87.5	92.8	32.7	-43.6
Lake	19.6	78.5	252.8	7.0	58.0	80.6	26.8	-21.9
Central Corn Belt	42.4	128.6	198.8	22.6	81.5	83.4	32.5	-51.1
Northern Plains	72.5	149.2	198.2	-36.8	120.4	111.5	40.3	-71.4
West	51.5	73.1	67.8	1.0	116.3	130.7	62.6	-41.9
Mountain	47.7	62.5	56.4	-13.3	116.2	142.3	109.0	-52.5
Pacific	58.0	101.3	107.8	10.9	117.0	113.1	45.1	-39.3
United States	42.2	103.9	145.5	-11.8	94.9	97.9	35.4	-26.0

[a]Commercial slaughter data by regions is not available prior to 1944.

Rather general increases in liveweight slaughter of beef cattle also are indicated for the period 1937-39 to 1948-58. Shifts in location of the slaughter industry to the Northern Plains, the West, and the Delta region, however, also are clearly evident (Table II). But even after the shift to the Delta, this region accounted for less than two percent of the total national slaughter of cattle; the entire South was responsible for only 15 percent. Despite production increases, the relative position of the South with respect to commercial cattle slaughter deteriorated. This is more particularly true, however, of the Northeast.

Calf slaughter has declined in all regions of the nation since 1937-39. Some factors responsible are reductions in cow numbers, increased demand and prices of feeder calves, and some shift in consumer tastes and preferences to other meats.

Oklahoma is the only area among those listed in Table II in which slaughter of mature cattle also declined. Beef cattle inventory increases for the two decade period exceeded comparable national averages. Increases in liveweight production and marketings, however, fell short of national average increases, reflecting a trend toward the marketing of younger, lighter-weight feeders. The relative decline in slaughter volume of mature cattle and the substantial drop in calf slaughter in Oklahoma may reflect (1) shifts in consumer preferences from calf to mature beef and from non-fed to fed beef, and (2) a relatively low level of feedlot production in the state in the face of substantial increases elsewhere. These changes also could point to a deteriorating competitive situation for Oklahoma beef packers.

Hogs

The history of hog production in the United States is highly correlated with corn production. As hogs can convert feed grain into meat more efficiently than any of the other classes of livestock, more than 45 percent of the corn produced in the United States is fed to hogs. This percentage is somewhat higher in the leading hog producing areas.

The complementary relationship between corn and pork production has resulted in a higher geographical concentration of production than is true for either cattle and calves or sheep. The center of hog production in the United States is the North Central region where about 80 percent of the nation's hogs were produced in 1960. Even more important is the fact that nearly three-fifths (59 percent) of the nation's total liveweight production of hogs was produced in the five states composing the Central Corn Belt area (Table III). Production in this area increased 57 percent during the period 1937 to 1958, which represents an increase of 27 percentage points above the national average. Not all sections of the North Central region increased in hog production, however. Total production in the Lake States decreased about 5 percent during this period.

Total liveweight production of hogs also increased materially in the Southeastern and Appalachian regions of the United States. In all other regions of the nation, however, production has dropped rather substantially.

Changes in production and marketings of hogs derived from published data, appear inconsistent. There are three principal reasons for this: (1) both series are estimates developed independently of one another and both are subject to error, (2) the marketings data, particularly, have been improved over time and have become more inclusive, and (3) substantially

TABLE III

HOG INVENTORIES, PRODUCTION, MARKETING, AND SLAUGHTER: PERCENTAGE DISTRIBUTIONS AND PERCENTAGE CHANGE BY REGIONS, UNITED STATES, 1937-39 TO 1958-60

Region	Inventory		Production		Marketing		Slaughter	
	Percentage Distribution 1959-61	Percentage Change 1937-39 to 1959-61	Percentage Distribution 1958-60	Percentage Change 1937-39 to 1958-60	Percentage Distribution 1958-60	Percentage Change 1937-39 to 1959-60	Percentage Distribution 1958-60	Percentage Change 1947-49 to 1958-60
South	20.5	-14.7	17.2	-.6	13.5	84.9	17.4	55.1
Appalachian	9.0	16.6	8.1	24.5	6.1	132.6	9.0	92.2
Southeastern	6.4	-2.0	5.0	29.8	4.2	170.1	4.0	42.3
Delta	2.5	-55.0	1.8	-40.9	1.3	1.8	1.2	63.3
Southern Plains	2.6	-38.1	2.3	-37.7	1.9	4.4	3.2	6.5
Oklahoma	.7	-44.9	.8	-4.4	.6	-19.4	.9	14.1
Texas	1.9	-34.9	1.5	-34.1	1.3	22.7	2.3	17.7
Northeast	1.8	-20.5	1.5	-23.0	1.2	84.9	7.8	8.0
North Central	75.3	51.0	79.2	45.6	83.4	90.2	69.1	15.4
Lake States	10.9	34.8	9.4	-5.0	12.9	58.1	13.6	5.8
Central Corn Belt	55.2	55.2	58.7	57.3	59.4	79.4	42.9	19.6
Northern Plains	9.3	49.6	11.1	54.4	11.1	90.2	12.6	13.1
West	2.4	-39.0	2.1	-34.3	1.9	-24.4	5.7	5.0
Mountain	1.2	-29.6	1.1	-27.6	.9	-14.1	2.0	17.0
Pacific	1.2	-46.1	1.0	-41.3	1.0	-22.2	3.7	-.5
United States	100.0	25.3	100.0	30.5	100.0	72.7	100.0	19.4

larger percentages of total production entered the marketing system during 1958-60 than during 1937-39.

Some relative shift in the location of hog slaughter to the Southeast from other regions is apparent. Liveweight slaughter of hogs increased 55 percent in the South during the period under consideration compared with 15 percent in the North Central region and a national average increase of 19 percent. Nevertheless, the South, along with all regions other than the North Central, remains in a deficit situation with respect to slaughter and consumption.

Sheep and Lambs

Many problems associated with sheep production have contributed to a general decline in sheep production in the United States. Although these problems are beyond the scope of this discussion, importation of foreign wools, innovation of synthetic fibers, and reductions in the available supply of suitable labor for range sheep production appear to be among the more important explanatory factors. Despite the recent downtrend in total production, sheep growing and fattening remains an important enterprise in certain areas of the nation. The Western region accounted for 42 percent of the January 1 inventories of sheep and lambs on farms during the period 1959-61 (Table IV). One-third of the total was located in the Mountain area of this region. The North Central region, with 32 percent of the total sheep inventories ranked second in sheep production. Few sheep relative to the total are produced in the Northeast region.

In many areas of the South, sheep production is relatively low. The nation's leading sheep producing state, however, is Texas with 17 percent

TABLE IV

SHEEP INVENTORIES, PRODUCTION, MARKETING, AND SLAUGHTER: PERCENTAGE DISTRIBUTIONS, AND PERCENTAGE CHANGE BY REGIONS, UNITED STATES, 1937-39 TO 1958-60

	Inventory		Production		Marketing		Slaughter	
	Percentage Distribution 1959-61	Percentage Change 1937-39 to 1959-61	Percentage Distribution 1958-60	Percentage Change 1937-39 to 1958-60	Percentage Distribution 1958-60	Percentage Change 1937-39 to 1958-60	Percentage Distribution 1958-60	Percentage Change 1947-49 to 1958-60
South	24.1	-37.0	17.1	-27.8	14.3	-27.2	9.0	10.2
Appalachian	4.6	-38.7	5.4	-33.1	5.4	-26.4	2.4	39.7
Southeast	.2	-30.8	.2	81.8	.3	158.2	*	0
Delta	.7	-48.7	.4	-19.4	.4	31.0	*	-66.7
Southern Plains	18.6	-31.1	11.1	-26.1	8.2	30.8	6.5	2.1
Oklahoma	.9	-17.0	.8	3.3	1.0	9.0	.2	-83.6
Texas	17.2	-36.8	10.3	-27.9	7.2	-32.9	6.3	22.8
Northeast	1.5	-44.4	1.4	-27.1	1.2	-36.4	15.1	10.8
North Central	32.2	-23.4	37.9	-.5	43.1	-3.6	44.9	-17.5
Lake States	5.1	42.8	6.9	-21.7	6.8	-30.4	12.7	40.0
Central Corn Belt	14.7	-32.6	17.3	10.8	20.7	-9.6	18.2	39.9
Northern Plains	12.4	11.4	13.7	38.1	15.6	29.6	14.0	-21.5
West	42.2	-41.6	43.6	-22.4	41.4	-24.9	31.0	39.3
Mountain	32.2	-40.9	32.6	-19.6	30.5	-22.6	12.5	95.5
Pacific	10.0	-43.6	11.0	-27.6	10.9	-30.7	28.5	16.8
United States	100.0	-35.6	100.0	-16.6	100.0	-17.6	100.0	-1.6

*Less than 1 percent.

of the total numbers on farms in the United States and 78 percent of total numbers in the South. Kentucky and Virginia are important areas of farm flock production, accounting for most (14 percent) of the remaining numbers on farms in the South.

Shifts in the location of sheep production, along with the general decline in total inventories, are apparent. Contrary to the national trend, production in the Northern Plains States has increased considerably. Oklahoma producers also increased their liveweight output slightly.

Relatively large numbers of sheep and lambs are shipped into the Northeast and the Pacific region for slaughter. These are the principal areas of consumption in the nation from the standpoints of both numbers and per capita consumption. In California and some states in the Northeast per capita consumption of lamb averages 12 to 13 pounds compared with a national average of 4.8 pounds.[2] Large numbers of lambs are fed and slaughtered in Texas and the North Central region but relatively little is consumed in these areas. Some shift in the location of lamb slaughter from the Northern Plains region, despite production increases for this region, to the West, Texas, the Northeast, and other regions has taken place.

Geographical Distribution of Livestock Inventories and Slaughter Within Oklahoma

Total numbers of cattle and calves on farms January 1 in Oklahoma have increased 86 percent since 1937-39. There appears to have been few major shifts in location of inventories since that period.

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[2]For discussion of regional differences in lamb consumption, see: Harry O. Doty, Jr., Lamb Availability and Merchandising in Retail Stores, USDA Marketing Research Report No. 207 (January, 1958).

Central Oklahoma is more important in the production of all three major classes of livestock than the other two areas--East and West (Table V). A greater concentration in this area is apparent for sheep and lambs than for hogs or cattle and calves. Hog numbers in Oklahoma have increased about 47 percent since 1947-49.[3] Several changes are evident in the location of hog inventories within the state since that time. During the sharp decline in production in 1953 and 1954, many producers, apparently, were forced to discontinue their hog operations. After 1954, the trough year of the hog cycle, favorable prices attracted old producers back into the business as well as new producers in different areas. As a result, the center of hog production in the state shifted from the Eastern part of the state in 1947-49 to Central Oklahoma in 1958-60.

Fewer shifts in the location of sheep inventories in Oklahoma are apparent than hogs or cattle and calves. Nearly two-thirds of the total sheep numbers are located in Cental Oklahoma. (Most of these are found in the northern section of this area.)

In addition to having the greatest total number of livestock on farms than any other area of the state, Central Oklahoma is also the state's principal slaughter area (Table V). With one-half of the state's total human population located in this area, about 75 percent of the total slaughter of cattle and calves are slaughtered in this area. At the same time, only 43 percent of the total cattle and calf inventories are located there. This indicates that Central Oklahoma is a deficit production--slaughter area for beef. Large numbers of live cattle are shipped into this area for slaughter, and some, apparently, is shipped out again in

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[3]Comparable data are not available for the period 1937-39.

TABLE V

PERCENTAGE DISTRIBUTIONS OF LIVESTOCK MARKETINGS AND SLAUGHTER BY CLASSES AND BY AREAS AND PERCENTAGE DISTRIBUTION OF HUMAN POPULATION BY AREAS, OKLAHOMA, 1958-60[a]

Area	Cattle and Calves		Hogs		Sheep and Lambs		Human
	Marketings 1958-60	Slaughter 1959	Marketings 1958-60	Slaughter 1959	Marketings 1958-60	Slaughter 1959	Population 1958-60
				Percent			
West	24.1	6.4	18.0	3.2	24.6	.3	13.2
Central	43.0	74.6	47.1	81.4	49.1	1.7	49.7
East	32.9	19.0	34.9	15.4	16.3	98.0	37.1
State	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a]Marketings allocated to areas on the basis of January 1 inventories.

dressed form. This deficit production-slaughter situation also reflects the influence of the large terminal market, located in this area, on the location of marketing and slaughter.

Central Oklahoma also has a deficit production-slaughter balance for hogs. The pattern is similar to that for cattle and calves but with greater concentration in this area.

Both the West and Eastern areas of the state produce surplus numbers of slaughter cattle. In Eastern Oklahoma where one-third of the state's inventories of cattle and calves is found, only 19 percent were slaughtered. This area receives large quantities of dressed beef for consumption from central Oklahoma as well as from out-of-state sources.

Eastern Oklahoma is the principal slaughter area for sheep and lambs in the state. Although most of the sheep and lambs were produced in the central area in 1959 over 98 percent was slaughtered in this area.

CHAPTER III

TRENDS AND CYCLICAL PATTERNS RELATED TO LIVESTOCK PRODUCTION AND MEAT CONSUMPTION

Historically, livestock inventories have varied cyclically around a long-run upward trend. High and low levels of livestock inventories have, in turn, caused certain cyclical movements in numbers marketed and, subsequently, in numbers slaughtered. In addition to the regular cyclical movements, there also have been irregular fluctuations caused by droughts, wars, supplies of substitute products, and general economic conditions. Motivating forces which have influenced production, marketing, and slaughter cycles are discussed in this chapter. A theoretical model is presented which, to a limited extent, explains the impact of these forces on the cyclical movement. Recent trends in cyclical patterns and changes including consumption trends are then examined.

Production Marketing and Slaughter Cycles

An analysis of cattle cycles is complicated by the existence of two distinctly different kinds of cattle, dairy and beef. The relative contributions to the total cyclical movement of the two classes varies as the cycle advances from stage to stage (Table VI). Change in numbers of beef cattle is the principal determinant of deviations in Oklahoma cattle numbers from the trend in critical years of the cattle cycle. Changes in numbers of beef cattle accounted for about 90 percent of the negative deviations from the trend value and over 100 percent of the positive

TABLE VI

DEVIATIONS FROM TOTAL CATTLE TREND VALUE; PROPORTIONATE CONTRIBUTION TO TOTAL TREND DEVIATIONS, BY CLASSES OF LIVESTOCK, FOR CRITICAL YEARS OF THE PRODUCTION CYCLE, OKLAHOMA, 1949-1958[a]

	Trough 1949	Peak 1954	Trough 1958
		Percent	
All Cattle	100.0	100.0	100.0
Dairy Cattle	12.6	-.9	5.5
Cows	14.6	.9	1.7
Heifers	.4	-2.1	1.7
Calves	-2.4	.3	2.1
Beef Cattle	87.4	100.9	94.5
Cows and Bulls	50.2	63.9	36.5
Heifers and Steers	14.2	25.9	26.5
Calves	23.0	11.1	31.1

[a]See Appendix A for trend equations and method used to separate affects of changes in numbers of the various classes of livestock on the major cyclical pattern.

deviation.[1] Furthermore, changes in numbers of cows and bulls influenced the total cycle more than did changes in numbers of the other classes of beef cattle. Although changes in numbers of dairy cattle contributed relatively little to the total deviation, dairy cattle had a greater influence during trough years of the cycle than during peak years.

[1]The over 100 percent deviation attributable to beef cattle results from the negative affect of dairy cattle on total cattle inventories.

The importance of beef cattle in determining cyclical movements in cattle inventories is further emphasized in Figure 1. Here, percentage deviations of total cattle from the major cycle are plotted along with the relative contributions to these deviations of beef and dairy cattle. The relatively minor influence of dairy cattle on the total cycle is readily noticable.

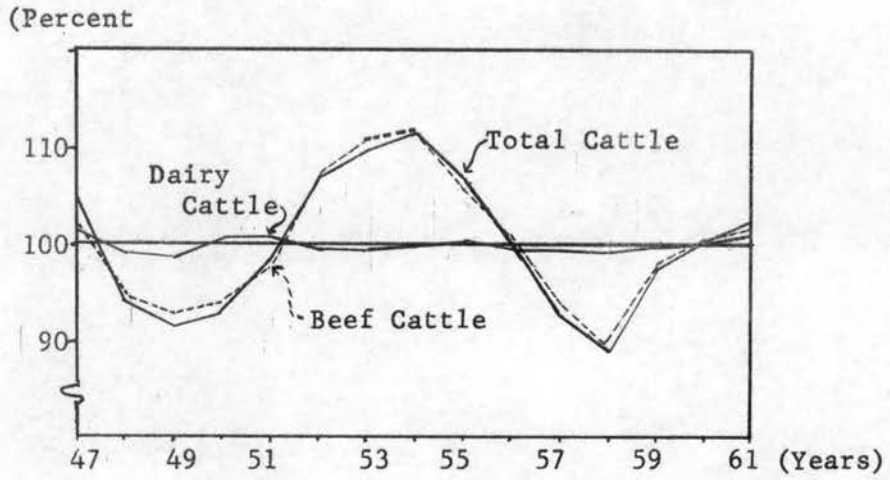

Figure 1. Percent Deviation From Total Trend of Total Cattle and Calf Inventories; Relative Contributions to Total Deviations by Dairy and Beef Cattle, Oklahoma, 1947-61

As beef cattle inventories exert the major influence on the cattle cycle, the model presented here is directed mainly toward explaining causes of cyclical changes in beef inventories, marketings and slaughter. With certain modifications, this model can be easily adapted to an explanation of hog and sheep cycles.

Theoretical Model and Applications

Many theories have been developed to explain cattle cycles and related phenomenon. One of these is the Cobweb Theorem.[2] An abreviated form of

[2]For detailed discussion see Mordecia Ezekiel, "The Cobweb Theorem," Quarterly Journal of Economics, Volume 52, No. 2., February 1958, pp. 262-272.

the Cobweb Theorem is employed below in the development of the theoretical model. This method is similar to that used by Lorie (1947).[3] The theoretical model is presented graphically in Figure 2.

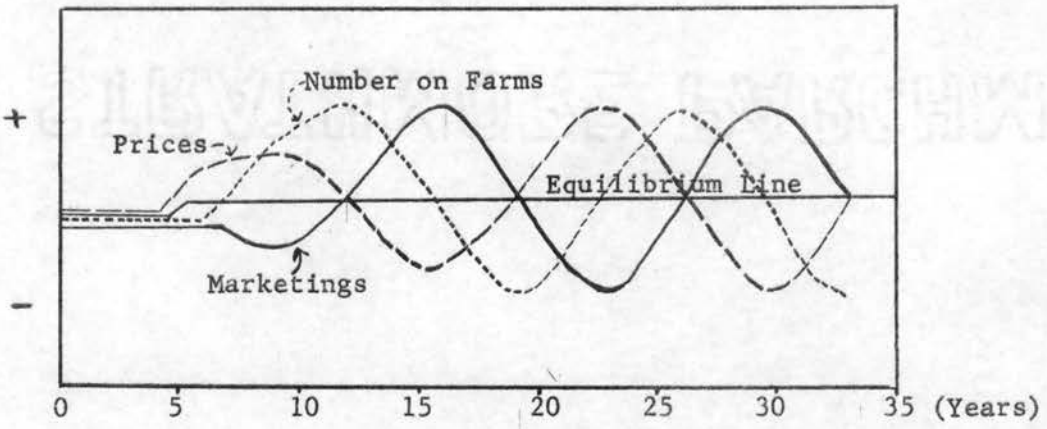

Figure 2. Theoretical Genesis and Progress of Cattle Cycle Initial Disturbance Being a Change in the Demand for Cattle

Source: Lorie (see footnote below).

Initially, four major assumptions are made. These are: (1) stability of all factors which affect cattle prices, i.e., numbers of consumers, tastes and preferences, incomes, availability of substitutes, prices of other commodities, production technology, production costs and various other economic forces; (2) producers make future production decisions based on present prices; (3) rationality of action on the part of producers, i.e., they will attempt to maximize total profits, and (4) stable equilibrium exists under the above stated conditions.[4] Thus, there is no

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[3] James H. Lorie, The Nature and Causes of Annual Fluctuations in Numbers of Animal Units on Farms, Journal of Business, University of Chicago (University of Chicago Press, 1947), pp. 53-57.

[4] Stable equilibrium here refers to the condition when supply equals demand at a given price and any deviation from equilibrium price will automatically set forces into motion which will tend to re-establish equilibrium.

incentive for change and cattle prices, inventories, marketings, and slaughter remain constant.

Into this system are injected disturbing forces which cause the demand for livestock and meat products to increase. Repercussions upon the system resulting from the increased demand, assuming rationality of action and strict adherence to ceteris paribus conditions previously indicated, are described below.

The initial disturbance causes beef cattle prices to rise above the equilibrium level. As prices rise, farmers, acting rationally, increase their herds in hope of capitalizing on future higher prices. Stock accumulation is accomplished at the expense of current marketings as animals are withheld from the market for breeding purposes and other cattle are retained and fed to higher weights. Thus, marketings and consequently, slaughter will decrease below the equilibrium level. The decreased marketing will have the affect of reinforcing the initial price rise. Marketings and slaughter will continue to decline until about two or three years after the initial disturbance (the time required to raise new animals to marketing age). Ceteris paribus, when marketings begin to increase prices will decline. Farmers will continue to increase their herds, however, as long as prices are above the equilibrium level.

When prices fall to equilibrium, farmers will no longer accumulate additional livestock. At this point cattle inventories will be at their maximum point. As marketings continue to rise, prices will decline below equilibrium and farmers will begin to liquidate their herds. Livestock slaughter will increase accordingly. The liquidation process continues until inventories once again reach equilibrium and marketings are at a peak. At this point marketings will decline because the productive

capacity of the herds has decreased such that marketings of young animals will more than offset continued liquidation of herds. As marketings decrease, prices reverse and liquidation continues until prices and marketings once again reach equilibrium. An increase in price above equilibrium causes expansion of inventories again and, thus, the cycle is reversed.

In the above discussion it is assumed that under normal, ceteris paribus conditions, accumulation of cattle will continue as long as prices are above equilibrium and, conversely, liquidation will continue as long as prices are below equilibrium. Theoretically, this results in a lag in the cattle marketings cycle equal to the time required to prepare new animals for market, i.e., about two to three years. The slaughter cycle will theoretically follow closely the marketing cycles but with less amplitude since some of the cattle will move back to the farms. Traditionally, a complete cycle has required from 12 to 15 years to complete. In recent years, however, there is evidence that cattle cycles are getting shorter and of less magnitude.[5] Although this model is developed mainly to discuss beef cattle cycles, it is recognized that the affect of dairy cattle on the major cattle cycle cannot be wholly discounted since all cattle must eventually go into slaughter as beef.

Theoretically, the same price-production-marketing interrelationships which exist for beef cattle exists also for hogs. That is, under ceteris paribus conditions, high prices induce farmers to accumulate and low prices induce them to liquidate herds. Although there is a time lag as for beef, this lag is much shorter for hogs (about one year). It is generally

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[5]For discussion see: Kansas City Federal Reserve Monthly Review, Federal Reserve Bank of Kansas City, April, 1961, pp. 1-9.

believed that hog cycles do not adhere to the theoretical model as closely as cattle cycles. Wells (1953) lists several reasons as possible causes for the irregular patterns in hog production.[6] First, hog production is largely dependent upon one crop, corn. Statistical evidence supports the fact that the corn-hog ratio directly affects hog production. In addition, when corn supplies are short, some livestock enterprise must be cut back and when supplies are large, some enterprise will be enlarged. The nature of hog production makes it readily adaptable to this expansion and contraction. Second, hog production is a rather rapid process in comparison to beef and dairy production. Farmers can increase and decrease inventories within a short period of time. Third, interrelationships which may exist between hog and cattle cycles as well as other farm enterprises often stimulate uncertainty in the industry. Hogs usually are raised in conjunction with other enterprises and serve to utilize resources that are temporarily idle or to convert available feedstuff into a more profitable form. When these resources can be put to more profitable uses, the size of the hog enterprise is generally reduced or often discontinued.

Breimyer (1959) points out, however, that in recent years cycles in hog production have become more distinct.[7] He also points out that hog production has become increasingly divorced from radical changes in corn production. These developments are largely the results of recent government support programs. The future of the hog cycle, however, remains uncertain.

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[6] O. V. Wells, Farmers Response to Price in Hog Production and Marketing (USDA Technical Bulletin 359, Washington, D. C., April, 1953).

[7] Harold F. Breimyer, "Emerging Phenomenon: A Cycle in Hogs," Journal of Farm Economics, Vol. XLI, November, 1959, No. 4, pp. 760-768.

A complete hog cycle requires from three to six years with irregular fluctuations within each cycle. A short gestation period along with the early marketing age of hogs makes rapid production response possible. This short time lag between price change and production response generates the short production cycle.

The sheep production cycle is characterized by the existence of joint products, meat, and wool. It is therefore necessary for producers to make adjustments to comply with changing marketing condtions for both products. The complementary relationship which exists between the two products complicates this adjustment process.

If the demand for lamb increases, with other things equal, farmers necessarily will expand their inventories. This expansion causes an increase in the amount of wool produced thus depressing wool prices. The net effect on total revenue will depend upon the cross-elasticities of the two products. If downward adjustments are made for wool a shortage of lamb meat could result. This bi-product situation complicates the wool cycle also.

If it were not for wool, assuming ceteris paribus conditions, it would be expected that the sheep cycle would move in a fashion similar to the cattle cycle but with a shorter duration, i.e., about eight years. Unlike hogs, sheep production is not dependent upon one crop and the cycle, therefore, is free of radical fluctuations.

Limitations of Model

The Cobweb model is only one among many approaches to the explanation of cyclical movements of livestock inventories in the United States. The limitations of this model in explaining livestock cycles are fully

recognized. As no livestock industry operates in a complete vacuum, constant changes in the ceteris paribus conditions necessarily influence the cyclical pattern.

Changes at the consumer level in numbers of consumers, consumers' tastes and preferences, and consumers' incomes will materially affect numbers, as well as types of livestock produced. Changes in the rate of consumption of one type of meat resulting from changes in prices of other meats have also influenced production cycles. At the production level, variations in factor costs without compensating variations in livestock prices can cause farmers to alter their production processes hence affecting the production cycle. The assumption that future production is completely determined by current prices will not hold over time since other factors such as production costs, available grain supplies, alternative uses for resources, and past experiences all enter into the production decision. Furthermore, the rationality assumption is not entirely valid as lack of knowledge and certain institutional barriers such as family farms and government controls limit the attainment of precise profit maximization. In addition, the equilibrium position is never reached as various forces mentioned above are continually changing equilibrium requirements. Rather, prices oscillate around the equilibrium price. Finally, various forces, exogenous to the industry also influence the cattle cycle. Despite the many limitations, however, the model remains useful in efforts to explain, predict, and analyze cyclical relationships and describe major causes of cyclical movement.

Recent Cattle Cycles in Oklahoma

One complete cattle cycle has taken place in Oklahoma since 1947. Requiring only nine years to complete, this cycle was somewhat shorter

than those of previous years. The cyclical movement of cattle in Oklahoma is consistent with that for the United States as highs and lows of the two series occur almost simultaneously.

The initial low of the post war cattle cycle in Oklahoma was in 1959. At this point, the actual number of cattle and calves on hand was 239,000 head below the trend. The 1954 cyclical peak was 332,000 head above the trend followed by a cyclical low in 1958, 347,000 head below the trend.

An examination of the various classes of livestock reveals that initial expansions in inventories of heifers and steers occurred about one year before expansions in numbers of cows and bulls. As noted earlier, movement in numbers of cows follows closely the major cycle. Numbers of heifers appear to peak about two years before the total index. Apparently, heifers are the first class of livestock to be liquidated from herds as they are no longer needed for herd build-up and are sold for feeding or slaughter. The trough in numbers of heifers was one year ahead of the total cyclical trough. Numbers of steers on farms in Oklahoma have varied somewhat independently of the total cycle, with no distinct cyclical movements.

Total cattle and calf marketings lagged behind the inventory cycle by two years during the first trough. Most of the lag was attributable to calves, heifers, and steers with little lag in cow and bull marketings. Cyclical peaks in total marketings and numbers occurred simultaneously. Peak marketings of cows and bulls, however, lagged behind the cyclical inventory peak by one year. Slaughter cycles of the various classes of cattle followed closely their marketing cycles but with less distinct cyclical fluctuation.

Toward the end of the 1947-60 period, forces were injected into the system which resulted in a shortened cycle.[8] This portion of the cycle does not adhere to the theoretical model.

Future Cattle Cycles

Because of the recent change in character of cyclical patterns, it is difficult to predict the direction and amplitude of future cycles. The revision of USDA inventory estimates leads to some degree of uncertainty as to the turning point of the present cycle. If, however, the present cycle follows recent patterns, it will reach its peak in about 1963 and a low in 1967.[9] This, of course, assumes a five year upswing and a four year decline. Marketings might be expected to follow a similar pattern with prices moving in the opposite direction. As population continues to increase and dairy cattle efficiency and technology approaches a maximum, numbers of dairy cattle should cease to decline and possibly increase. Assuming that the demand for beef will increase in proportion to the population, the trend in beef numbers will continue in its present direction.

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[8] There has been a general trend toward a shorter production cycle in the past few decades. Among forces which may be responsible for the shorter cycle are (1) earlier marketing age of cattle; (2) increased technology which facilitates quicker production response; (3) improved market reporting services, and (4) general economic conditions. Revision of annual estimates of livestock numbers for the period 1955 through 1960 also may have contributed to the more recent shorter production cycle. A reduction of 5.2 percent in the original estimates for 1960 and smaller percentage reductions for earlier years caused some confusion in the interpretation of livestock forecasts. The over-estimation may have caused farmers to liquidate their herds sooner and at a faster than normal rate. Hence, both the 1954 high and 1958 low may have been prematurely generated, contributing to the shortened cycle.

[9] The present upswing in cattle inventories is taking place at a slower than normal rate. With a steady uptrend in population it is possible that the cyclical peak will not be reached until 1964 or 1965.

Although these predictions must be interpreted with caution, it can be safely concluded that cattle cycles are getting shorter. The shorter cycle is a step toward smoothing out production thus decreasing risk and uncertainty faced by cattle producers.

Recent Hog and Sheep Cycles in Oklahoma

A broad interpretation of the movement in hog numbers would indicate two hog production cycles in Oklahoma during 1947-60. The first cycle covered a period of about six years (1948-54) with a cyclical peak in 1951. The second cycle, 1954 to 1957 peaked in 1956. Accumulation of sows and gilts appear to have preceeded the general upswing in total numbers. Presently, Oklahoma's hog production industry is in the rising phase of a new cycle. The future course of the present cycle is not certain.

The sheep cycle in Oklahoma has been irregular and less distinct since 1947. The first trough was in 1949 followed by a general increase until 1956. The succeeding cycle covered the period 1956 to 1959 with the cyclical trough in 1957. The downswing of the present cycle lasted only one year and numbers of sheep and lambs on farms in Oklahoma are presently increasing.

Livestock Inventory Trends

Total numbers of cattle and calves on farms in Oklahoma have increased at an annual rate of about 1.8 percent since 1947. This compares with an average rate of 1.4 percent for the United States (Figure 3). Consistent with the national trend, total numbers of dairy cattle on Oklahoma farms have declined throughout this period. Numbers of cows and heifers kept for milk have decreased an average of 4.5 and 4.1 percent, respectively

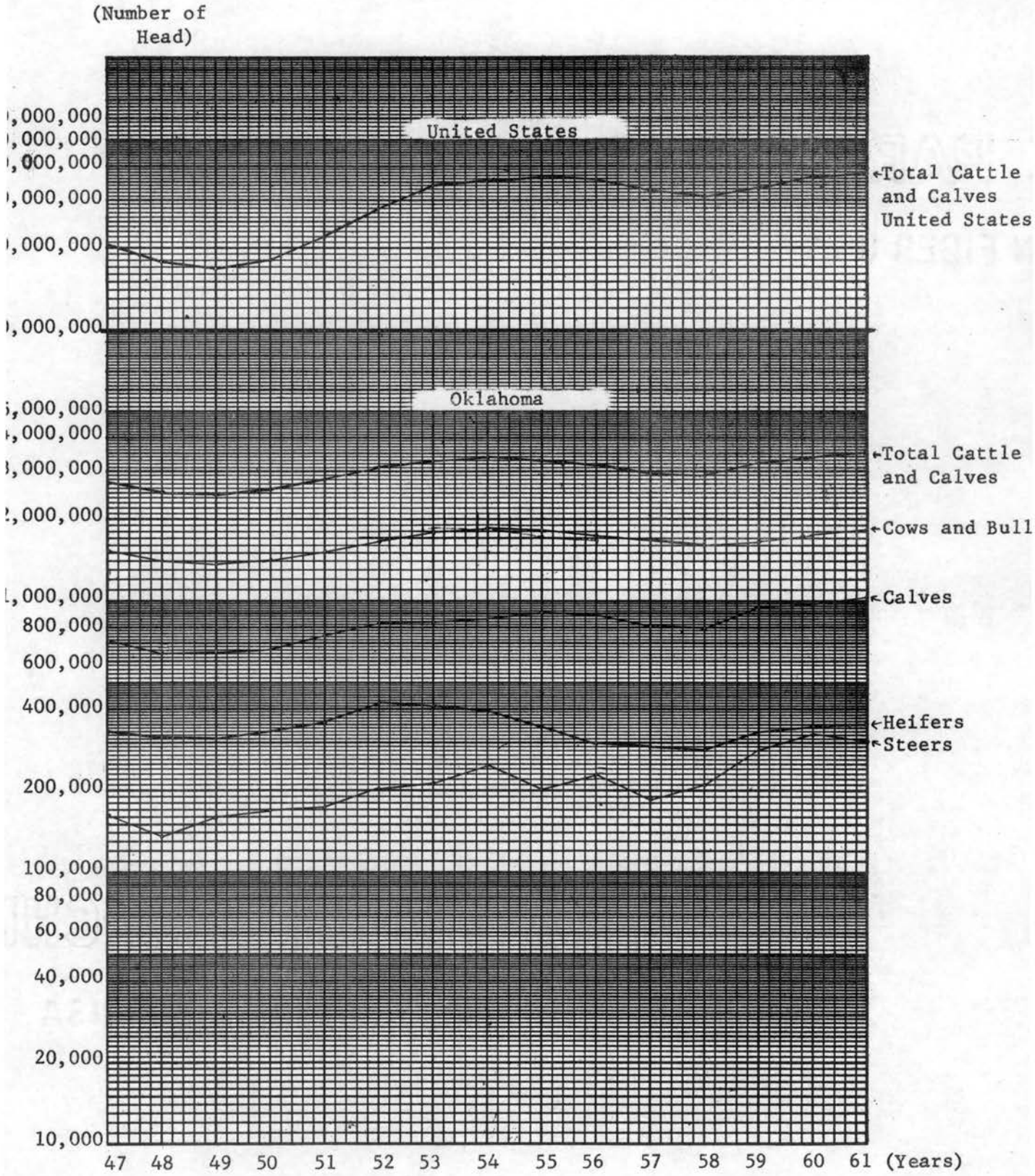

Figure 3. Inventories: Number of Cattle and Calves on Farms January 1, by Classes, United States and Oklahoma, 1947-61

since 1947. At the national level the relative decrease in dairy cattle numbers has been less than in Oklahoma, i.e., 1.4 and .7 percent decrease for dairy cows and dairy heifers, respectively.

Since numbers of dairy cattle have trended downward, the general upward movement of total cattle numbers resulted from increases in beef cattle inventories. Relatively, numbers of cows and bulls on Oklahoma farms January 1 have increased at a much faster rate than at the national level. The annual increase in cow and bull inventories for Oklahoma was 6.5 percent which compares with only 4.1 percent for the United States as a whole. Beef heifers, steers, and calf inventories have also increased faster in Oklahoma since 1947 than at the national level. Average yearly increases in the Oklahoma heifer and steer inventory was 5.8 percent, compared with 3.8 percent for the nation, and calf inventory, 6.7 percent for Oklahoma, and 4.3 percent for the United States.

Two distinct trends in Oklahoma hog numbers are evident since 1947 (Figure 4). The period 1947 to 1954 was characterized by a downward movement. The cyclical peak in 1951 was followed by a sharp decline in numbers for the succeeding three years. A rising trend is indicated for the period 1954 to 1961 with cyclical peaks in 1956 and 1960. At the national level, a similar movement is evident. During the first period, however, the percentage decrease at the national level was much less than that for Oklahoma. Total hog inventories declined only 2.9 percent per year in the United States as compared with 8.4 percent in Oklahoma. Inventories in Oklahoma and the United States increased at about the same rate (3.4 percent) during the second period, 1954 to 1961.

A directional shift in trend of sheep and lambs on farms in the United States for the period 1947-61 is indicated (Figure 5). The four

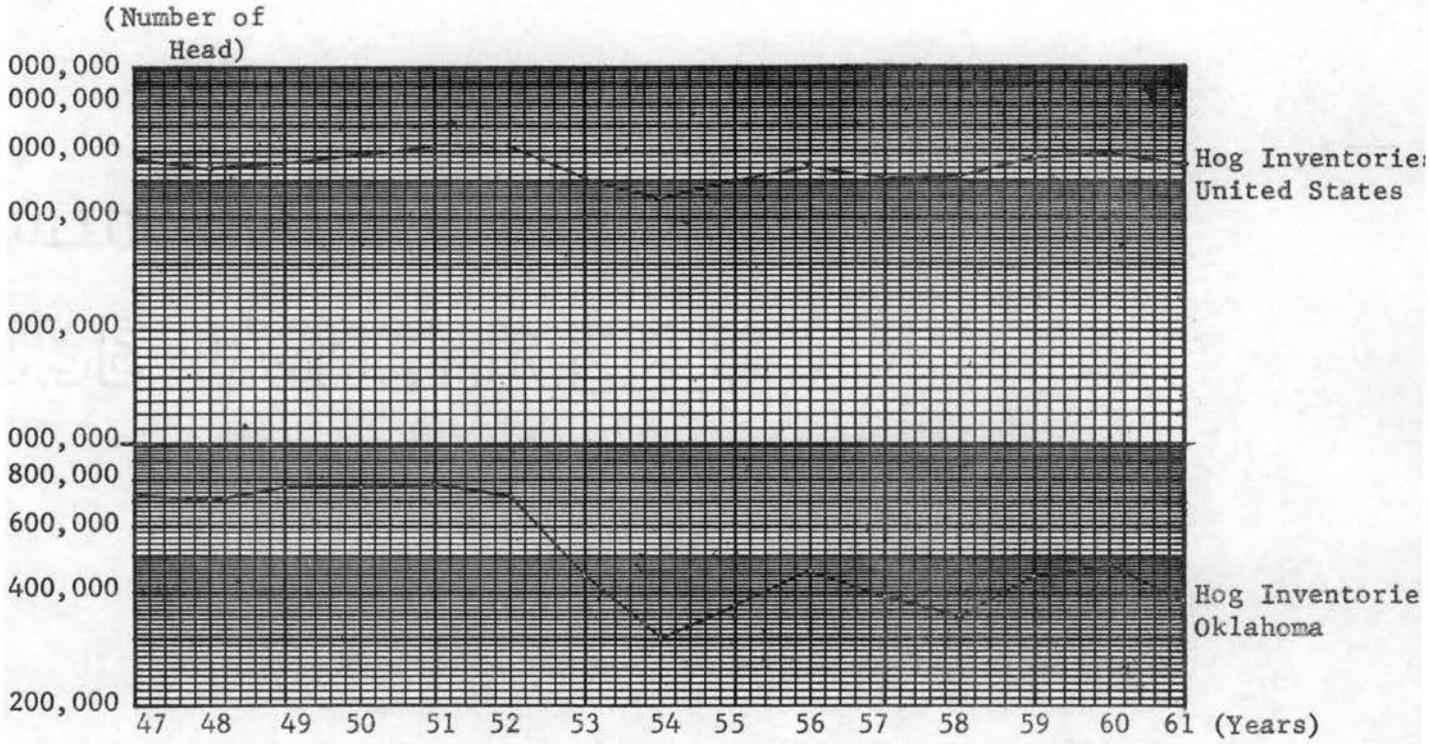

Figure 4. Inventories: Number of Hogs on Farms January 1, United States and Oklahoma, 1947-61

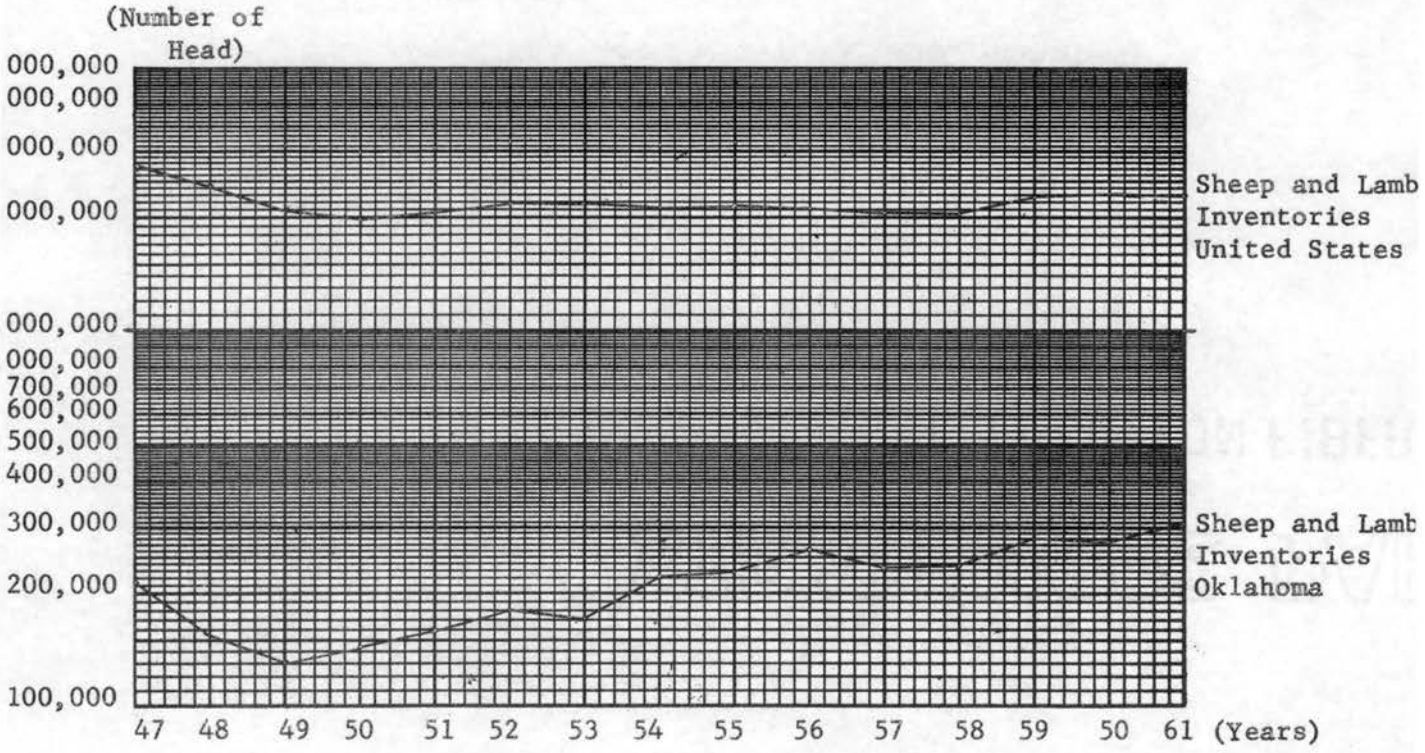

Figure 5. Inventories: Number of Sheep and Lambs on Farms January 1 United States and Oklahoma, 1947-61

year period, 1947 to 1950, is characterized by a downward movement in numbers of sheep. A gradually rising trend developed during the remaining 11 years. The downward movement in numbers of sheep on farms in Oklahoma lasted only three years followed by a gradual upward trend. Beginning in 1950 the rate of increase in sheep numbers in Oklahoma was 10.2 percent compared with less than one percent for the United States.

Marketing Trends

Cattle and calf marketings in the United States have trended upward since 1947 (Figure 6). The data reveals little evidence of a trend in total cattle and calf marketings in Oklahoma. There is, however, some indication that numbers of steers and heifers marketed by Oklahoma producers are trending upward. In 1960, about 60 percent more steers and 43 percent more heifers were marketed than in 1947. This represents an average increase for the period of about 4.6 and 3.3 percent per year, respectively. Marketings of cows, bulls, and calves have dropped cyclically since about 1955. These later classes appear to adhere more to the movement in total marketings than heifers and steers and, thus, have not followed a distinct trend throughout the period. Trends in hogs and sheep marketings reflect inventory trends discussed earlier (Figure 7).

Slaughter Trends

Reflecting trends in total inventories and marketings for recent years, numbers of cattle and calves slaughtered in the United States have also trended upward. Although total numbers slaughtered have increased only about two percent since 1947, significantly different trends are apparent in numbers of cattle, as compared to calves, slaughtered during

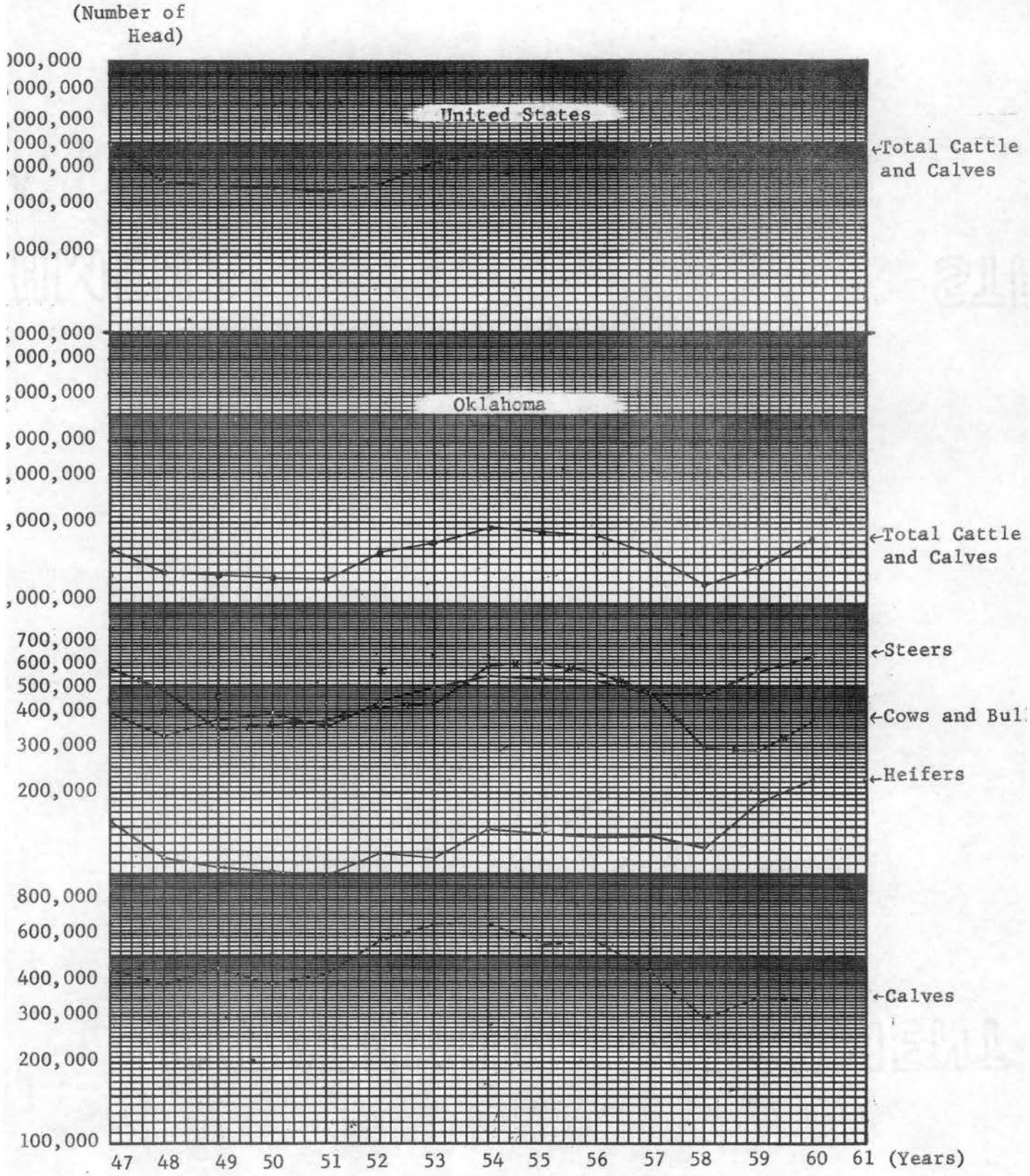

Figure 6. Marketings: Number of Cattle and Calves Marketed, United States and Oklahoma, 1947-60

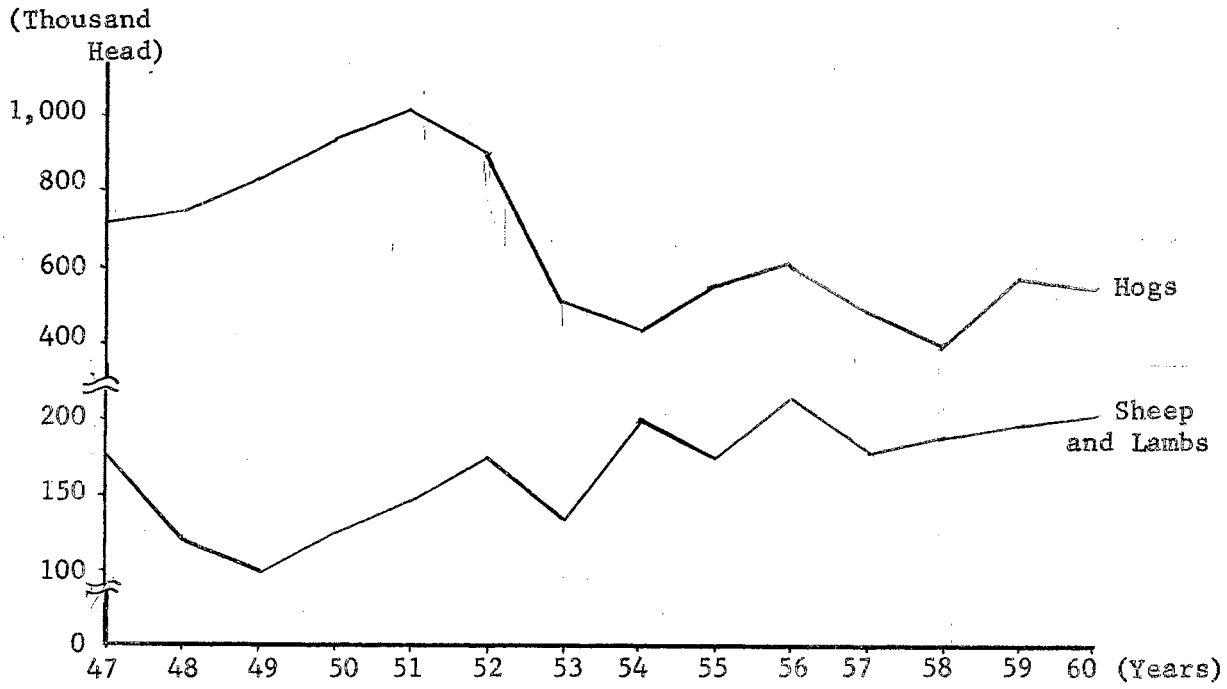

Figure 7. Marketings: Number of Sheep and Lambs and Hogs Marketed, Oklahoma, 1947-60

this period. Cattle slaughtered (numbers) trended upward at an average annual rate of about 1.2 percent from 1947 to 1960. During the same period, however, calf slaughter in the United States decreased 31 percent or approximately 2.2 percent per year.

Total numbers of cattle and calves slaughtered in Oklahoma have trended downward since 1947. As on the national level, the most significant trend has been the downward movement in numbers of calves slaughtered. Relatively, numbers of calves slaughtered decreased more in Oklahoma than on the national level. Calf slaughter in the state decreased more than

200 percent over the period 1947-60. Numbers of cows, bulls, and steers slaughtered have also trended downward. About 44 percent fewer cows and bulls and 4 percent fewer steers were slaughtered in 1960 than in 1947. Slaughter of heifers in the state showed an increase of 34 percent for the period.

A more reliable indicator of slaughter trends is dressed weight. Trends in dressed weight slaughter of cattle and calves in Oklahoma are shown in Figure 8. The significant downward movement in numbers of calves slaughtered in the state is also reflected in the downward trend in dressed weight slaughter. Dressed weight slaughter of calves in 1960 was about 40 percent below the 1947 level. In total, dressed weight slaughter of steers and heifers has trended upward while that for cows and bulls has been downward.

Slaughter of hogs in the United States increased about 14 percent from 1947 to 1960, and has closely followed hog marketing patterns. In Oklahoma, hog slaughter trended downward throughout the 1947-61 period. Twenty-one percent fewer hogs were slaughtered in the state in 1960 than in 1947. Similarly, dressed weight slaughter of hogs in Oklahoma has decreased about 10 percent since 1947.

Sheep and lamb slaughter in the United States has increased about 14 percent since 1951. In contrast, slaughter of sheep and lambs in Oklahoma has diminished to virtually zero. Less than 2,000 head were slaughtered in the state in 1960 compared with 116 thousand in 1950.

Farm slaughter of all classes of livestock has trended downward steadily as less meat is now produced for home consumption than previously. This is true at the national level as well as for Oklahoma. In Oklahoma, farm slaughter of cattle and calves decreased 10 percent from 1947 to

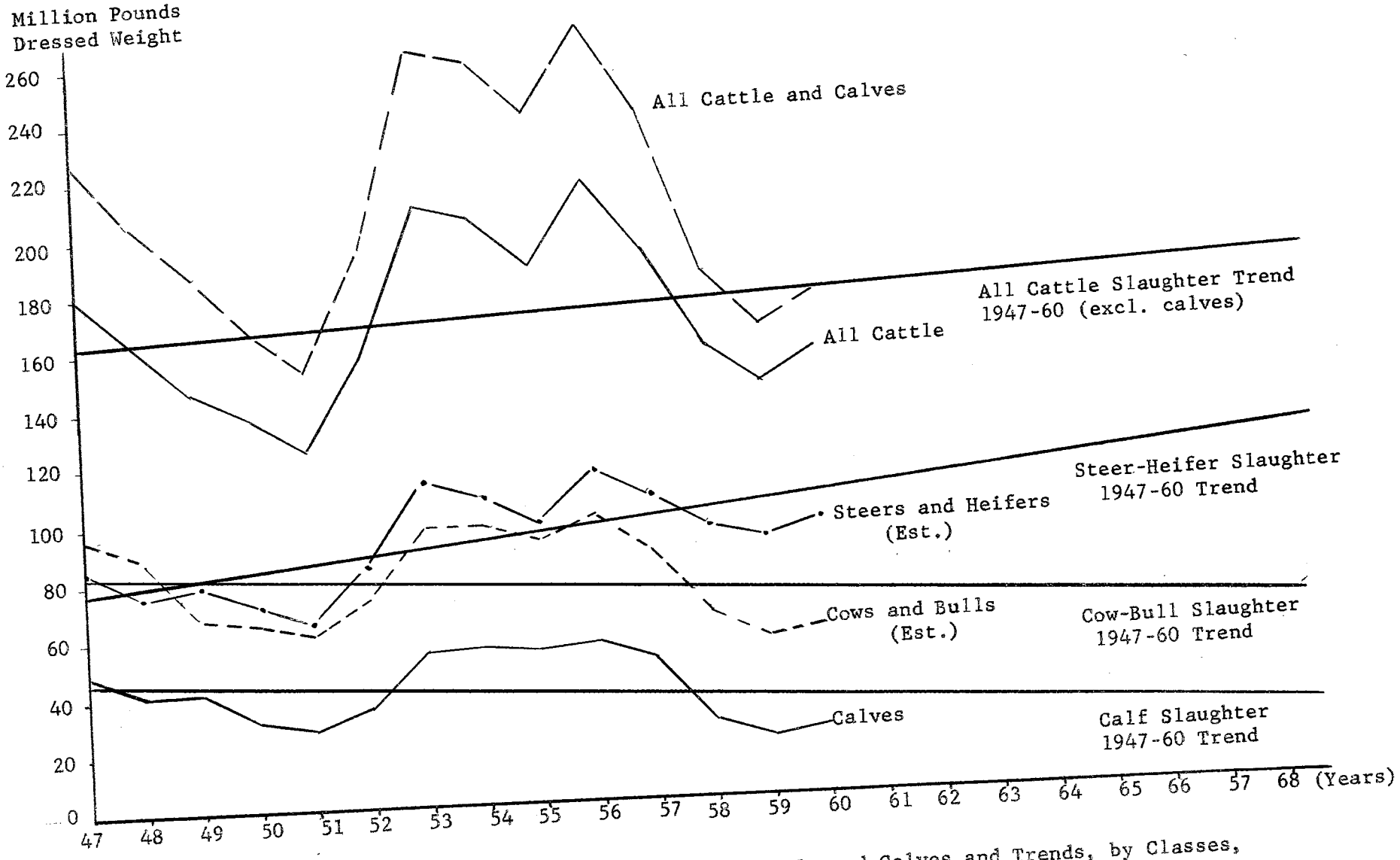

Figure 8. Estimates of Commercial Slaughter of Cattle and Calves and Trends, by Classes, Oklahoma, 1947-60

1960. An even sharper decline is evident for hogs as farm slaughter of this class of livestock decreased more than 200 percent for the same period.

Meat Consumption

In general, per capita meat consumption in the United States is about the same now as it was 50 years ago. The trend in meat consumption was downward until the mid 1930's when consumption fell to a record low of 117 pounds per person (carcass weight). Per capita consumption then increased, reaching a peak in 1956 of 165 pounds per person. The 1956 peak was followed by reduced average meat consumption until 1959 when it again began to rise.

Both beef and pork contribute to the general trend in meat consumption in the United States. However, the consumption of each of these meats often fluctuates in opposite directions from the trend. For example, in the 1950's, beef consumption trended upward while pork consumption trended downward. Recently, however, average prok consumption has been rising. Veal, lamb and mutton are much less important in total meat consumption. Average veal consumption increased slightly during the early 1950's but dropped sharply in recent years.[10]

Figure 9 gives an indication of meat consumption trends for Oklahoma for years 1947 to 1960 with projections to 1968. These data do not necessarily reflect increased per capita consumption alone but rather, they may reflect the combined affect of increasing incomes and population as

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[10] Trends based on data from: Meat Consumption Trends and Patterns, U. S. Department of Agriculture, Agricultural Handbook No. 187, Agricultural Marketing Series, July, 1960.

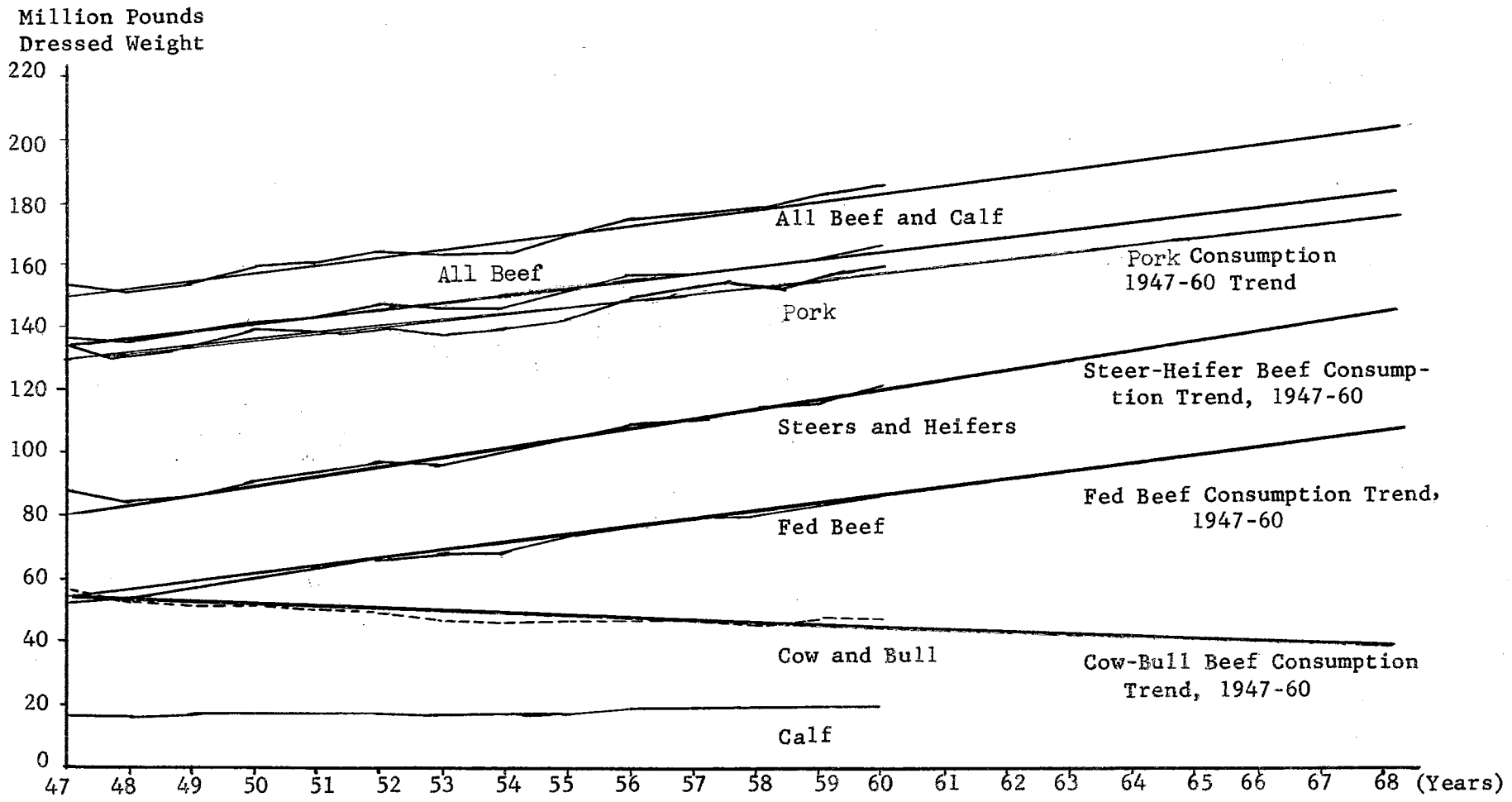

Figure 9. Estimates of Consumption of Pork, Calf and Beef and Trends, by Classes, Oklahoma 1947-60

well as in per capita consumption. If present trends continue, an estimated 1,150 million pounds of beef and 170 million pounds of pork will be consumed in Oklahoma in 1970.[11]

Factors Influencing Meat Consumption

The average consumption rate for meat in a particular area changes as income, population, availability, price and tastes and preferences change. Promotional programs, regional customs, nationality backgrounds, and religious customs also affect meat consumption patterns.

Changing incomes will contribute not only to the amount of meat purchased but also will influence types of meat purchased. The response to income changes is different for different kinds of meat. In a given framework of prices, consumption of beef and veal is more responsive than pork to changes in income.[12]

Average per capita disposable income in the United States was $1,783 in 1960. In general, disposable income is higher in the Northern, Eastern, and Western United States than in the Southern and Inter-Mountain regions. In 1960, per capita disposable income in Oklahoma was $1,499 or about 16 percent below the national average. Published data indicates that the bulk of the purchasing power in Oklahoma is located in the central part of the state.[13]

With rising incomes, population is assumed to add proportionally to changes in meat consumption. The relationship between changes in

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[11] These projections are based on population and income data for years 1955 to 1960.

[12] Rex F. Daly, The Long-Run Demand for Farm Products, USDA Agricultural Marketing Service 130, July, 1956, p. 9.

[13] Sales Management, Annual Surveys.

population and income for Oklahoma and the United States is shown in Figure 10. Total population in the United States has increased at an average rate of 2.7 million persons per year since 1947. Oklahoma's population reached a peak of 2.4 million in 1930. Since that time considerable cyclical movement is evident. Total population in the state has increased at a slower rate than at the national level, i.e., 25 percent for the period 1947-60 compared with 92 percent for the United States. Since 1955, however, population in the state has increased at a much faster rate than in earlier years. Projections for Oklahoma, based on 1955-60 data indicate that the 1970 population will be about 2.59 million persons.[14]

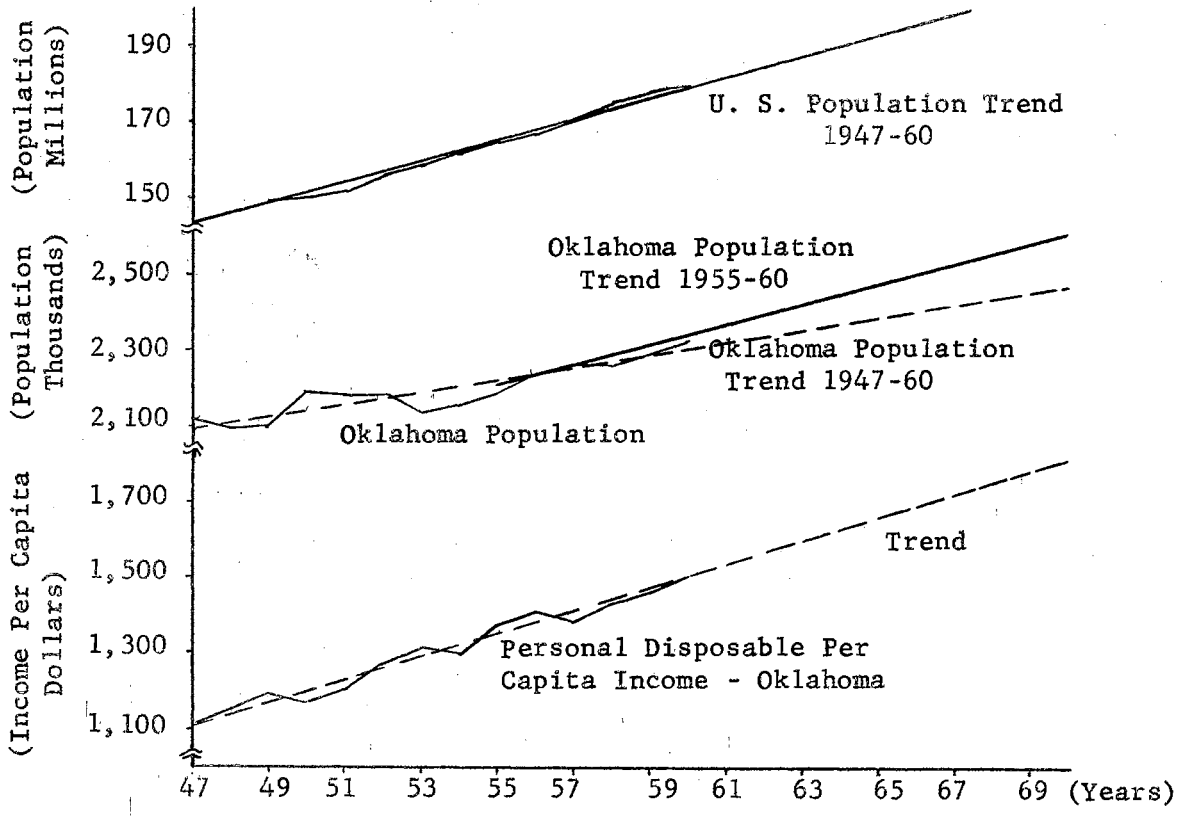

Figure 10. Personal Disposable Per Capita Income and Population Trends, 1947-60; Projections, 1960-70, Oklahoma

[14]These projections compare favorably with those made by Tarver (1960). For discussion see: James D. Tarver, Estimates and Projections of Oklahoma Population, 1950 to 1970, Arts and Sciences Studies, Oklahoma State University, 1960.

Various characteristics of population also have influenced the level of meat consumption. For example, as farmers once produced large quantities of meat for home consumption, the decrease in farm population has resulted in less total production for this purpose. Customs of various religious and racial groups have resulted in meat being consumed in differing quantities and patterns.

In addition to changes in consumption resulting from changes in income, population, and population mix, changes in the relative price levels of meats (substitution affect), occupational shifts, and demand for related livestock products such as dairy products and wool have also affected meat consumption.

Relationship Between Production Cycles and Consumption

There is a distinct relationship between production cycles and consumption patterns in the United States. Since imports of meat to this country are relatively small each years consumption is roughly equal to current production. It is expected, then, that total consumption is correspondingly high during years of high production and low during low production. Statistical evidence has supported this belief.[15] In 1956, the record high in per capita consumption, total marketings and production also were record high. The ensuing years resulted in decreased marketings and production. When production falls, of course, the relative decrease in per capita consumption among individuals depends upon their incomes, income elasticity for meat and the combined income and substitution affects.

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[15]Rex F. Daly, pp. 4-6.

CHAPTER IV

STRUCTURE AND PRACTICES IN MARKETING LIVESTOCK

Livestock marketing patterns in the United States are changing, they differ significantly by area and class of livestock, and patterns of change differ among areas of the nation. Historical patterns of livestock marketing, area differences, and recent changes were determined by a wide variety of forces. These included (1) types and volume of livestock produced, (2) location with respect to rail and water transportation facilities, slaughtering centers, and principal areas of consumption, (3) production resources, patterns of land ownership, and production practices, (4) marketing services desired or required, (5) changes over time in each of these factors, among others, and (6) technological and institutional innovations.

Space does not permit a detailed description of evolutionary changes in the structure of markets for livestock. In addition, only casual mention is made here of the meat packer as a market outlet for livestock since this element in the system is considered in some detail in Chapter V. Basically, however, structural changes in livestock marketing may be viewed as adjustments to a broad interrelated complex of forces. These, in turn, result from changes throughout the livestock and meat economy and include many exogenous factors. An understanding of Oklahoma's role in livestock marketing and of changing patterns of livestock marketing in that state, therefore, requires the perspective provided by a brief treatment of national trends and changes.

Market Structure and Structural Changes

Livestock markets in the United States may be conveniently divided into two groups: direct and intermediate markets. Direct markets are packers who receive livestock from producers rather than from dealers or other agencies engaged in livestock marketing. Intermediate markets are the handlers through which livestock is channeled before reaching packers. To simplify the analysis, this group has been further divided into primary and secondary intermediate markets. Primary intermediate markets include terminals[1] and auctions.[2] Secondary intermediate markets include country dealers, other producers, concentration yards, and other small volume local markets.[3]

Marketing patterns for livestock in the United States have gone through three principal phases of change during the history of the country. During the early developmental period in each principal region, marketing channels generally were short. Livestock during this period were slaughtered on the farm and consumed there or sold directly to

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[1] A "terminal market," also known as a "public stockyard" is any place or facility operated for profit as a public market in which livestock are received, held, or sold in commerce and in which the area normally available for handling livestock, exclusive of alleys, is equal to or in excess of 20,000 square feet. When a stockyard meets this definition the Secretary of Agriculture, acting in accordance with provisions of the Packers and Stockyards Act, posts a notice to this effect and the yard becomes a "posted" stockyard. Terminal markets, therefore, are defined, here, as posted stockyards.

[2] A livestock auction may be defined as a stockyard and related facilities at which livestock is offered for sale simultaneously to several prospective buyers and is sold to the buyer making the highest bid.

[3] A packer is defined here as any firm conducting slaughter activities. Concentration yards are unposted stockyards usually operated by packers or cooperative shipping associations where livestock are assembled for sale or shipment. Country dealers are independent operators who buy and sell livestock, usually in local country areas, for profit.

consumers in nearby towns and cities. A few local slaughterers soon developed in each area, but most of these were also retailers. As the meat packing sector developed as a separate entity, the long distance overland trailing of livestock, including hogs, to slaughtering centers developed. Sales during this period usually were made directly to packers or packer buyers.

As the economy grew, as cities became larger, and as transportation facilities developed, marketing channels lengthened in the sense that the number of marketing intermediaries increased. This period dates for the Eastern portion of United States from about 1865 when the Chicago terminal market was established. During the ensuing period of railway construction, changes also were initiated throughout the Western portion of the nation. The Southern Plains, however, did not complete the transition to the second phase until after 1900 when terminal markets were established at Ft. Worth and Oklahoma City.

The second phase was characterized by a relatively high degree of specialization in marketing, relatively little vertical integration, and the emergence of highly organized systems of marketing. Livestock were assembled in the country by dealers, and others. They were trailed to rail heads where local stockyards and concentration yards soon developed. From the local stockyards they were shipped to terminal markets where they were received by commission firms serving as agents of dealers or other shippers. Packers purchased the bulk of their slaughter livestock supplies at terminals. Throughout this period some direct selling to packers was practiced, in local country areas particularly.

Even before completion of the transition to the second phase, new forces were developing that were destined to again shorten channels for

livestock. The large national packers developed rapidly after about 1880 and many soon began establishing concentration yards in country areas and buying more vigorously directly from producers. Improvements in rail transportation and in rail car refrigeration began shifting the packing industry from the Northeast and other consumption centers to the Corn Belt and other principal areas of production. With the introduction of the motor truck and construction of highways the shift to more decentralized and more direct patterns of marketing was accelerated.

The terminal markets began a long term decline in the early 1920's which still is in progress. Within major areas of production, the meat packing industry began to decentralize and establish facilities in country areas. By 1925, a few livestock auction markets had appeared. These grew rapidly in number during the 1930's and 1940's until 1952, the peak year, when more than 2,500 auction markets were in operation.[4] At the same time, country dealers and local country markets declined sharply in importance. Direct selling, it appears, has increased at the expense of terminal market volume whereas auction marketing, for the most part, has replaced dealers, unorganized local markets, and much of the trading among producers. Accordingly, there appears to be less competition between terminal markets and auctions than frequently is assumed.

Terminal Markets

Terminal markets are more than large stockyards operated by a stockyard company. They usually include an exchange building housing offices

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[4]Gerald Engelman and Betty Sue Pence, Livestock Auctions in the United States, Marketing Research Report No. 223, Agricultural Marketing Service, U. S. Department of Agriculture, March, 1958, p. 7.

of a family of private firms in addition to branch offices of various government agencies. The private firms usually include a varied number of commission agencies, order buyers, livestock trucking companies, producer or trade association offices and others.

Terminal markets still are the most important single outlet for livestock in the United States. They are most important in the North Central region where they were established during the latter half of the 19th Century at major rail or water shipping points. About 44 percent of the livestock sales by producers in the North Central region during 1955 were made through terminals. An even higher percentage is indicated for the West North Central region where 77 percent of the steers and heifers, 60 percent of other classes of cattle and calves, 49 percent of the hogs and 70 percent of the sheep sold by farmers in 1956 were handled by terminal markets.[5]

Since about 1920, however, numbers of hogs, calves, and lambs marketed at terminals have dropped.[6] Percentagewise, these reductions are substantial. Although cattle marketings at terminals have risen steadily since the early 1930's, these also have dropped relative to total marketings.

Terminal market activity declined in the Northeast with the westward movement of the slaughter industry. The markets did not become established in the South as elsewhere primarily because production in most areas of

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[5]R. R. Newberg, Livestock Marketing in the North Central Region, North Central Regional Publication 104, Research Bulletin 104, Ohio Agricultural Experiment Station, December, 1959 (Appendix Tables).

[6]Edward Uvacek and Dalton L. Wilson, Livestock Markets in the United States, Agricultural Marketing Service, U. S. Department of Agriculture, Marketing Research Report No. 299, January, 1959, p. 2.

the South did not exceed local consumption requirements. There has been little need in this region, until recent years, for the assembly of livestock in volume for shipment. The direct marketing of stocker feeder cattle and of grass fed cattle for slaughter always has been relatively important in the West. Terminal markets flourished for a time at major slaughtering centers of the West Coast but in recent years this activity has largely disappeared. The markets at Los Angeles and San Francisco were closed during the 1950's while at Portland and some other locations they were converted largely to auction markets.

Although terminal markets remain important throughout the Great Plains and in the Corn Belt, terminal marketing as it has been known over the years is gradually disappearing. A large portion of the terminal facility at Ft. Worth was abandoned and dismantled in 1960 and replaced by a large auction. Stockyard companies at many other locations including Oklahoma City and Ft. Smith now also own and operate auction market facilities.

The terminals that have been most successful in maintaining volume are major shipping or receiving points for stocker-feeder cattle. This is true of Kansas City, Omaha, Sioux City, and Oklahoma City which rank among the nations largest terminal markets.

Livestock Auctions

Several factors facilitated the rapid growth in number of auction markets in the United States. A long felt need existed for organized local market facilities. A rising volume of local trading, the trend toward country oriented packing plants, and desire by producers to exercise more direct and organized control over the sale of their livestock

contributed to the need. Social objectives, reportedly, also were contributing factors.[7] With the introduction of the motor truck, organized auction marketing operations became feasible and practicable.

Auctions are most numerous in the North Central region but highest percentages of marketings through auctions are found in the South and in the Northeast. With the growth of livestock production in the South, the increasingly commercialized nature of production in that area, and absence of competitive market outlets, auctions found ready and widespread acceptance in the South. They also grew rapidly in the Northeast, the Great Lakes Area, and other regions where relatively large numbers of dairy cattle and plainer classes of livestock were traded.

Despite the apparent importance of livestock auctions in terms of the total volume of livestock handled, they still are mainly local trading centers for livestock producers. Most of the livestock sold through auctions return immediately to the farm for breeding or additional feeding. Patrons of auctions generally are relatively small producers. Exceptions to these patterns, however, require mention. Packers in some areas rely heavily upon auctions for supplies of slaughter cows and other average or lower quality livestock. Fat cattle auctions at Dodge City and other locations are additional exceptions to the general pattern.

Direct Marketing

Sales directly to packers are most important for hogs in the North Central region and for cattle and calves in the West. Direct marketings

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[7] Harold Abel and Dee Broadbent, Trade in Western Livestock at Auctions, Utah Agricultural Experiment Station Bulletin 352, May, 1952, pp. 58-60.

of all classes of slaughter livestock, however, have increased. Contributing factors in addition to decentralization of the packing industry and the increased use of trucks include (1) improved means of communication between producers and packers through Federal-State market news reports; radio, television, and newspaper reports of prices and market conditions, and direct personal and telephone contact with packers; (2) establishment of uniform grade standards for slaughter livestock; (3) increased use of the carcass or grade and weight method of selling livestock;[8] and (4) the rising importance of cattle feedlots.

Although the trend toward direct marketing and the decline of terminals represent adjustments to a changing complex of forces, they introduced new marketing problems. For instance, critical problems arose in pricing and price reporting of livestock. Historically, both public and private market reporting services have become fewer and less representative for many classes of livestock. Few higher quality slaughter cattle, for example, are sold through terminal markets. Additionally, relatively few auction markets issue market reports and many of these are of little use since livestock usually are not sold at auctions in graded or uniform lots. Adjustments, improvements, and changes in methods and procedures involved in accurately reporting market conditions for livestock have been required. Public market news services have devised means of reporting country sales of livestock in many areas. The problem, however, is far from solved. Considerable question remains at most locations as to prices of livestock by class, grade, and weight.

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[8] By this method carcass prices rather than live animal prices are agreed upon by the buyer and seller prior to slaughter. A schedule of prices according to commonly used grade and weight classes, rather than a single price, is agreed upon.

Market Structure for Livestock in Oklahoma

Terminal markets and auctions handle the major portion of the livestock sold in Oklahoma. As such, structure of the marketing system in Oklahoma is much less complex than that found in the North Central Region and other leading production areas where many more elements of structure are found.

The Oklahoma livestock marketing structure appears to be emerging from phase II, described earlier. This transition, however, has taken place slower in this state than in some of the other leading livestock producing states. Nevertheless, several changes in the livestock market structure in Oklahoma are apparent. The principle changes are, (1) the development and growth of auctions (a primary market), (2) a sharp decline in the proportion of total sales handled by livestock dealers and "others," and (3) a shift toward more direct selling. These changes are essentially consistent with those at the national level. It should be noted, however, that market structure in Oklahoma differs significantly from that for the Southern Region as a whole. While auctions dominate livestock marketing in the Southern Region, terminals are the leading market outlet in this state.

Oklahoma terminals handled about 48 percent of the total cattle and calf marketing by Oklahoma producers in 1957. This was 7 percent greater than the proportion handled by these markets in 1940 (Table VII).[9] Volume

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[9] These data are estimates compiled from the following studies:

Adlowe L. Larson and Gene Crosby, Marketing Preferences of Oklahoma Livestock Producers, Oklahoma Agricultural Experiment Station Bulletin B-566, June, 1960.

Sidney L. Jenkins, Gerald Marousek, and Nellis A. Briscoe, Live-Stock Marketing Practices and Preferences in Northeastern Oklahoma, 1957, Processed Series P-307.

Knute Bjorka and the Corn Belt Region Committee, Marketing Livestock in the Corn Belt Region, South Dakota Agricultural Experiment Station Bulletin 365, November, 1942.

TABLE VII

PERCENTAGE DISTRIBUTIONS OF LIVESTOCK SOLD AT VARIOUS TYPES OF MARKETS BY CLASSES OF LIVESTOCK, OKLAHOMA, 1940[a] AND 1957[b]

	Terminals	Auctions	Dealers and "Others"	Packers	All Markets
			Percent		
Cattle and Calves					
1940	40.7	10.5	44.4	4.4	100.0
1957	48.1	29.0	16.8	6.1	100.0
Hogs					
1940	42.9	8.9	32.5	13.0	100.0
1957	49.8	22.6	12.4	15.2	100.0
Sheep and Lambs					
1940	61.8	5.1	22.0	11.1	100.0
1957	90.1	4.2	2.2	3.5	100.0

[a]Source: Knute Bjorka, p. 124.

[b]Estimates based on data obtained from studies by Sidney Jenkins, et al., and Adlowe L. Larson, et al., (Footnote page 58).

sold at auctions increased also (from 10 to 29 percent). These increases were made primarily at the expense of dealers and country sales. Although direct sales accounted for only 8 percent of the total sales in 1957, this represents an increase of about 100 percent over the 1940 level. In this later year, 46 percent of the hogs were sold at terminals, 25 percent at auctions, 15 percent to dealers and 14 percent directly to packers. Considerably more direct selling of hogs than of cattle and calves is apparent.

The dominant role of terminal markets in Oklahoma can be traced to the fact that the large volume of stockers and feeders produced in the state requires assembly for relatively long distance shipping. Stocker and feeder cattle are usually consigned to Oklahoma terminals in large numbers, sold, and shipped by rail or truck to feeding centers in the North Central Region. Thus, Oklahoma terminals provide the connecting link between livestock production in the two areas. These terminal markets are of vital importance since they serve as a convenient outlet for the most important class of livestock produced in the state.

The same forces which stimulated the growth and development of auction markets at the national level were responsible for their growth in this state. That is, there existed a need for organized market facilities for local trading. Oklahoma auctions soon provided a satisfactory market for local livestock produced. These markets are especially important in the trading of certain classes of livestock, particularly cows, bulls and hogs. In general, it can be said that Oklahoma auctions are largely farmer-type markets while terminals serve the larger, specialized, stocker-feeder producers, although each market type draws livestock from both large and small producers.

Terminal Markets in Oklahoma

There are three terminal markets in the state serving Oklahoma's livestock producers. The largest of the three, located in Oklahoma County serves livestock producers in the Western and Central parts of the state, although its drawing range is not necessarily restricted to those areas. Another Oklahoma terminal, located in Tulsa County, serves producers in

Eastern Oklahoma. The third, located on the Oklahoma side of the border in Ft. Smith is considered an Oklahoma market since it serves many Oklahoma producers.

Salable receipts at these three markets totaled nearly 1.2 million head of livestock in 1960. The Oklahoma City terminal handled over three fourths of this total. More cattle was sold through Oklahoma terminals than any other class of livestock, followed by hogs, calves, and sheep and lambs, respectively.

Origin of Livestock

Livestock received at Oklahoma terminals originates not only from Oklahoma farmsand ranches but from producers in Texas, Kansas, Iowa, Mississippi, and other states in the South and Southwest. Oklahoma producers supplied about 92 percent of the salable receipts at the Oklahoma City terminal during the period 1957-1960 (Table VIII). Producers in Kansas and Texas were the leading out-of-state suppliers to this market. The Tulsa terminal receives a smaller portion of its livestock from out-of-state sources (Table IX). This is basically because of its central location between the Oklahoma City, Ft. Smith, Parsons, Joplin and Kansas City markets. The Oklahoma City terminal receives most of the livestock shipped into the state from the North and Western Regions.

Receipts of Feeder and Stocker Livestock

Oklahoma is a major supply source of stocker and feeder cattle and calves to leading cattle feeding areas of the United States. The volume of stocker and feeder livestock handled by the Oklahoma City terminal increased to the extent that in 1960, this market ranked 4th in the nation

TABLE VIII

SALABLE RECEIPTS OF CATTLE AT THE OKLAHOMA CITY TERMINAL MARKET BY STATES OF ORIGIN; PERCENT ORIGINATING IN OKLAHOMA, 1957-60

State of Origin	Salable Receipts			
	1957	1958	1959	1960
	Head			
Oklahoma	537,051	427,732	493,380	484,870
Texas	23,223	20,235	18,948	*
Kansas	9,466	14,610	16,867	11,438
Iowa	1,043	1,192	22	165
Arkansas	1,776	2,355	1,918	1,308
Missouri	207	169	371	596
Mississippi	2,090	860	253	*
Nebraska	365	190	607	*
New Mexico	696	280	701	*
Others	269	451	203	24,086
Total	576,186	468,002	533,270	522,463
Percentage Originating in Oklahoma	93.2	91.4	92.5	92.8

*Not available.

TABLE IX

SALABLE RECEIPTS OF CATTLE AT THE TULSA TERMINAL MARKET BY STATES OF ORIGIN; PERCENT ORIGINATING IN OKLAHOMA, 1957-60

State of Origin	Salable Receipts			
	1957	1958	1959	1960
	Head			
Oklahoma	134,175	90,808	89,522	89,892
Texas	262	39	50	*
Kansas	417	115	317	256
Missouri	414	428	432	646
Arkansas	358	137	193	342
Others	137	0	13	5
Total	135,763	91,527	90,527	91,141
Percentage Originating in Oklahoma	98.8	99.2	98.9	98.6

*Not Available.

in total volume handled. Nearly 325 thousand head of stockers and feeders cleared through the Oklahoma City terminal that year.

Figures 11 and 12 show the percentage of cattle and calves received at the Oklahoma, Texas, and Kansas terminals that were stockers and feeders. Although total volume is greater at the Kansas terminals than in Oklahoma or Texas, the percentage of stock and feeder cattle receipts is greater in Oklahoma. In general, the trend has been upward with some cyclical patterns apparent. Kansas City has declined relatively as a stocker and feeder market during the past five years. A much sharper increase in the percentage of total calf receipts represented by stocker and feeder calves appears evident. In 1960, nearly 90 percent of the calves sold at Oklahoma terminal markets were classed as stockers and feeders. This further emphasizes the importance of the state as a stocker-feeder supply area.

Weights of Stocker and Feeder Cattle

Significant differences in the weights of feeder and stocker livestock received at Oklahoma terminals and other leading stocker-feeder markets are apparent. The trend in this state has been toward lighter weight cattle. Sixty-three percent of the stocker and feeder cattle and calves received at the Oklahoma City terminal in 1959-60 were in the 501 to 700 pound category (Table X).

Even lighter weight cattle are received at the Fort Worth market. This market reports over four-fifths of the stocker-feeder cattle less than 700 pounds. In contrast, eight other leading terminal markets report that only 45 percent of the total feeder-stocker receipts weighed less than 700 pounds. About 14 percent of the receipts at these markets weighed over 900 pounds.

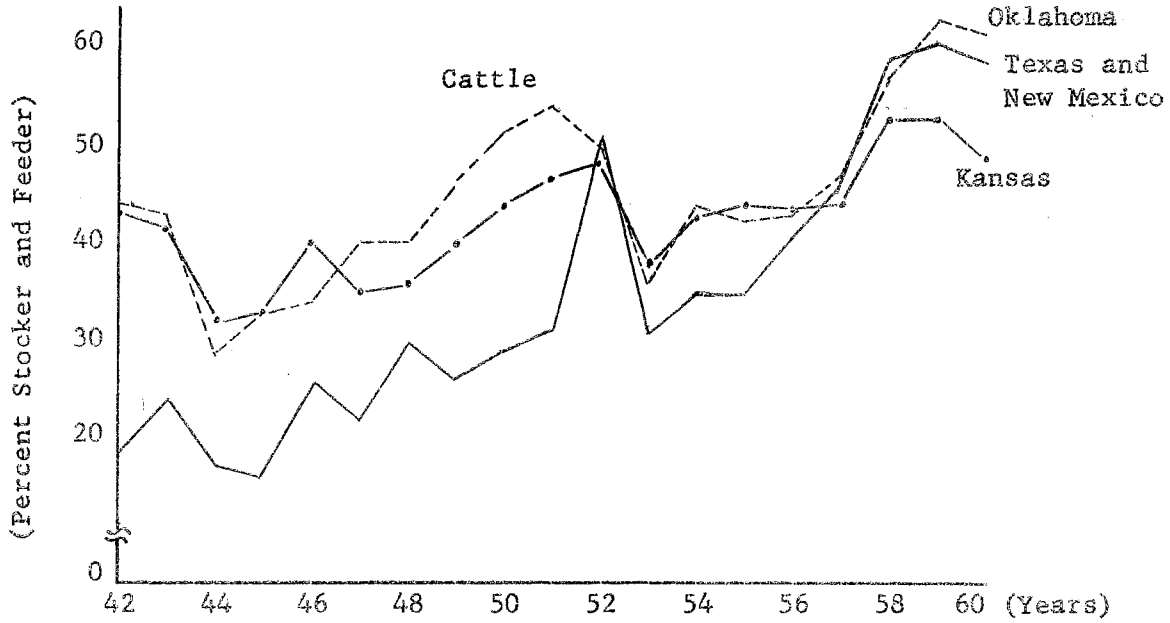

Figure 11. Receipts of Cattle at Selected Terminal Markets in the Southwest, Percent Stocker and Feeder, 1942-60

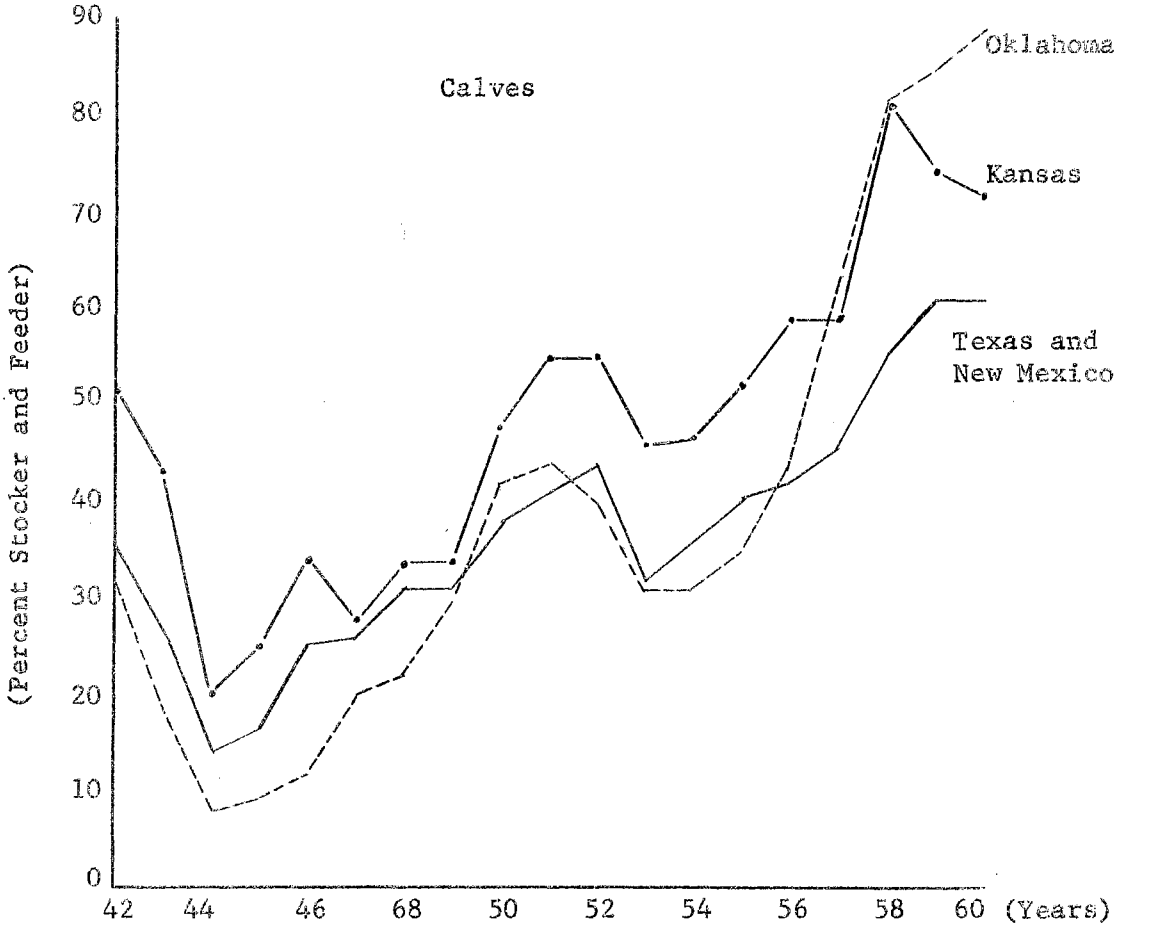

Figure 12. Receipts of Calves at Selected Terminal Markets in the Southwest, Percent Stocker and Feeder, 1942-60

TABLE X

PERCENTAGE DISTRIBUTION OF WEIGHTS OF FEEDER CATTLE AND CALVES RECEIVED AT SELECTED TERMINAL MARKETS, 1959-60[a]

Weight Class	Oklahoma City	Fort Worth	8 Other Markets	Total Markets
		Percent		
1,001 and Up	.89	.21	3.85	3.29
901-1,000	5.16	1.25	9.85	8.77
801-900	11.64	5.65	17.03	15.68
701-800	19.04	12.12	23.98	22.64
501-700	63.27	80.77	45.29	49.62
All Weights	100.00	100.00	100.00	100.00

[a]The 10 markets include: Oklahoma City, Fort Worth, Chicago, South St. Paul, Kansas City, Omaha, Sioux City, Denver, St. Louis, and St. Joseph.

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

The feeding of cattle to lighter weights in the Southern Plains probably accounts for the fast turnover in stocker-feeder production in this area.

Slaughter Livestock Receipts

Although Oklahoma terminals are primarily feeder-stocker markets, a considerable volume of slaughter livestock is received. The proportion of slaughter livestock has declined significantly, however, since 1940 as feeder and stocker livestock have dominated the market. This is less true for hogs than for the other classes of livestock.

Over 820 thousand head of livestock were received at Oklahoma terminals in 1960 that were sold for immediate slaughter. This total consisted of

472,000 head of hogs (mostly direct shipments by packers); 262,000 cattle; 13,000 calves and 74,000 sheep and lambs. The large volume of hogs sold for immediate slaughter in Oklahoma is indicative of its deficit position in hog production. Data compiled by the Veterinary Division of Oklahoma State Board of Agriculture indicates that a large portion of the slaughter hogs sold in Oklahoma originate from out-of-state sources. Excluding direct shipments, dealers and order buyers in the Central Corn Belt and Northern Plains states are the primary out-of-state consignors of slaughter hogs to Oklahoma terminals. As indicated earlier, relatively few calves sold at Oklahoma terminals go for immediate slaughter.

Grades of Slaughter Livestock

Grades of steers and heifers received at Oklahoma terminals appear to be lower than those at other leading terminals in the United States. About two-thirds of the steers and heifers received at the Oklahoma City terminal during 1959-60 were Good grade quality, while only about one-fourth qualified for Choice. No Prime grade slaughter cattle were sold at this market. This compares with about 50 percent of the heifers and steers grading Choice at twelve other leading markets during this same period. About 40 percent were Good and three percent Prime equivalent at these markets. The quality of slaughter cattle clearing through the Oklahoma City terminal is higher than that at the Fort Worth market.

Destination of Livestock Sold

Livestock clearing through Oklahoma terminals is shipped to nearly every section of the United States. As stockers and feeders constitute the largest portion of the total, few hogs and sheep and lambs are shipped

out. Shipments of cattle and calves, however, account for a significant portion of the shipments of livestock from this state.

That Oklahoma exports large quantities of stocker and feeder cattle is evident from Table XI. Nearly two-thirds of the total number of stocker and feeder cattle sold through Oklahoma terminals during the period 1957-1960 was shipped to other states. This total amounted to about 375,000 head in 1960. A total of about 175,000 head of stocker and feeder cattle was shipped from Oklahoma terminals to Oklahoma farmer-feeders and commercial feedlots in this same year.

TABLE XI

TOTAL SHIPMENTS OF STOCKER AND FEEDER CATTLE FROM OKLAHOMA TERMINALS TO AREAS OF DESTINATION, PERCENTAGE DISTRIBUTION, 1947-60[a]

Area	1957	1958	1959	1960	1957-1960
	Head	Head	Head	Head	Percent
Southern	223,267	224,799	226,423	207,997	40.68
Oklahoma	191,423	193,347	185,191	175,311	34.36
Texas	15,550	18,134	20,812	17,148	3.30
Arkansas	12,729	11,145	16,682	13,435	2.49
Northeast	2,665	707	1,456	207	0.23
North Central	268,342	235,991	314,951	326,076	52.80
Lake States	16,138	3,699	14,311	17,038	2.36
Corn Belt	132,056	90,089	156,251	151,161	24.41
Northern Plains	120,148	142,203	144,389	157,877	26.03
Missouri	28,685	18,915	32,796	31,285	5.38
Kansas	67,694	67,474	70,082	87,615	13.55
Western	36,981	29,802	33,653	35,740	6.29
United States	531,255	491,299	576,483	570,020	100.00

[a]Total shipments from Oklahoma City, Tulsa, and Fort Smith terminals.

Of the total stockers and feeders shipped to other states during 1957-60, 53 percent went to the North Central region. The Northern Plains and the Central Corn Belt states each received about one-fourth of the total shipments. A larger proportion (14 percent) of the out-shipments of stockers and feeders went to Kansas than any other single state. Only about three percent was shipped to Texas.

The price structure has played an important role in shaping the patterns of movement of livestock in the United States. As noted above, there is a tendency for feeder and stocker cattle to move from south to north as prices increase in this direction. Fed cattle and hog prices, however, rise as we move south and fall to the north. This, in part, accounts for the large numbers of feeder and stocker cattle being shipped to the Central Corn Belt and Northern Plains from Oklahoma. These patterns in movement of livestock reflect (1) the geographic patterns of production as related to consumption, and (2) the economic principles as related to price competition.

Commission Firms

There were approximately 17 commission firms operating at the Oklahoma City terminal in 1961 (Table XII). The largest two firms handled 30 percent of the hogs, and 87 percent of the sheep and lambs. The concentration among a few firms is greater for hogs and sheep than for cattle and calves. Less than one-half of the firms handled 78 percent of the hogs and 93 percent of the sheep at this market in 1961. Comparable data were not available for the Tulsa and Ft. Worth markets.

TABLE XII

COMMISSION FIRMS AT THE OKLAHOMA CITY TERMINAL MARKET; PERCENT OF LIVESTOCK HANDLED BY NUMBER OF FIRMS, 1961

Number of Firms	Cattle and Calves	Hogs	Sheep and Lambs	All Livestock
		Percent		
2	21.3	29.6	86.6	30.1
4	36.0	53.3	89.3	45.4
8	61.8	78.2	93.2	68.7
12	85.0	96.2	98.4	88.8
17	100.0	100.0	100.0	100.0

Auction Markets in Oklahoma

Livestock auctions have grown to be one of the leading market outlets for livestock in Oklahoma. There were 88 auctions in operation in the state in 1960. These 88 markets handled over five million head of livestock that year.[10] The growth pattern in numbers of livestock auctions in the state is consistent with that on the national level. The peak year in auction numbers was in 1949. Since that time, however, numbers have declined steadily. Smaller firms largely accounted for the decrease in number of auctions as medium and large auctions have increased both in actual numbers and in proportion to the total (Table XIII).

As noted earlier, auctions are primarily farmers' markets and usually thrive best when located at distances away from terminals. The largest

[10]This figure exceeds USDA published marketing figure for several reasons. Two of these reasons are (1) the amount of double selling at auctions, and (2) the published marketing figure includes marketings from an area for slaughter and outshipsments only and as such, does not include inter-farm sales and inshipments of livestock.

auction markets in Oklahoma are found in areas where terminals cannot easily be reached.

TABLE XIII

PERCENTAGE DISTRIBUTIONS OF OKLAHOMA AUCTIONS BY VOLUME OF BUSINESS, 1955 AND 1960

Size of Auction[a]	1955	1960
	Percent	
Small: (Under 10,000 Units)	53	43
Medium: (10,000 to 25,000 Units)	33	40
Large: (25,000 Units and Over)	14	17
Total	100	100

[a]An animal unit consists of one head of cattle, three calves, four hogs, or 10 sheep and lambs.

In general, consignments to Oklahoma auctions are made in small lots by local livestock farmers or ranchers. Some markets, however, draw livestock from a much wider range. As would be expected, small auctions have a smaller drawing area than larger ones. Nearly 70 percent of the livestock sales at small auctions originated from within a 25 mile radius in 1960. Larger auctions, however, drew over one-half of their total volume from distances greater than 25 miles. About one-fifth of the livestock sold at large auctions originated from farms and ranches over 50 miles away.

Large Oklahoma auctions and those located near the border also draw livestock from other states. Operators estimated that in 1960, twenty-two

percent of the cattle, 19 percent of the calves, 12 percent of the hogs, and 39 percent of the sheep and lambs marketed at Oklahoma auctions originated in other states.

Livestock producers and feeders, dealers, and auction personnel are the major consignors of livestock to Oklahoma auctions. Consigning over three-fourths of the total volume, producers and feeders are by far the most important of this group. Dealers consigned an average of 15 percent of the livestock sold in 1960. Auction personnel and "others" play minor roles in the consignment of livestock. Little change in the proportion of livestock consigned by each group of consignors is evident over the past five years.

Types of Livestock Received

There appears to be some changes in the types of livestock sold at Oklahoma auctions. Consistent with the trend toward the production of feeder-stocker livestock in the state, the percentage of slaughter livestock sold through Oklahoma auctions has declined considerably. Only 34 percent of the cattle and 27 percent of the calves sold at Oklahoma auctions went for immediate slaughter in 1960, compared with 42 percent for each class in 1955 (Table XIV). The percentage of hogs sold at auctions for slaughter declined from 55 to 45 percent during this same period. A higher percentage of the sheep, however, went for slaughter in 1960 than in 1959.

Disposition of Livestock

Major purchasers at auctions include livestock feeders, packers and dealers. Combined, these groups purchased 97 percent of all livestock

TABLE XIV

PERCENT OF LIVESTOCK SOLD FOR SLAUGHTER THROUGH OKLAHOMA AUCTIONS BY CLASSES OF LIVESTOCK, 1955 AND 1960

Year	Cattle	Calves	Hogs	Sheep and Lambs	All Livestock
			Percent		
1955	42	42	55	53	43
1960	34	27	45	80	34

TABLE XV

PERCENTAGE DISTRIBUTIONS OF PURCHASES AT OKLAHOMA AUCTIONS BY CLASSES OF LIVESTOCK, BY TYPES OF BUYERS, 1960

Type of Buyers	Cattle	Calves	Hogs	Sheep and Lambs	All Livestock
			Percent		
Packers	31.4	28.6	46.4	73.1	32.3
Livestock Feeders	49.6	52.7	38.3	18.5	49.1
Dealers	15.7	16.1	12.5	5.1	15.4
Auction Personnel	3.3	2.6	2.8	3.3	3.2
Total	100.0	100.0	100.0	100.0	100.0

sold through Oklahoma auctions in 1960 (Table XV). The remaining three percent was bought by auction personnel and "others".

Livestock producers and feeders purchased a greater percentage, (49 percent) of the total volume sold at auction in 1960, than any other single group. They were particularly important in the purchase of cattle and calves, 50 and 53 percent, respectively. About 40 percent of the hogs

were also purchased by producers. Direct sales to packers constituted about one-third of total sales. Another 15 percent was purchased by livestock dealers.

CHAPTER V

MEAT DISTRIBUTION

Oklahoma's meat marketing system consists of meat packers, nonslaughtering wholesale meat distributors and processors, meat brokers and sales representatives, numerous retailers, and other outlets. Packers are defined here as any type of firm slaughtering red meat animals. Wholesale meat distributors consist of branch processing and sales plants of national packers and independent, nonslaughtering distributors doing little or no processing. Processors are independent nonslaughtering firms engaged primarily in production and sale of cured and smoked pork and of dry sausage products. Retail outlets consist of retail food stores, both chain and independent, and dining establishments designated here as hotels, restaurants and institutions (H.R.I.). "Other" outlets include Federal, State, and Local Government agencies, consumers, and out-of-state receivers.

Structural Changes at the Retail Level

At the national level, marked changes have taken place in all major segments of the livestock and meat industry. In Oklahoma, structural changes among retail grocery firms are, perhaps, most evident and dramatic. In all areas structural changes at the retail level usually have preceeded and have helped shape and condition structural changes at other levels of the system.

Although population in the United States increased one-third between 1939 and 1958, the number of retail grocery stores to supply that population dropped more than one-fourth. At the same time, average deflated sales per store more than trippled and average number of customers per store rose from 338 to 611. By 1958, 92 percent of the grocery store volume was handled by 30 percent of the total number of stores. These consisted of 29,900 supermarkets and 59,700 superettes.[1] Supermarkets, alone, accounted for 68 percent of the total grocery store business in 1958. It has been estimated that by 1965, 75 percent of the total grocery store business will be transacted by 35,000 supermarkets or about 13 percent of the total estimated number.[2]

Numbers of retail grocery stores in Oklahoma dropped nearly 40 percent during 1948-58 (Table XVI). This was a considerably larger percentage decline than those reported for Texas or the United States. The deflated volume of retail grocery store sales rose sharply in Oklahoma but in percentage terms this increase was exceeded by Texas and at the national level. Deflated sales per store, consequently, rose 150 percent in Oklahoma. This, however, fell far short of the national average increase in sales per store. The average store in the Southern Plains apparently is small. It was smaller, relative to the national average, in 1958 than in 1948.

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[1] Supermarkets generally are considered to be stores with sales in excess of $375,000 annually. Superettes are stores with sales in the range of $75,000 to $375,000 annually.

[2] D. B. Deloach, Changes in Food Retailing - Causes, Effects, Washington Agricultural Experiment Station, Bulletin 619, October, 1960, p. 6.

TABLE XVI

NUMBER OF RETAIL GROCERY STORES, TOTAL DEFLATED SALES OF GROCERY STORES AND DEFLATED SALES PER STORE, OKLAHOMA, TEXAS AND UNITED STATES, 1948 AND 1958

		Stores	Total Sales[a] Deflated	Average Sales Per Store
		Number	$1,000	$1,000
Oklahoma:				
	1948	6,295	319,787	50.8
	1958	3,793	482,417	127.2
Percent Change		-39.7	50.9	150.4
Texas:				
	1948	22,013	1,288,682	58.5
	1958	16,078	2,133,179	132.7
Percent Change		-27.0	65.5	126.8
United States:				
	1948	377,939	23,817,426	63.0
	1958	259,796	57,124,616	219.9
Percent Change		-31.3	139.8	249.0

[a]Sales deflated by the Bureau of Labor Statistics Retail Food Price Index 1947-49=100.

Source: United States Census of Business, Retail Trade for Areas Indicated, United States Department of Commerce, Bureau of Census, 1948 and 1958.

Changes in numbers of stores at various levels of horizontal integration are indicated in Table XVII. Largest reductions are apparent for single unit stores. At the national level reductions appear for all of the size of firm groups indicated. The 42 percent reduction in numbers of single unit stores in Oklahoma is highly significant. Differences between the Southern Plains and the United States in patterns of change among size groups of firms also is significant. These may indicate that

TABLE XVII

NUMBER AND PERCENTAGE DISTRIBUTION OF STORES BY SIZE OF FIRM, UNITED STATES, TEXAS, AND OKLAHOMA, 1948 AND 1958[a] AND PERCENTAGE CHANGES, 1948-58 IN TOTAL NUMBER

Year and Size of Firm	United States		Texas		Oklahoma	
	Number	Percent	Number	Percent	Number	Percent
1948						
Single Units	347,063	91.8	20,631	93.7	5,982	95.0
2-3 Stores	5,829	1.5	447	2.0	88	1.4
4-10 Stores	2,497	.7	198	.9	62	1.0
11 or More Stores	22,550	6.0	737	3.4	163	2.6
Total	377,939	100.0	22,013	100.0	6,295	100.0
1958						
Single Units	234,901	90.4	14,219	88.4	3,483	91.8
2-3 Stores	4,960	1.9	502	3.1	75	2.0
4-10 Stores	2,312	.9	257	1.6	62	1.6
11 or More Stores	17,623	6.8	1,100	6.9	173	4.6
Total	259,796	100.0	16,078	100.0	3,793	100.0
Percentage Change 1948-58						
Single Units		-32.3		-31.1		-41.8
2-3 Stores		-14.9		12.3		-14.8
4-10 Stores		-7.4		29.8		0
11 or More Stores		-21.8		49.3		6.1
Total		-31.3		-27.0		-39.7

[a]Data for 1958 include delicatessens.

Source: U. S. Bureau of Census of Business, Retail Trade.

retail structural changes at the national level have been underway longer and have advanced further than in the Southern Plains.

In Oklahoma, as well as nationally, a few large retailers account for a large share of the business. The 235 stores of multi-unit firms in Oklahoma, 8.2 percent of the total number of stores, made 40 percent

of the total grocery store sales in 1958. Stores with sales in excess of $500,000 annually, 7.4 percent of the total number made 52.8 percent of the total sales.[3] In Texas, stores of multi-unit firms, 11.6 percent of the total number made 48 percent of the total sales, while those with sales in excess of $500,000, 7.6 percent of the total number, made 55.9 percent of the total sales. In 1960, about 300 stores in Oklahoma, or about 8 percent of the total number, were supermarkets.[4] The state adds about 25 new supermarkets each year.

Additional and less readily apparent structural changes are taking place in grocery retailing. In 1960, for instance, 39 percent of the nations' total grocery store sales were made by corporate chains but an additional 48 percent were made by affiliated group retailers. Only 13 percent were made by unaffiliated or "independent" independents. The affiliated groups consist of voluntary wholesale buying groups and cooperative retail groups.[5]

Until recently the voluntary group and cooperative retailers bought only dry groceries through their central buying units. More recently, they have begun to buy perishables, including meat, through these units. This is having marked effects on marketing patterns for meat and other perishables and is affecting structural organization at other levels of the marketing system. The reason is that when retailers join together

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[3]This includes the largest volume stores of both single and multi-unit classifications.

[4]Supermarket Merchandising, May, 1961 issue.

[5]Voluntary groups are those such as I.G.A., Red and White Stores, and H & H Stores, which are headquartered in Tulsa. The central figure in these organizations is the wholesaler who offers franchises to stores meeting particular qualifications. The stores become voluntary members of the wholesale buying group.

into wholesale buying organizations they take on characteristics of the corporate chains so far as their procurement activities are concerned. They can reach out much farther for meat and are no longer heavily dependent upon local suppliers. They then consider advantages to be gained through establishment of specifications on quality, uniformity, and services required to suppliers. In addition, they begin to seek continuing arrangements with larger volume suppliers in order to reduce their procurement costs and assure themselves of regular and dependable supply sources.

Some of the voluntary or cooperative groups have warehouses where the meat is centralized prior to distribution to stores. To an increasing extent, however, these groups are experimenting with procedures for the direct distribution of meat from packers to retail stores. This requires sizes and types of packer suppliers in position to distribute meat over a relatively wide territory and provide other necessary services.

Voluntary group retailers are relatively strong in Oklahoma and Texas. I.G.A. is buying meat centrally for many of their stores in the Southern Plains. Others either have recently initiated central buying programs or are seriously considering doing so. Data on the exact number of stores in Oklahoma that are members of voluntary or cooperative groups are not available. It is known, however, that at least 925 stores, or about 25 percent of the total number of grocery retailers in the state, are members of such groups. Firms with four or more stores, according to the 1959 meat distribution survey, account for an additional 9.3 percent

Structural Changes at the Packer, Processor, and Wholesale Levels

Meat packing was initiated on a commercial basis in the Southern Plains with the erection, in 1902, of Swift and Armour packing plants in Fort Worth.[6] These were followed by establishment of plants in Oklahoma City by Morris in 1909 and Schwartzchild and Sulzberger in 1911. The Morris firm was later purchased by Armour, and Wilson and Company acquired the Schwartzchild and Sulzberger plant.[7] Both of these plants were federally inspected establishments which permitted them to ship meat in interstate commerce.

Number and Size of Firms

In later years, large numbers of additional meat packing plants were established in Oklahoma. Almost exclusively, however, these were small, locally oriented, nonfederally inspected firms. In addition, many were not included, for one reason or another, in either the census or United States Department of Agriculture data on plant numbers. For instance, 159 livestock slaughtering firms were located in Oklahoma during the 1959 meat distribution survey. The 1958 Census of Manufacturers, however, reports 49 and a United States Department of Agriculture 1960 release reports 65.[8] The small butchering establishments with annual volumes of less than 300,000 pounds are excluded from the U.S.D.A. data. Census of

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[6] Terrell W. Littleton, The Meat Packing Industry With Special Reference to Texas (Unpublished M.S. Thesis, University of Texas, August, 1940), pp. 15-16.

[7] Edward R. Swem, "Meat Packing Grows Up," The National Provisioner, (January, 1952), pp. 67-76.

[8] Agricultural Marketing Service, U. S. Department of Agriculture, Number of Livestock Slaughter Plants, March 1, 1960, August, 1960, p. 5.

Manufactures data exclude exceptionally small firms and classify the remainder on the basis of their primary activity. Many, therefore, were classified by the Census as wholesale distributors or prepared meat plants.[9] U.S.D.A. data on changes in plant numbers probably are the more reliable.

During 1950-55 numbers of federally inspected and larger nonfederally inspected wholesale plants in the United States increased in most areas (Table XVIII). General increases in size of plant also were taking place during this period. Many exceptionally small plants were established during and immediately following World War II. By 1955 some of these plants had increased in size to qualify as "Other Local" plants (Table XVIII). This probably is the reason for the relatively large increase in Texas during 1950-55 in numbers of "Other Local" plants. Many remaining small plants disappeared from the industry while many plants classifying as "Other Local" in 1950 also were increasing in average size and volume during 1950-55. General increases resulted for the United States and the Southern Plains in numbers of "Other Wholesale" plants.

During 1955-60 numbers of federally inspected plants continued to rise in the United States. This, however, was not true in Oklahoma. By 1961, Oklahoma had only two federally inspected plants and one of these was a specialized slaughterer of cows only. In 1960, federally inspected plants accounted for 81 percent of the commercial meat production in the United States.

Since 1955, numbers of nonfederally inspected plants have dropped slightly in most areas of the nation. Substantial reductions probably

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[9]The Census of Manufactures size limitation has varied to some extent from one census year to the next.

TABLE XVIII

NUMBER OF MEAT PACKING PLANTS BY TYPE OR SIZE OF PLANT, SELECTED YEARS AND PERCENTAGE CHANGE, OKLAHOMA, TEXAS AND UNITED STATES

Area and Type or Size of Plant	1950	1955	1960	Percentage Change 1950-55	1955-60
	Number	Number	Number	Percent	Percent
Oklahoma:					
Federally Inspected[a]	4	3	3	-25.0	0
Other Wholesale[b]	19	27	37	42.1	37.0
Other Local[c]	38	39	25	2.6	-35.9
Total	61	69	65	13.1	-5.8
Texas:					
Federally Inspected	18	22	30	22.2	36.4
Other Wholesale	57	75	71	31.3	-5.3
Other Local	54	121	119	124.1	-1.7
Total	129	218	220	69.0	.9
United States:					
Federally Inspected	441	455	530	3.2	16.5
Other Wholesale	725	952	902	31.3	-5.3
Other Local	2,072	1,810	1,712	-12.6	-5.4
Total	3,238	3,217	3,144	-.6	-2.3

[a]Plants officially qualifying for Federal Inspection.

[b]Nonfederally inspected plants with slaughtering 2,000,000 or more liveweight pounds of livestock annually.

[c]Nonfederally inspected plants slaughtering 300,000 or more liveweight pounds of livestock but less than 2,000,000.

Source: Agricultural Marketing Service, U. S. Department of Agriculture, Livestock Slaughter by States, June, 1950, July 31, 1950, p. 9 and Number of Livestock Slaughter Plants, March, 1960, August, 1960, pp. 5-11. (Includes data for 1955.)

have taken place in numbers with volumes under 300,000 pounds annually. In Oklahoma numbers of "Other Wholesale" plants continued to rise sharply during 1955-60 but substantial reductions were recorded in numbers of smaller plants.

The 159 slaughtering firms in Oklahoma, revealed by the 1959 meat distribution survey, are classified according to size in Table XIX. These data indicate that on the basis of their 1959 volumes, 93 firms classified as federally inspected, "Other Wholesale" or "Other Local". These included 13 relatively large plants slaughtering the equivalent of eight million liveweight pounds of cattle or more annually. These together with the 27 additional large firms accounted for 90 percent of the total liveweight volume of livestock slaughtered in Oklahoma during 1959. The "medium" volume plants accounted for an additional 8 percent. The smaller firms consisted mainly of locker plants slaughtering for consumers, establishments owned by individual retailers, and butchers in small towns or rural areas.

In addition to firms engaged to some extent in the livestock slaughtering activity, the 1959 survey revealed a total of 46 nonslaughtering meat processors and distributors. Two of these, both located in Tulsa, were branch processing and sales houses of national packers. The remainder were divided evenly between processors and wholesale distributors of fresh meat.

Various measures are used in Table XX to compare average size of Oklahoma meat packing and prepared meat plants with average size for the West South Central region and the United States. As expected, average size of both types of plants in Oklahoma and the West South Central area, by any of these measures, fall far short of the national averages. Growth rates of meat packing plants in Oklahoma and the West South Central region also appear smaller than the national average rates. Growth rates of prepared meat plants in the Oklahoma and West South Central area, on the other hand seem to exceed the national average rates significantly.

TABLE XIX

PERCENTAGE DISTRIBUTIONS OF NUMBERS AND TYPES OF MEAT PACKERS AND LIVEWEIGHT VOLUME, BY SIZE OF FIRMS, OKLAHOMA, 1959[a]

	Number Firms	Percent Liveweight Volume	Percent of Total Firms
Packers (Slaughter Firms)			
Large:[b]			
I. (Over 8,000,000 Pounds Liveweight Slaughter Annually)	13	68.6	8.2
II. (3,000,000 to 7,999,000 Pounds Liveweight Slaughter Annually)	27	20.9	17.0
Total Large	40	89.5	25.2
Medium:[c] (Less than 300,000 Pounds Liveweight Slaughter Annually)	53	8.5	33.3
Small: (Less than 300,000 Pounds Liveweight Slaughter Annually)	66	2.0	41.5
Total	159		100.0
Others (Nonslaughtering Firms)			
Wholesale Distributors	22		48
Processors	22		48
Branch Houses	2		4
Total	46		100

[a]Packers were classified by size according to volumes for 1959 reported in the survey. Accordingly, the numbers by size groups may not agree with unpublished U. S. Department of Agriculture data for 1959.

[b]Federally inspected and "other wholesale" plants as defined in Table XVIII.

[c]"Other Local" plants as defined in Table XVIII.

Source: Meat distribution survey data on Oklahoma and Texas, Oklahoma State University in cooperation with Texas A & M and the U. S. Department of Agriculture.

TABLE XX

AVERAGE VALUE OF SHIPMENTS, VALUE ADDED AND NUMBER OF PRODUCTION WORKERS PER PLANT, CENSUS YEARS, OKLAHOMA, WEST SOUTH CENTRAL AND UNITED STATES, 1939-58

	1939	1947	1954	1958	Percentage Period	Change Percent
Meat Packing Plants:						
Value of Shipments Per Plant ($1,000)						
Oklahoma	a	a	3,303	2,758	1954-58	-16.5
West South Central	a	a	2,124	2,124	1954-58	0
United States	a	a	4,185	4,271	1954-58	2.1
Value Added Per Plant ($1,000)						
Oklahoma	278	332	493	496	1939-58	78.4
West South Central	197	326	376	326	1939-58	65.5
United States	303	454	589	624	1939-58	105.9
Production Workers Per Plant (No.)						
Oklahoma	81.5	66.8	66.5	40.0	1939-58	-50.9
West South Central	58.8	55.0	44.7	32.7	1939-58	-44.4
United States	86.1	77.6	70.9	53.8	1939-58	-37.5
Prepared Meat Plants:						
Value of Shipments Per Plant ($1,000)						
Oklahoma	a	a	537	903	1954-58	68.2
West South Central	a	a	704	946	1954-58	34.2
United States	a	a	1,075	1,383	1954-58	28.7
Value Added Per Plant ($1,000)						
Oklahoma	a	172	136	346	1947-58	101.2
West South Central	a	154	171	245	1947-58	59.1
United States	a	1,863	2,510	2,959	1947-58	58.8
Production Workers Per Plant						
Oklahoma	a	19.9	10.7	11.0	1947-58	-44.7
West South Central	a	21.9	16.2	16.8	1947-58	-23.3
United States	a	27.3	25.7	24.4	1947-58	-10.6

[a]Not available.

Source: U. S. Bureau of Census, Census of Manufacturers for years indicated.

Little census data are available on average size or growth rates of wholesale meat distributors in Oklahoma. Sample survey data indicate, however, that all of the independent firms (those other than branch houses) handled small volumes of meat.

Concentration in the Industry

The existence of a few large firms in Oklahoma supplemented by a large number of small firms suggests some degree of oligopoly in the industry.[10] This, however, is not necessarily the case since there is no reliable evidence to support the hypothesis that these large firms play a dominant role in price formulation. Futhermore, few restrictions exist on entry to or exit from the industry. Thus, the Oklahoma meat packing sector must be classed as "dominant firm". It is recognized, however, that the state is encircled by additional large firms at Kansas City, Wichita, Denver, Lubbock and Fort Worth.

Excluding the dominant firms, the state's meat packing industry is monopolistically competitive in some respects and purely competitive in others. In any event, and despite the apparent concentration in the industry, a high degree of competition is evident. The volume handled by each firm is small enough so that no one firm can substantially affect market price. Although some firms sell branded products, most of the fresh meat is not differentiated.

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[10] It may be argued that the number of firms is too large for the industry to be classified as an oligopolistic industry. However, a change in the policies of one of the larger firms may result in repercussions and adjustments throughout the industry, thus partially justifying an oligopoly classification. For discussion see Joe S. Bains, Industrial Organization, New York, John Wiley and Sons, Inc., 1959, pp. 121-132.

A high degree of concentration of livestock slaughtering activities is evident from Table XXI, since, in most cases, 5 percent of the firms slaughtered over 50 percent of the livestock in 1959. For all classes of livestock, 40 percent of the firms slaughtered over 90 percent of the total volume (numbers). Even more important is the fact that in the same year, 25 percent of the firms slaughtered nearly 90 percent of the total liveweight volume.

TABLE XXI

NUMBERS OF LIVESTOCK SLAUGHTERED BY OKLAHOMA PACKERS; PERCENT OF LIVESTOCK SLAUGHTERED BY PERCENT OF FIRMS, 1959[a]

	Percent of Livestock					
Percent of Firms	Total Cattle	Calves	Beef Heifers and Steers	Other Cattle	Hogs	Sheep
5	50.2	58.3	43.2	72.0	66.8	86.4
10	61.0	68.9	59.7	82.0	77.5	97.7
12						100.0
20	79.0	82.2	77.6	90.5	90.4	
30	87.2	89.9	87.0	94.3	95.6	
40	93.1	94.3	93.1	96.4	97.4	
70				100.0		
75		100.0				
86			100.0			
88					100.0	
93	100.0					

[a]Based on report from 121 firms.

The above percentages are highly influenced by the large dominant firms in the industry. It would be expected that, if the larger firms were excluded from the analysis, the relative percentages of volume slaughtered by firms would be more evenly distributed. Table XXII presents data on slaughter concentration for Oklahoma packers, excluding the dominant firms.[11] Although there appears to be some decrease in the proportion slaughtered by the larger firms, the relative unimportance of the small firms remains evident. As when the dominant firms are included, 40 percent of the firms slaughter about 90 percent of the livestock.

The concentration of slaughter activities for all firms and for firms excluding the dominant group is further emphasized in Figures 13 through 18. Here, the percent of livestock slaughtered is plotted against the percent of firms. The straight line represents the hypothetical situation where there is a one to one ratio between percent of firms and percent of total slaughter. In total, there appears to be more concentration in the slaughter of cows and bulls, and hogs than the other classes of livestock. Despite the fact that only a few firms (16) slaughter sheep, the concentration here is also quite evident. Two of these firms slaughtered over three-fifths of the total sheep volume in 1959.

Specialization

An estimated total of 291 million dressed weight pounds of livestock were slaughtered by Oklahoma packers in 1959. This total consisted primarily of beef and hogs with calves responsible for 7 percent and sheep

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[11] Excludes the state's two largest plants one of which has since been closed by the parent company.

TABLE XXII

NUMBERS OF LIVESTOCK SLAUGHTERED BY OKLAHOMA PACKERS, EXCLUDING TWO DOMINANT FIRMS; PERCENT LIVESTOCK SLAUGHTERED BY PERCENT OF FIRMS, 1959[a]

	Percent of Livestock					
Percent of Firms	Total Cattle	Calves	Beef Heifers and Steers	Other Cattle	Hogs	Sheep and Lambs
5	31.7	41.0	29.9	62.6	37.4	76.5
10	48.7	53.6	49.5	74.4	59.5	97.9
11.8						100.0
20	71.0	72.6	70.4	86.6	82.0	
30	82.2	85.3	81.2	93.3	91.4	
40	89.1	92.9	88.5	96.8	95.0	
50	93.4		93.4			
69.8				100.0		
75.6		100.0				
85.7			100.0			
88.2					100.0	
92.4	100.0					

[a]Based on reports from 119 firms.

less than one percent. Accordingly, sheep are largely ignored in this analysis.

Of 121 firms included in the meat distribution survey, the number slaughtering particular classes or species in 1959 were as follows: hogs, 107; heifers and steers, 102; cows, 85; calves, 90; and sheep, 16. This suggests immediately that Oklahoma meat packers are not highly specialized

Slaughter Concentration: Percent of Livestock Slaughtered by Percent of Packers, by Classes of Livestock, Oklahoma, 1959

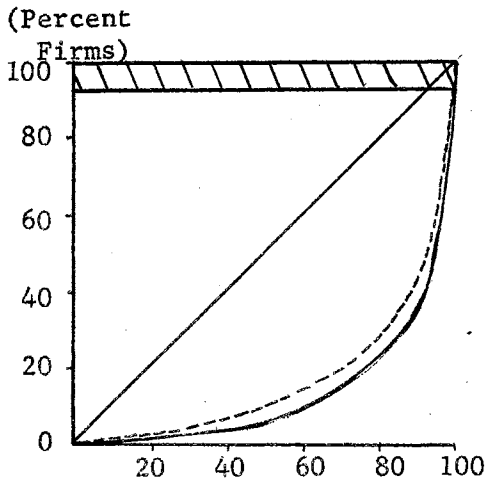

Figure 13. Total Cattle

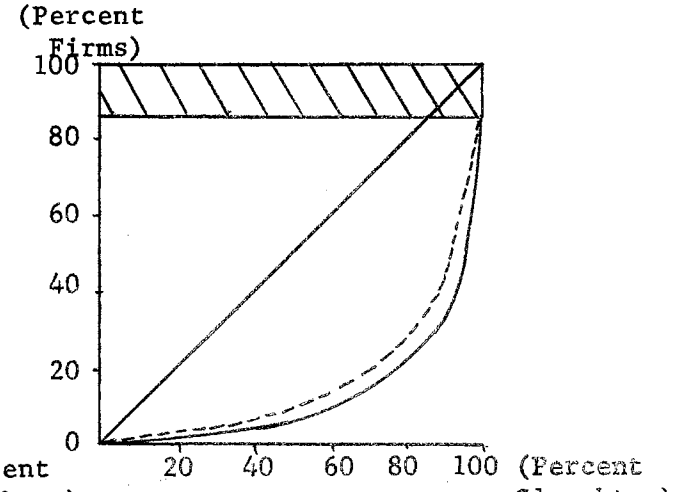

Figure 14. Beef Heifers and Steers

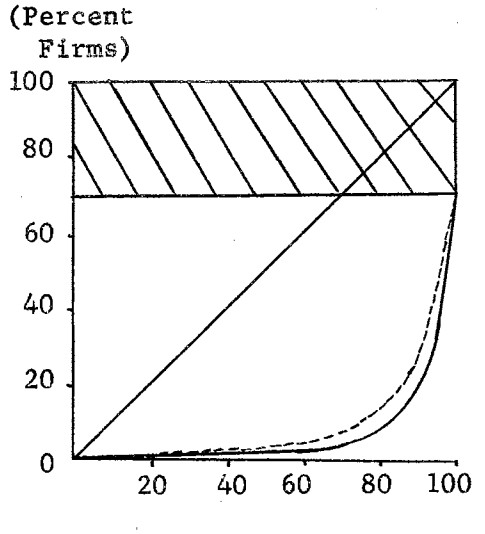

Figure 15. Other Cattle

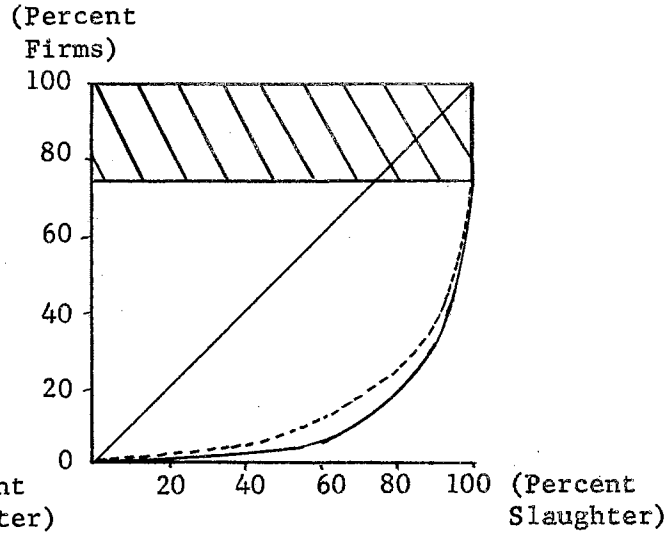

Figure 16. Calves

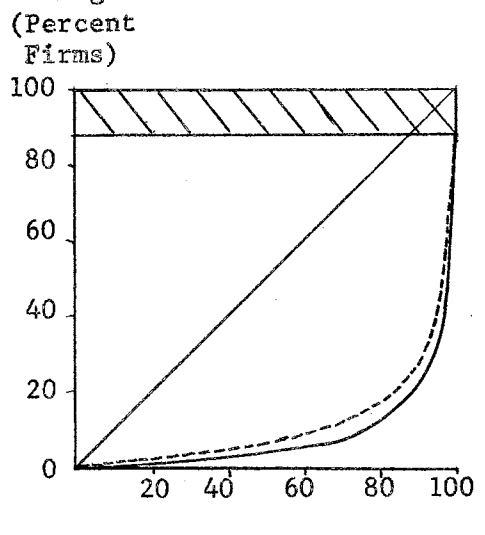

Figure 17. Hogs

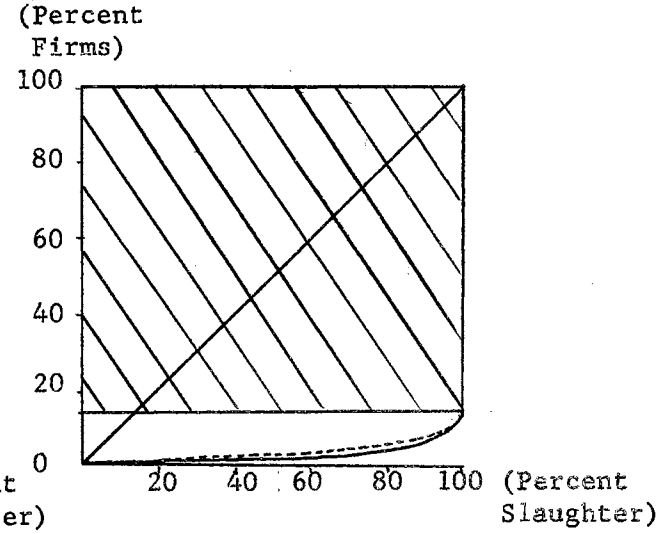

Figure 18. Sheep and Lambs

——All Oklahoma Packers

---- Oklahoma Pakcers; Dominate Firms Excluded

Percent of Firms not Slaughtering the Particular Class of Livestock

by species or class of livestock. This is established in more detail in Figure 19. Smaller butcher type operators appears to be more highly specialized than the larger firms. United States meat packers, on the average, are more highly specialized than those in Oklahoma.

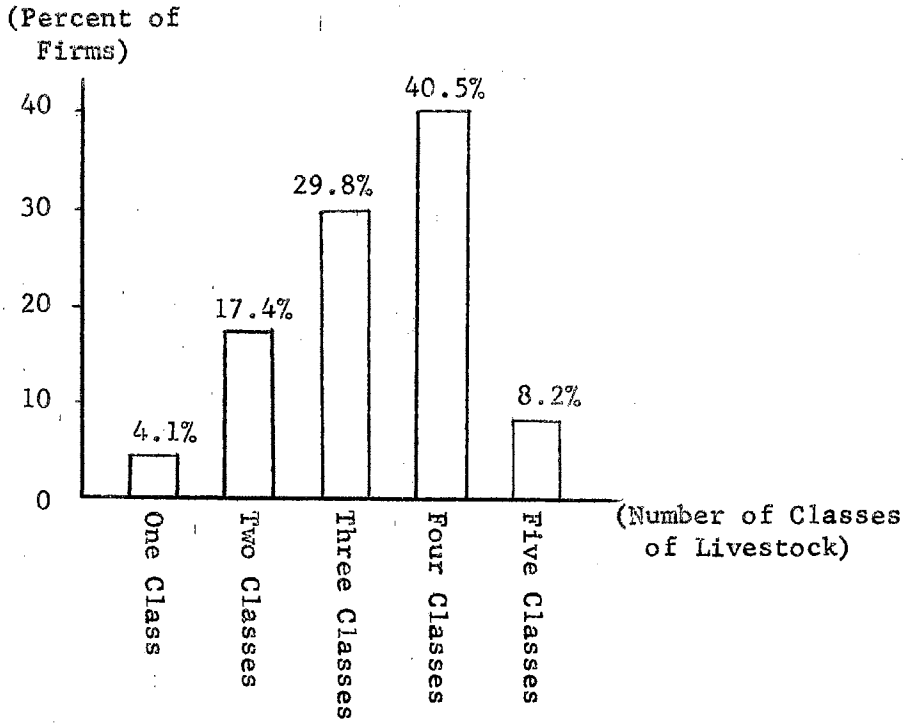

Figure 19. Slaughter Specialization of Packers: Percent of Firms Slaughtering Number of Classes of Livestock, Oklahoma, 1959

Despite the fact that Oklahoma is primarily a beef producing state, Oklahoma packers also handled a large volume of pork. These packers imported from out-of-state sources 46.5 million pounds of pork compared with only 8.6 million pounds of beef. Considering the average size of Oklahoma packers and the deficit hog supply situation in the state, these packers are rather heavily engaged in hog slaughtering and pork processing

Nonfederally inspected packers in most hog and pork deficit areas slaughter few hogs and do relatively little processing.

Only 49 of 121 sample firms in Oklahoma were engaged in no processing whatever. Twenty-one of these were the exceptionally small firms and another 20 were medium volume firms. Most of the larger firms manufacture processed pork items as well as sausage; most of the remaining large firms engaged in processing and manufacturing sausage but few produce smoked or cured pork. Few medium volume packers specialized in sausage; of those engaged in processing, about half specialize in pork and the remaining half manufacture both processed pork and sausage. Most of the smaller firms do not engage in processing.

Comparative Cost and Efficiency Characteristics of Oklahoma Meat Pakcers and Processors

The Census of Manufactures provides data on costs and efficiency of meat packing and processing plants in Oklahoma. These, however, must be interpreted with caution. Relatively few Oklahoma plants were included in Census of Manufactures data. In addition, data on the two dominant Oklahoma packing plants in operation during census years under consideration influenced the packing plant data.

Tentative conclusions that might be summarized from these data are as follows:[12]

1. Using North Central region and United States data as basis for comparison, Oklahoma meat packing plant workers are employed for a longer than average number of hours during the year, are paid a lower than average wage per hour, and receive a lower than average total wage for the year.

[12]See Appendix B Tables II and III.

2. On the same basis, however, value added per worker and per man-hour are above average in Oklahoma meat packing plants.
3. In comparison with other West South Central states the North Central region and the United States during the period 1947-58, number of hours worked by Oklahoma meat packing plant labor have dropped relatively little while wages per hour, average annual wages, value added per worker and value added per man-hour in Oklahoma meat packing plants have risen substantially.
4. Hours worked, wages and annual wages of Oklahoma prepared meat plant workers all are relatively low.
5. Hours worked by Oklahoma prepared meat plant workers have dropped relatively more and per hour wages of these workers have risen relatively more than is true for other areas.
6. Value added at Oklahoma prepared meat plants and value added per man-hour in these plants are exceptionally large and have risen substantially more than is true for competitive areas.
7. Hourly wages, value added per plant and value added per man-hour in Oklahoma meat packing and prepared meat plants all significantly exceed comparable averages for remaining West South Central states.

Significance and reasons for these trends and differences are not definitely known. That the data indicate significantly higher levels of efficiency in Oklahoma is questionable. The trend on number of hours worked in Oklahoma meat packing plants differs significantly from the trend indicated for prepared meat plants. Differences among the areas in value added could arise from several sources.[13] Oklahoma plants included in the

[13]Value added is defined as value of shipments minus cost of materials, supplies, containers, fuel purchased, electrical energy used, and contract work.

census data are relatively small. Accordingly, the owner or plant manager and salaried employees not classed as production workers, may, nevertheless, perform much production labor. Family workers may not have been reported as production labor. Value added by manufacturing apparently is greater than value added through slaughtering and, as indicated earlier, a higher than average number of the nonfederally inspected plants in Oklahoma are engaged in meat processing activities. The product mix among prepared meat plants could influence value added figures of prepared meat plants. Oklahoma packers and processors may utilize cheaper raw meat materials while selling end products at competitive prices. Finally, less packaging, less expensive packaging and fewer services may be provided by Oklahoma packers and processors. As evidence of this, much slab bacon, "rough cut" bacon not packaged and nonprepackaged hams and picnics are sold in Oklahoma.

In one way or another, however, it does appear that Oklahoma meat packing and processing plants are achieving relatively high levels of value added for the volume of labor employed and wages paid. Casual observation indicates that these levels have not been achieved through high rates of technological innovation. Additional research will be required for more complete evaluation of these data and to determine sources of the apparent high levels of productivity.

Marked imporvements in efficiency usually are made as a matter of necessity. In the face of rather rapidly rising wage rates and a rising volume of finished product inshipments, improvements in productivity of Oklahoma plants may reflect intense competition and a struggle for survival. Oklahoma pakcers and processors do enjoy more flexibility in the use of labor. Cost of raw meat materials in Oklahoma probably are relatively low as the Southern Plains is an area of surplus processing type beef production.

In addition, lack of stringent Federal or State inspection requirements permit the use of relatively cheap materials and the pumping of hams, bacon and other cuts to relatively heavy weights. Data for the nation indicate that of the total average fixed and variable costs of meat packing plants, raw meat materials represent 73 percent. Of total variable costs other than raw materials, labor represents about 67 percent, supplies and containers account for an additional 21 percent, and transportation comprises the remaining 12 percent. Locally oriented Oklahoma packers and processors may realize savings in all of these cost categories.

Distribution Channels for Meat in Oklahoma

Several characteristics of market structure for beef and pork in Oklahoma and distribution channels for these commodities are summarized in Figures 20 and 21. Although meat typically moves directly from meat packers to final outlets in Oklahoma, these diagrams suggest the complex nature of the distribution systems for meat in the state.

Distribution Channels for Beef

About 192 million pounds of beef were handled by Oklahoma packers and marketing firms in 1959. Of this total, less than two-thirds was supplied by Oklahoma producers. As a smaller volume, 163 million pounds, was consumed in Oklahoma. Oklahoma producers may have produced as much as three-fourths of the total state consumption.

About 81.4 percent of the 192 million pounds distributed was handled by packers whereas the remaining 18.6 percent represented shipments from out-of-state suppliers directly to intermediate nonslaughtering handlers or final outlets. The 81.4 percent distributed by Oklahoma packers was

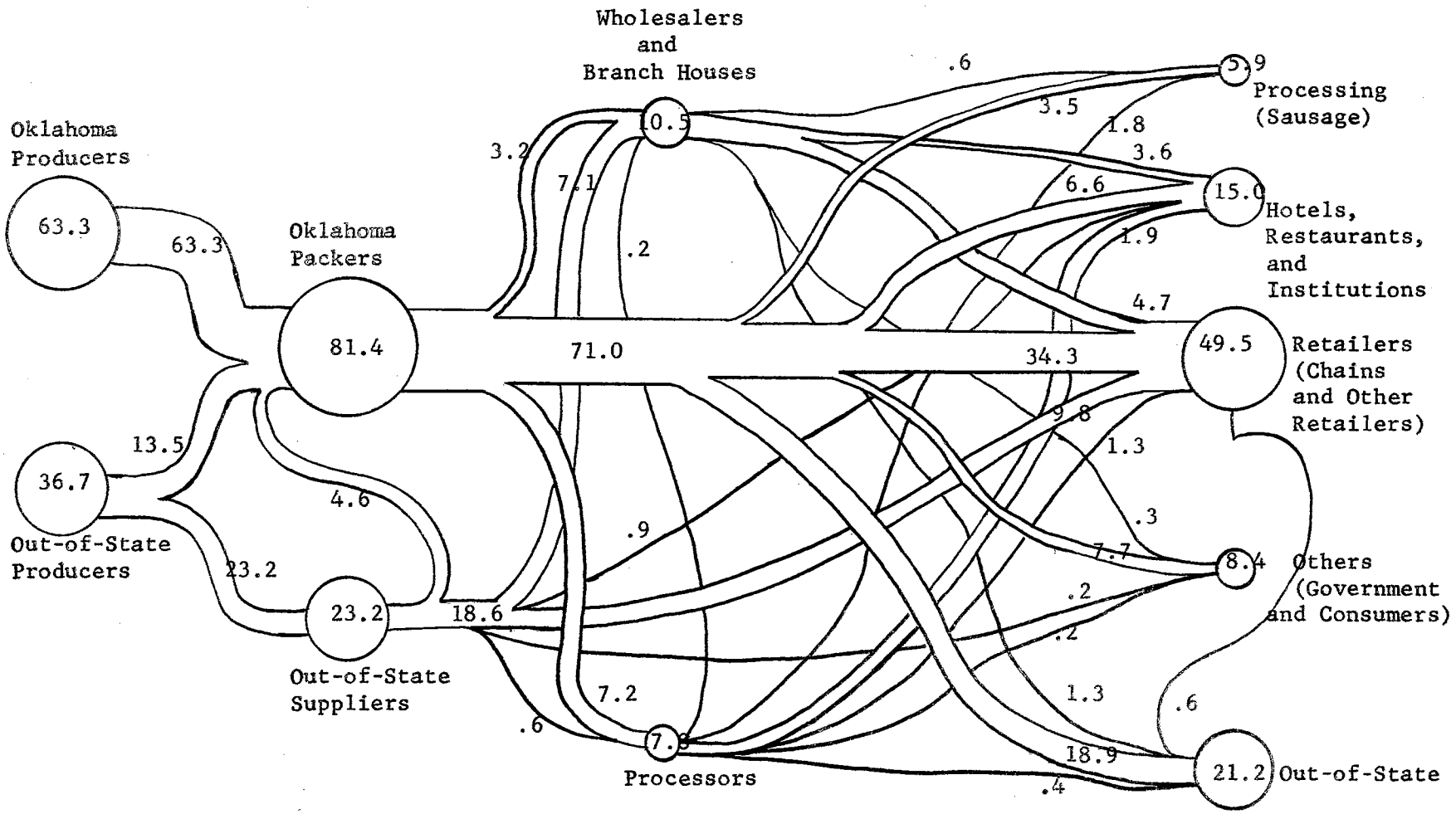

Figure 20. Market Structure and Distribution Channels for Beef in Oklahoma, 1959

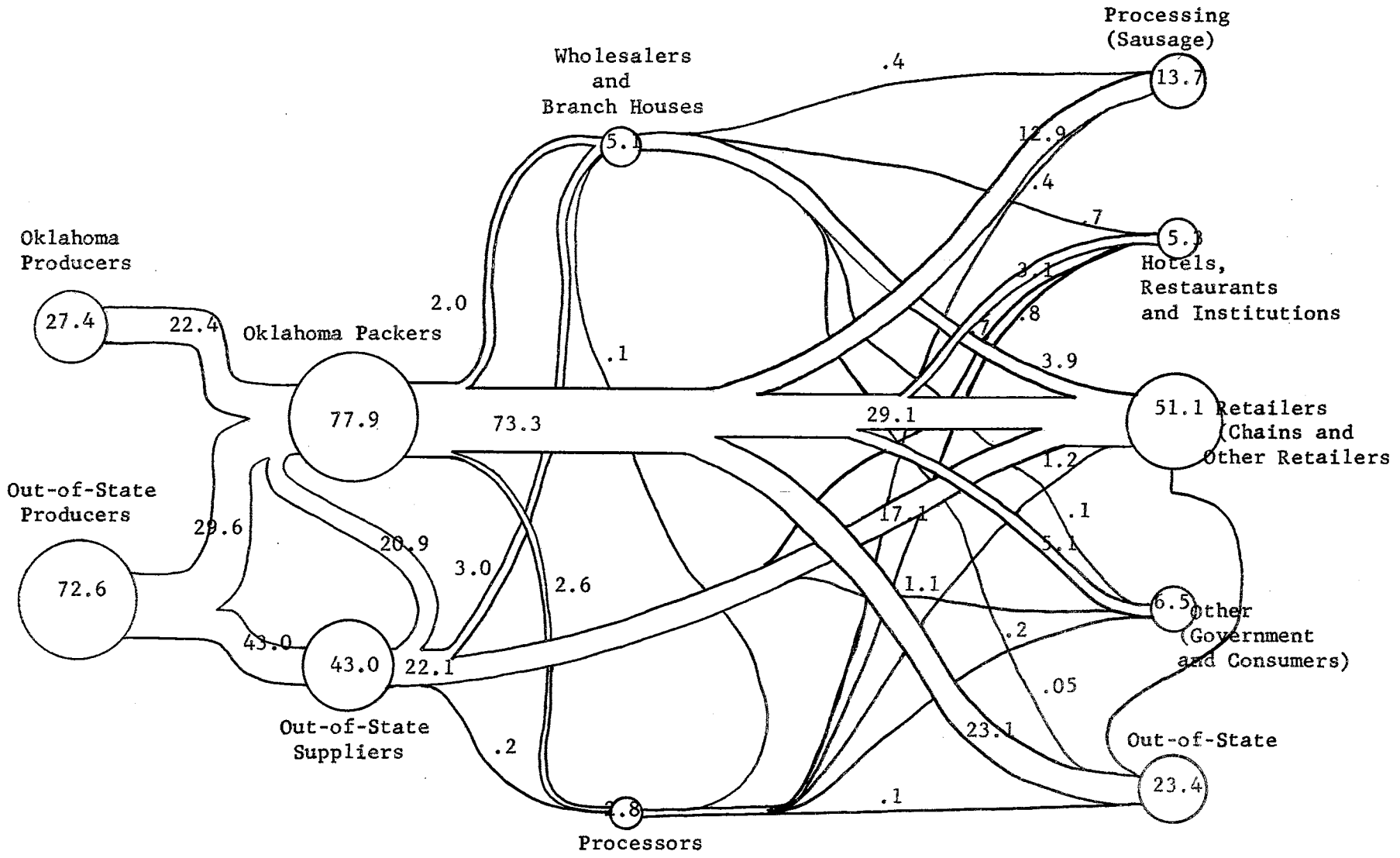

Figure 21. Market Structure and Distribution Channels for Pork in Oklahoma, 1959

comprised of beef from sources as follows: (1) purchases in live form either directly or through various livestock marketing agencies - from Oklahoma producers, 63.3 percent, (2) purchases in live form either directly or through various livestock marketing agencies from out-of-state producers, 13,5 percent, and (3) purchases of dressed beef from out-of-state meat suppliers, 4.6 percent.

Nonslaughtering meat distributors and processors in Oklahoma handled only 18.3 percent of the total volume with the remainder, 81.7 percent, moving directly from Oklahoma packers or out-of-state suppliers to final outlets, as indicated. Final outlets included sausage processing, 5.9 percent; dining establishments, 15 percent; retail chains and other grocery stores buying through owned or affiliated buying organizations, 15.8 percent; other retail grocery stores, 33.7 percent; federal, state, or local government agencies, 3 percent; consumers, 5.4 percent, and; shipments to out-of-state buyers, 21.2 percent.

Wholesalers and branch houses combined were supplied mainly by out-of-state sources. The bulk of their sales were divided, about evenly, between dining establishments and the smaller retail grocers.

Oklahoma packers were the principal suppliers of in-state processors. Processors, in turn, sold mainly to dining establishments. Packers also were the principal suppliers of each of the final outlets. A substantial portion, 20 percent, of the volume received by retailers, however, was provided directly by out-of-state suppliers.

Distribution Channels for Calf

Distribution channels for calf are similar in many respects to those indicated for beef. They differ, however, in several important aspects.

About 23.2 million pounds of calf meat was handled by Oklahoma packers and distributors in 1959. About 20 million pounds of this total was produced from slaughter in Oklahoma with the remainder, 3.2 million pounds provided by out-of-state suppliers. Insignificant quantities of calf meat are used in Oklahoma for processing. About 4 million pounds were exported from the state, leaving about 19.1 million pounds for consumption within the state. Packers sell larger percentages of their calf meat to consumers and retailers and smaller percentages to dining establishments. Wholesalers and branch houses, however, handled a relatively large portion, 19.4 percent, of the total volume of calf meat distributed. Purchases by wholesale distributors, branch houses and retailers accounted for most of the inshipments of calf and veal.

Distribution Channels for Pork

About 223 million pounds of pork were available in Oklahoma during 1959 for distribution. An estimated 147 million pounds were consumed in Oklahoma in the fresh or cured form, which means that a relatively large volume, 76 million pounds, was channelled to sausage processing or exported.

Oklahoma producers supplied only slightly more than one-fourth of the 223 million pounds distributed, or about 42 percent of the estimated Oklahoma consumption (Figure 21). Packers obtained another 30 percent of the total supply in the form of live hogs from out-of-state sources. In addition, they received another 21 percent in dressed form from out-of-state meat suppliers. About 22 percent came indirectly to wholesalers, branch houses, processors, retailers and others.

Intermediate nonslaughtering handlers are less important in the distribution of pork than of beef or calf. This is unusual since branch

processing houses and independent processors usually are significant factors in the market structure of deficit supply areas for pork. One source indicates that packer branches along provided 43 percent of the smoked and cured pork distributed during 1956 in the Los Angeles area.[14] Independent distributors also are highly important in the Northeast. The Oklahoma pattern again reflects the dominant interest of packers in the state in pork and in processing.

Surprisingly, more pork than beef was exported from Oklahoma during 1959. A relatively large volume also was channelled to sausage processing by packers and others. Of the supply going to retailers, 51 percent of the total, 27 percent was received by chains and other retailers through their central purchasing organizations.

Marketing Patterns of Oklahoma Packers

The preceding section provides the broad integrated pattern of meat distribution in Oklahoma. Additional details, along with descriptions of related marketing practices of packers are presented here.

Volume and Geographic Distribution of Purchases and Sales

Oklahoma packers handled and sold a total of about 351 million pounds of dressed meat in 1959. About 83 percent of the total, or 291 million pounds, was produced from slaughter with inshipments comprising the remaining 60 million pounds (Table XXIII). Inshipments consisted primarily of pork from the Corn Belt Region. Inshipments of carcass lamb, however, represented more than 70 percent of the total volume of sheep and lamb

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[14] Raymond A. Dietrich and Willard F. Williams, Meat Distribution in the Los Angeles Area, Marketing Research Report No. 347, Agricultural Marketing Service, U. S. Department of Agriculture, July, 1959, pp. 46-47.

TABLE XXIII

VOLUME AND DISTRIBUTION OF MEAT SALES BY OKLAHOMA PACKERS, BY GEOGRAPHIC AREA, BY KINDS OF MEATS, 1959

	Beef	Calf and Veal	Lamb and Mutton	Fresh Pork	Smoked and Cured Pork	Sausage, Variety and Others	All Meat
				1,000 Pounds			
Supply of Meat:							
From Slaughter	143,518	20,039	340	126,998			290,895
Inshipments	8,571	123	849	40,473	6,073	4,286	60,375
Total Supply Before Processing	152,089	20,162	1,189	167,471	6,073	4,286	351,270
Total Supply After Processing (Sales)	145,302	20,075	1,189	76,164	68,600	39,940	351,270
Distribution of Sales to					Percent		
Oklahoma	76.8	79.6	57.3	65.0	63.5	78.1	71.5
Texas	7.2	15.1	32.3	31.3	32.2	12.4	18.5
Other States	16.0	5.3	10.4	3.7	4.3	9.5	10.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sales Distribution in Oklahoma:					Percent		
Oklahoma City	25.7	17.6	19.2	26.2	27.5	24.0	
Tulsa	17.1	12.5	22.1	13.7	14.3	18.7	
Other Oklahoma	57.2	69.9	58.7	60.1	58.2	57.3	
Total	100.0	100.0	100.0	100.0	100.0	100.0	

[a]Partly from slaughter and partly from inshipments of other meats.

handled. Geographic origins of livestock slaughtered are presented in Table XXIV. Except for hogs, Oklahoma and contiguous states provided the bulk of the supply.

Relatively high percentages of the lamb and pork handled by Oklahoma meat packers were exported. Texas, in these instances, was the principal receiving state. Additional small quantities of meat were distributed in Arkansas and Kansas. Beef was a principal exception to these general statements. Most of the beef exported consisted of cow meat which was shipped, usually in carcass form, to North Central or Northeastern regional locations for further processing.

TABLE XXIV

GEOGRAPHIC ORIGIN OF LIVESTOCK SLAUGHTERED BY OKLAHOMA PACKERS, BY SPECIES OF LIVESTOCK, 1959

	Origin				
Species	Texas	Oklahoma	Kansas	Other States	Total
			Percent		
Cattle:					
Heifers and Steers	1.6	78.9	9.7	9.8	100.0
Cows and Bulls	5.0	88.5	5.8	.7	100.0
Calves and Vealers	1.0	86.8	6.9	5.3	100.0
Sheep and Lambs	a	98.5	1.5	a	100.0
Hogs	a	48.0	8.6	43.4	100.0

[a]Less than .05 percent.

Within Oklahoma, meat supplies from packers were distributed geographically as indicated in Table XXV. With one major exception, more than 40 percent of these supplies went to the two largest cities, Oklahoma City

TABLE XXV

DISTRIBUTION OF SALES IN TEXAS AND OKLAHOMA, BY OKLAHOMA PACKERS, BY KINDS OF MEATS, 1959

Kinds of Meat	Fresh Meat				Smoked and Cured Pork	Sausage, Variety and Others
	Beef	Lamb and Veal	Lamb and Mutton	Fresh Pork		
Sales Distribution in Texas:						
Dallas-Ft. Worth	0	0	0	0	0	0
San Antonio	19.5	5.0	14.9	3.0	3.0	1.0
Houston	39.0	5.0	65.2	7.0	7.0	2.0
Other Texas	41.5	90.0	19.9	90.0	90.0	97.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Sales Distribution in Oklahoma:						
Oklahoma City	25.7	17.6	19.2	26.2	27.5	24.0
Tulsa	17.1	12.5	22.1	13.7	14.3	18.7
Other Oklahoma	57.2	69.9	58.7	60.1	58.2	57.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

and Tulsa. Most of the Oklahoma packer sales in Texas were received in Houston and San Antonio.

Types of Markets Used

Central markets are the most important source of Oklahoma packers for all types of slaughter livestock. Well over 50 percent of all livestock slaughtered in 1959 was purchased through central markets. A larger percentage of the cows and bulls and sheep and lambs are supplied packers by these markets than the other classes of livestock. Auctions,

relatively, are more important as a source of calves and vealers and heifers and steers than of other classes, while country dealers rank second to terminals as a source of hogs.

Terminals also are the chief out-of-state source of slaughter livestock for Oklahoma packers. Both auctions and terminals appear relatively more important as out-of-state sources because country buying, either directly from producers or through dealers, is less important in out-of-state transactions. It is significant that 68 percent of the calves and vealers brought into the state for slaughter by packers was purchased at livestock auctions.

Grades of Livestock and Meat Handled

Grades of beef and calf slaughtered and of beef, calf, and lamb purchased in dressed form were estimated by Oklahoma packers in the meat distribution survey. The U. S. grading standards were used throughout as the basis of quality reference.

Most of the steer and heifer beef slaughtered in Oklahoma qualifies for the "Good" grade label. In contrast, most of the dressed beef purchases by Oklahoma packers, consisting mainly of inshipments, is "Choice" in quality. The Standard and Good grades account for nearly all of the calf either slaughtered or purchased by packers. Under present grading standards nearly all lamb qualifies for Prime or Choice. No quality data were obtained on pork.

Livestock Buying Arrangements

The cash basis of purchase is a long established tradition in the livestock industry. Other basis, however, are being used more frequently.

The use of custom slaughtering arrangements is on the increase. This practice had its genesis in arrangements between packers and producers. Livestock producers not desiring to bother with slaughtering on the farm for home consumption frequently offered the packer the animal hide and a small cash payment for his slaughtering service. Packers willingly complied in order to retain the good will of their producer suppliers. Private individuals, wholesale meat distributors, processors, and, in some instances, retailers and producers frequently produce or buy livestock (some may have them custom fed) and arrange for custom slaughter. Specialized custom slaughterers, accordingly, have developed in some areas. There are only one or two specialized firms in Oklahoma and others do some custom slaughtering. This arrangement, therefore, is involved in small but significant percentages of all classes of livestock slaughtered in Oklahoma (Table XXVI).

TABLE XXVI

OKLAHOMA PACKERS: PRUCHASE OR SLAUGHTERING ARRANGEMENT OF LIVESTOCK PURCHASED, BY SPECIES, 1959

Purchase or Slaughtering Arrangement	Cattle			Sheep and Lamb	Hogs
	Heifers and Steers	Cows and Bulls	Calves and Vealers		
			Percent		
Cash	85.3	89.6	89.2	92.7	93.9
Grade and Weight	3.1	.1	.2	0	0
Contract[a]	.2	0	c	0	.1
Others[b]	11.4	10.3	10.6	7.3	6.0
Total	100.0	100.0	100.0	100.0	100.0

[a]Thirty days or more.

[b]Primarily custom slaughtering.

[c]Less than .05 percent.

Custom slaughtering offers a number of advantages to packers. It permits them to concentrate on the slaughtering operation. It reduces the volume of operating capital required. Finally, it permits the packer to operate consistently at levels nearer capacity than other alternative methods.

The grade and weight basis of selling also is on the increase. This arrangement accounts for about three percent of the steer and heifer slaughter in Oklahoma. Consignment selling to pakcers is not practiced in Oklahoma.

Form of Meat Purchased and Sold

More than 85 percent of the dressed beef purchased by Oklahoma packers in 1959 was in the form of carcass or sides. Although some firms preferred to purchase quarters, most of the remainder was bought in smaller wholesale cuts. Carcass or sides was the most common form of veal and mutton purchased also. Less than one percent of the veal was purchased in wholesale cuts. Fresh pork, on the other hand, was primarily purchased as wholesale cuts. Only 16 percent was purchased in carcass or side form. Even this small percentage is unusually high as pork, traditionally is disassembled at the original packing plant. Higher percentages of the meat produced from slaughter and purchased by packers are sold as wholesale or retail cuts. The degree of disassembly practiced by Oklahoma packers is indicated in the fact that 36 percent of the beef, 25 percent of the veal, 50 percent of the mutton, and 94 percent of the pork was sold as wholesale or retail cuts in 1959.

Carcass Grading Practices of Packers

Relatively small percentages of the meat produced from slaughter in Oklahoma is officially grade marked. Although Oklahoma packers reported that relatively high percentages of the calf and lamb sold were federally graded, other considerations suggest that these are biased upward. Data obtained from the U. S. Grading Service indicate that no more than 17.8 percent of the beef and 4.8 percent of the calf slaughtered in Oklahoma was graded by official U. S. graders. Reported average percentages of beef, calf and lamb sold under packer brands also may be biased upward (Table XXVII). The bulk of the meat, except "Other Pork", undoubtedly was sold without an identifying grade or brand mark. Most of the cured and smoked pork, on the other hand, probably was branded.

Nationally, about 50 percent of the beef, representing 80 percent or more of the steer-heifer beef, 17 percent of the calf and 35 percent of the sheep and lamb slaughtered is officially graded.

Marketing Practices of Wholesale Distributors and Processors

Nonslaughtering meat distributors and processors in Oklahoma handled nearly 60 million pounds of meat in 1959. Fresh beef, smoked and cured pork and sausage were most popular among these distributors. They imported nearly 24 million pounds of meat during the year consisting mainly of beef and pork. Exports of these distributors were much smaller, less than five million pounds.

With inshipments representing a sizeable portion of total volume and many dining establishments as customers, the quality of meat handled by wholesalers and branch houses is relatively high. Sample respondents

TABLE XXVII

SYSTEM OF GRADING OR MARKETING USED BY OKLAHOMA PACKERS; PERCENTAGE DISTRIBUTIONS BY KINDS OF MEATS, 1959

System of Grading or Marking	Fresh Meat				
	Beef[a]	Calf[a] and Veal	Lamb[a] and Mutton	Fresh[b] Pork	Other Pork[b, c]
	Percent				
U. S. Graded[d]	26.5	39.2	57.5	0	0
Packer Branded	26.5	24.0	37.7	.7	87.4
U. S. Graded and Packer Branded	0	0	0	0	0
Not Graded or Branded	47.0	36.8	4.8	99.3	12.6
Total	100.0	100.0	100.0	100.0	100.0

[a] Represents total slaughter and purchases of dressed meat.

[b] Represents sales.

[c] Includes smoked and cured pork and sausage, variety and other meats.

[d] Data on extent of federal grading may be seriously biased upward. Data obtained from the Grading Service of the U. S. Department of Agriculture indicate that only about 17.8 percent of the beef and 4.8 percent of the calf slaughtered in Oklahoma during 1960 was officially graded in Oklahoma. Inshipments, consisting principally of graded marked meats, undoubtedly increased these percentages. Reported percentages, nevertheless, appear high.

indicated that 45 percent of the total beef sold would quality for "Choice". They also handled a relatively high percentage of the lower quality cow beef. Most of this, however, was either used in processing by the branch houses or sold to retailers or dining establishments for hamburger. The higher qualities of beef and calf handled by processors was sold fresh. Much of the remainder was processed.

Respondent estimates of the volume of federally graded meat handled appear to be biased upward. Fresh meat distributors, however, probably did handle higher percentages of federally graded marked meat than did Oklahoma packers.

CHAPTER VI

EVALUATION OF FACTORS AFFECTING PRODUCTION AND MARKETING POTENTIALS

Many factors must be taken into consideration in evaluating production and marketing potentials of an industry. Basically, potentials for growth and development depend upon the competitive position of the industry relative to other industries and of the area in which it is located relative to other areas. Competitive position depends heavily upon location, relative costs in production and marketing, and relative prices. These, in turn, depend upon a wide variety of factors. For Oklahoma's livestock and meat industry, these factors include: (1) availability of pasture, feed grain and other necessary production resources and net costs of these resources, (2) effects of weather, size of operation, concentration of production, management, levels of feed conversion efficiency achieved and effects of other factors on costs of production and marketing, (3) population and per capita consumption potentials within the Southern Plains region, (4) volume potentials and costs associated with the shipment of livestock from the state for feeding or slaughter elsewhere, (5) adequacy and efficiency of livestock marketing agencies within the state and the general area, (6) the structure of the meat packing, processing, and distribution segments of the industry within the state or region together with market potentials and costs of shipping dressed meat products out of the area for consumption elsewhere, and (7) extent to which relative costs, prices and market structure affect shipments of dressed meat products

into Oklahoma from other areas. Although the importance of factors affecting production costs and efficiency are recognized, this discussion is devoted primarily to the influence of non-farm factors on production and marketing potentials. Even so, data are inadequate at this time for a thorough analysis of all relevant considerations.

General Considerations

Diverse trends are indicated by a review of data and information presented earlier. The state is well supplied with basic resources needed for livestock production. Large acreages of native grass pasture, additional large quantities of wheat pasture and hay, a relatively large and growing supply of feed grain, generally adequate supplies of water, and a favorable climate make Oklahoma one of the nation's formost livestock states. Production and marketing considerations especially favor the cow-calf type of operation. The state is well located with respect to the principal cattle feeding areas of the nation. In addition, the state is well supplied with reasonably efficient livestock marketing agencies and adequate market outlets for feeder cattle are available.

Oklahoma's competitive situation with respect to other classes, species, or types of livestock appears less favorable. Even within the feeder cattle sector, changes, in accordance with changes in demand and marketing patterns, are underway. With the gradual shift of demand to younger, lighter weight feeders, the practice of grazing feeders for a year or so prior to sale is disappearing. Two primary markets for cattle, accordingly, are emerging. These are the feeder calf market and the fed beef market. In addition, of course, replacement and slaughter markets for cows and bulls remain strong. As these three markets develop and become stronger,

relatively, additional adjustment in Oklahoma beef cattle production patterns will be required. Eventually, it may become difficult to sell feeder steers in excess of 500 pounds. Outlets for heifers in excess of desired feeder weight may become limited to the replacement market.

Despite cyclical variations, which probably will remain with the livestock industry far into the future, beef cattle inventories in Oklahoma have been increasing at the rate of about 47,000 head per year. It probably will maintain this rate during the next 10 years. Inventories of cows and calves have been rising most rapidly. Inventories of dairy cattle have trended downward in Oklahoma as elsewhere.

Hog numbers on farms in Oklahoma dropped sharply during 1951-54 and have risen rather solowly since that time. Inventories of sheep and lamb trended upward during 1947-60, but numbers produced on farms in Oklahoma remain small. A considerable number of sheep usually are shipped into the state during the fall period to utilize abundant grass and wheat pastures. These, however, usually are again shipped out of state for slaughter.

Production of cattle and calves in Oklahoma for slaughter rose during 1947-60 with largest increases indicated for steers. With a sharp uptrend in cow inventories, marketings of cows remained relatively constant during the period.

The Oklahoma production of beef for slaughter rose more sharply during 1947-60 than did commercial slaughter. This means that in both absolute and relative terms, outshipments of slaughter cattle have increased. Commercial slaughter of steers and heifers in Oklahoma appears to have increased to some extent during 1947-60, but puroduction in Oklahoma of

steers and heifers for slaughter increased even more. Commercial slaughter of cows, bulls and calves, however, trended downward. Slaughter of hogs and sheep dropped even more sharply.

In the face of a gradually rising population and increasing real per capita incomes, these trends, in themselves, suggest that Oklahoma's competitive situation with respect to many particular classes of livestock and meat is gradually deteriorating. This finding is reinforced by data for 1959 presented earlier on the volume of inshipments for that year of beef, pork, calf and lamb. Figures 22 and 23 also are revealing. Consumption of all beef in Oklahoma has been rising relative to the total volume of beef slaughter in the state. Net outshipments of calf meat have dropped to negligible proportions. Cow slaughter has not risen relative to consumption and facilities for substantially increasing outshipments of cow beef are non-existent.

In the retail grocery sector of Oklahoma's economy, numbers of stores have dropped sharply; average size of stores has increased, the number of supermarkets and food chain stores have risen absolutely and relatively, and an increasing number of stores are forming or joining cooperative or voluntary group buying organizations. Production and sales patterns and practices of Oklahoma meat marketing firms are oriented to a type of outlet that is rapidly disappearing. The larger integrated retailer is interested in a dependable supply of standarized and uniform quality product that can be purchased along with specified services at competitive prices. This usually requires a relatively large, specialized supplier located in an area where raw farm product materials of uniform quality can be obtained in volume at minimum cost. Oklahoma's population is too small

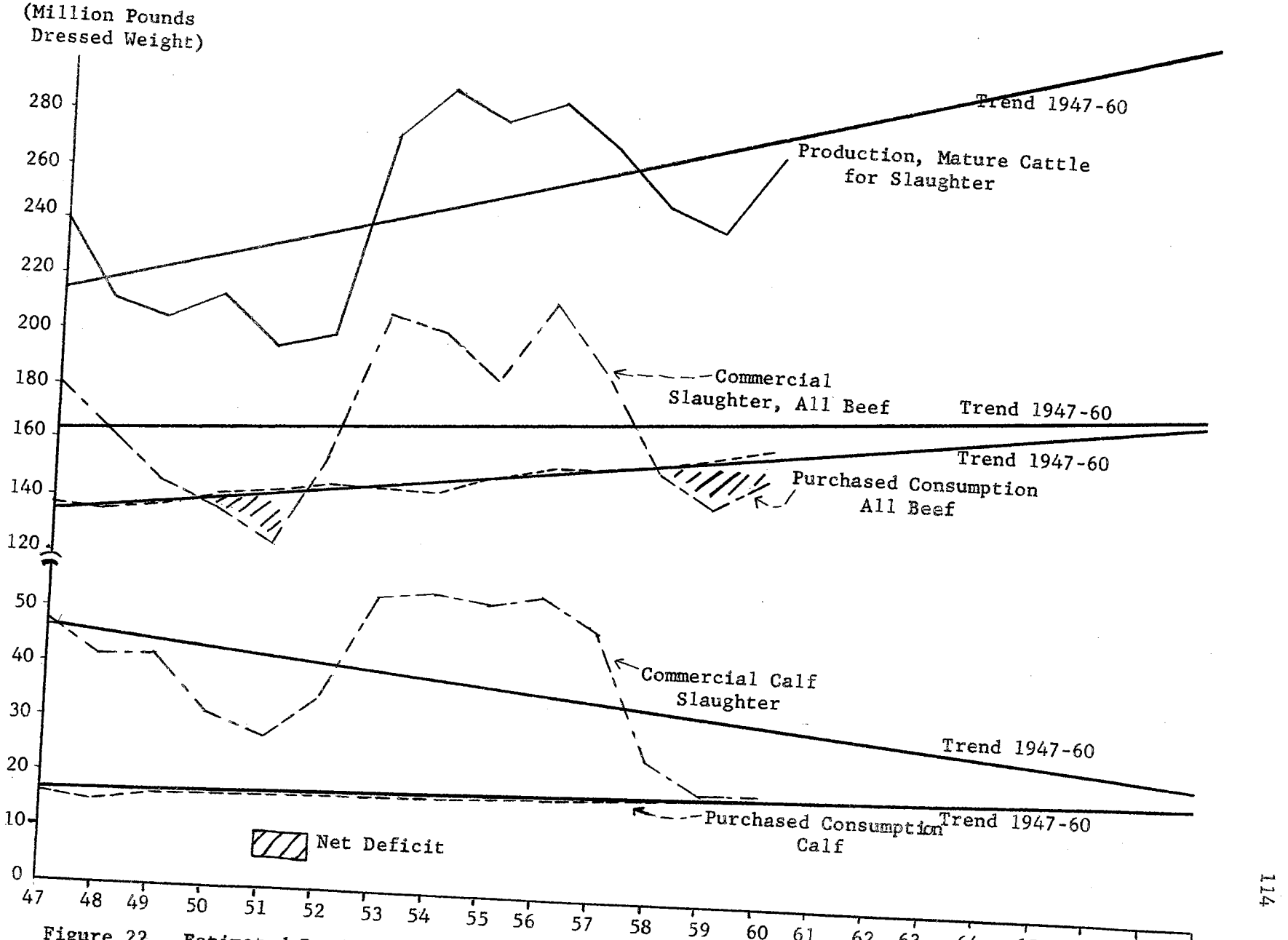

Figure 22. Estimated Production for Slaughter, Commercial Slaughter and Purchased Consumption 1947-60 and Trends, Mature Beef and Calves, Oklahoma

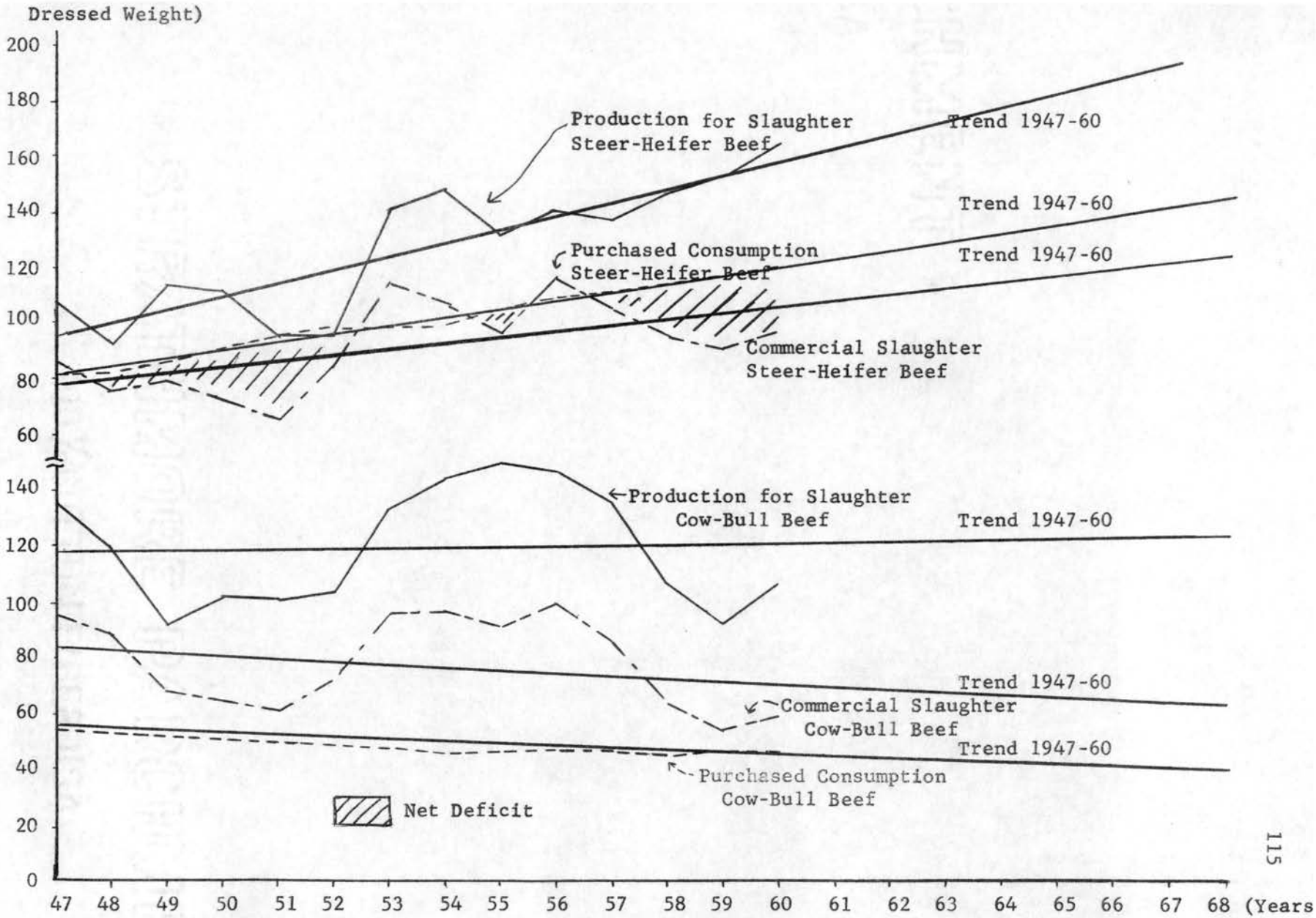

Figure 23. Estimated Production for Slaughter, Commercial Slaughter and Purchased Consumption, 1947-60 and Trends, Steer-Heifers and Cow-Bull Beef, Oklahoma

and population growth potentials are too small for the state, by itself, to support such suppliers.

At present, production of sheep and hogs as well as fed cattle in Oklahoma appear too small, scattered and variable to sustain specialized large volume slaughtering and processing plants. These considerations indicate that organization and structure of Oklahoma production and marketing systems for livestock and meat have not fully adjusted to structural changes at the consumer and retailer levels and to other forces. They emphasize the need for simultaneous development and growth of the production and marketing sectors of Oklahoma's livestock and meat economy. In the face of revolutionary changes elsewhere in meat packing, processing, and distribution, few, if any, substantial changes have taken place in the organization or structure of Oklahoma's meat marketing sector in recent decades.

Sheep and Lambs

The modern low-cost lamb slaughtering plant requires a minimum of 1,000 to 2,000 head per day. A plant such as this operating at 2,000 head per day would have provided Oklahoma's 1960 slaughter volume in two days. At this rate, Oklahoma's total marketings of lambs would have been slaughtered in 79 days. These marketings were distributed through the year in such a manner that a slaughter volume of 2,000 head per day could not have been sustained for more than a few weeks at a time. In addition, it would have been necessary to ship most of the dressed production to California or the Northeast for consumption.

The nearest larger volume lamb slaughtering plants are located at Fort Worth, Kansas City and Denver. Shipping to Fort Worth means moving lambs

out of Oklahoma in a direction opposite to the normal flow of dressed lamb to principal areas of consumption. This leaves Oklahoma lamb producers with relatively few slaughter outlets for lamb. Considering Oklahoma's location with respect to both principal areas of production and principal areas of consumption, little improvement in Oklahoma's competitive situation for lamb is indicated.

Beef and Veal

Calves

As cattle are produced widely throughout the United States, slaughter calves are readily available in most areas. The dairy industry usually oriented toward consumption centers provides the principal source of vealer calves. In addition, shrink on calves in either live or dressed form and loss of desirable color in calf meat when shipped long distances are important factors. To preserve weight and "bloom" most calf carcasses were shipped, until recent years, with the hide intact. The hide was removed at the retail store.

These considerations suggest that production of slaughter calves and calf slaughter must be limited largely to the volume required for local consumption. In an area such as Oklahoma, located far from principal centers of consumption, this is particularly true.

Consumption and marketing patterns for calf, however, are changing. Numbers of dairy cows on farms are dropping steadily which means that the beef industry must provide increasing percentages of total calf slaughter and consumption. In addition, demand for heavier, more mature calf appears to be growing in some areas relative to demand for veal. Per capita consumption of calf in the United States, however, has dropped from about

10 pounds in 1954 to six pounds in 1960. Little improvement in Oklahoma's interregional competitive situation for slaughter calf appears in prospect for the near future.

Cows and Bulls

Reductions in numbers of dairy animals on farms also affect supplies of beef available for processing because virtually all dairy animals eventually must become part of the dressed meat supply. At the same time, consumption of hamburger, sausage and other processed meat products in which beef is used is increasing steadily throughout the nation. Relative increases in prices of slaughter cows and bulls and beef for processing have resulted. The United States imports of all types of red meat for processing also increased. Imports of beef and calf, mainly for processing, rose from an average of about 235 million pounds annually during 1953-56 to more than one billion in 1959. In one way or another, however, imports of beef and other meats are held to insignificant portions of the total United States' supply. In 1960, imports of beef and veal dropped to 775 million pounds.

Oklahoma is one of the nation's leading states in numbers of cows on farms and ranches. On the average, a substantial number of these must be replaced each year. Relatively low replacement rates during the latter part of the period 1947-60 resulted in some decline in cow marketings. Despite this fact, cow-bull marketings, in terms of dressed weights, approximated 220 million pounds annually; production for slaughter averaged 120 million pounds while Oklahoma consumption averaged 50 million pounds.

An active national market operates through meat packers, processors and brokers for processing types of beef. Accordingly, figures cited on

cow-bull production seem to offer some basis for further development and growth in Oklahoma of an industry segment devoted to the slaughter of cows and bulls and the distribution of processing type beef carcasses on a nationwide basis. Additional supplies of cows are readily available in nearby states. At present, however, several specialized firms of this nature operate in Arkansas, Kansas or the Southern Plains. In addition, available supplies of slaughter cows vary widely through beef inventory cycles. During 1947-60, Oklahoma marketings of cows varied from about 603 thousand head in 1955 to about 295 thousand in 1958.[1] Nevertheless, processing type beef slaughter potentials may deserve additional study.

Fed Beef

The long-term outlook for cattle feeding in the Southern Plains, neglecting effects of weather and other detailed considerations, is good.[2] Basic resources for continued increases in production are available. In addition, population increases, improvements in real incomes of consumers, and possibilities for shifts in present consumer tastes and preferences, likely will require substantial increases for the Southern Plains in available supplies of fed beef. In time, dependable and large volume markets outside the region possibly can be developed for dressed beef produced in Southern Plains feedlots.

Sufficient feed grain was produced in Oklahoma during 1960 to adequately supply the dairy, hog and poultry industries of the state and,

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[1] These are estimated figures based on a comprehensive balance sheet analysis.

[2] Future possibilities and potentials for fed beef production and marketing in Oklahoma are evaluated in more detail in Willard F. Williams and James McDowell, The Oklahoma Cattle Feeding Industry (in process).

in addition, maintain more than one-half million head of cattle on a fattening ration for at least 150 days.[3] This would be approximately 3.5 times the actual 1960 feedlot production in Oklahoma. However, it must be recognized that Oklahoma produces only about five percent of the grain sorghum supplied by Kansas, Oklahoma and Texas.

Total fresh dressed beef inshipments during 1959 are conservatively estimated for Oklahoma at about 51 million pounds and for Texas at about 95 million pounds. These quantities, consisting primarily of fed beef, were equivalent to 32 percent of total beef consumption in Oklahoma and 17 percent of total consumption in Texas. The Oklahoma inshipments were three-fourths as large as the dressed weight of total feedlot production in that state. In Texas, total beef inshipments were about half as large as the dressed weight of total feedlot production. These data suggest that potentials arising from possibilities of replacing inshipments are greater for the immediate future than those which may arise from population and income increases within the region.

Evaluation of several more detailed considerations, however, leads to considerably less optimism with respect to potentials. The vagaries of weather and other factors for instance, always have made feed grain production extremely variable from year to year in Oklahoma. The state's 1956 feed grain crop, for instance, would have fallen 200,000 tons short, on the

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[3]Determined as follows: Poultry = 6,711,000 broilers at 4.4 lbs. grain, 3,400,000 laying hens at 90 lbs. grain, 1,265,000 turkeys at 40 lbs. grain + 10 percent = 22,370 tons grain. Hogs = 7,000,000 market hogs at 800 lbs. grain each = 280,000,000. Dairy = 1,421,000 lbs. milk at 1 lb. grain = 2 lbs. milk = 355,280 tons grain. Total = 847,620 tons. Feed grain production in 1960 = 1,476,000 tons leaving 628,380 tons which at 15 lbs per day per head would feed 558,560 head of cattle for 150 days.

basis indicated earlier, of meeting the 1960 requirements of Oklahoma's animal industries other than fed beef. High moisture content and low storability of much of the sorghum grain produced in the more humid areas of the state is another chronic problem. This problem together with attrative freight rates on feed grain shipped south or west cause much of Oklahoma's production of grain sorghum to leave the state soon after harvest.

Available data indicate that per capita consumption of beef is low in the Southern Plains relative to the United States average. So much calf and "baby beef" is consumed, in Texas particularly, that mature beef consumption probably is lower in the Southern Plains region than in any other area of the nation. Fed beef consumption also is relatively low. The demand within the region principally is for heavier calf or light weight Good grade steer or heifer beef that if necessary can be produced on high quality pasture, particularly if some concentrate supplement is made available.

Feedlot production in Oklahoma has been rising faster than consumption of fed beef in the state. This is illustrated in Figure 24. As indicated, total production and consumption of fed beef in Oklahoma converged in 1961. This means that substantial increases in net outshipments of live or dressed fed beef will be required if production continues to rise at the present rate or even at a sharply reduced rate.

Figures 25 and 26 indicate that Texas and the Southern Plains both are rapidly approaching the situation described for Oklahoma. Although large animal deficits of fed beef existed for Texas during 1953-58, production has been rising so rapidly that it will equal consumption in 1962 if production continues to rise in Texas at the 1959-61 rate. The 1955-61

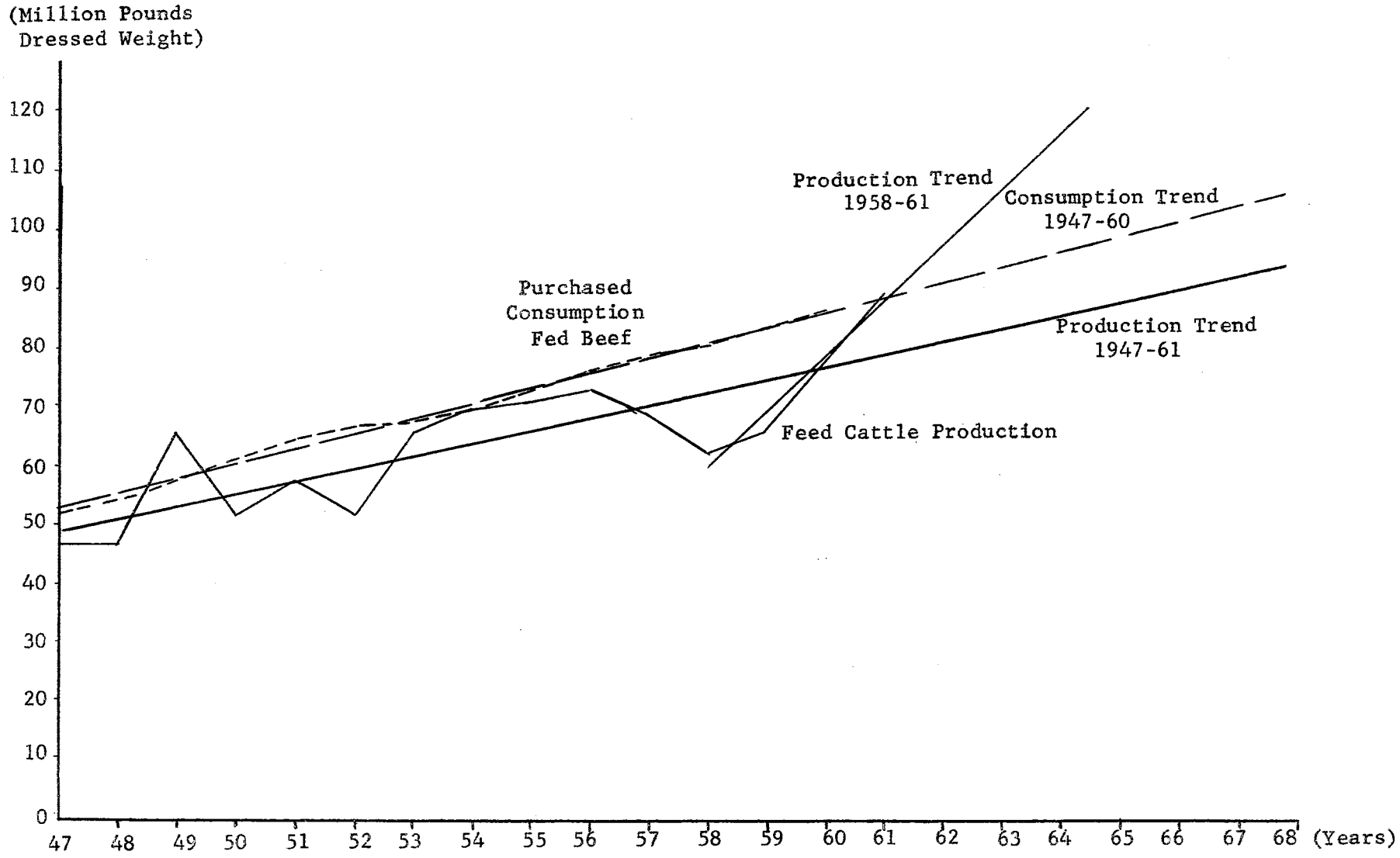

Figure 24. Estimates of Production and Purchased Consumption of Fed Beef, 1947-60 and Trends, Oklahoma

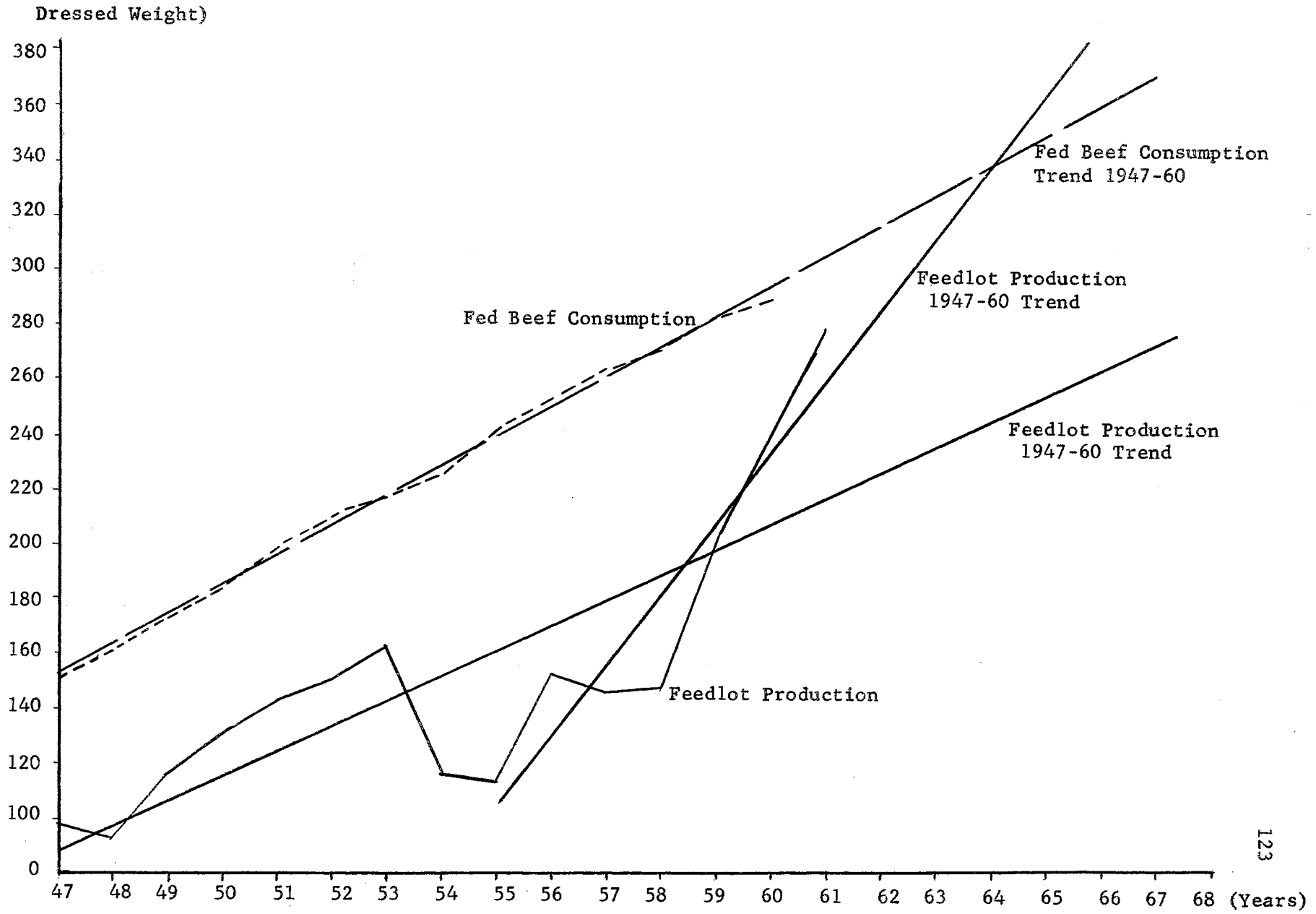

Figure 25. Production and Purchased Consumption of Fed Beef, 1947-60 and Trends, Texas

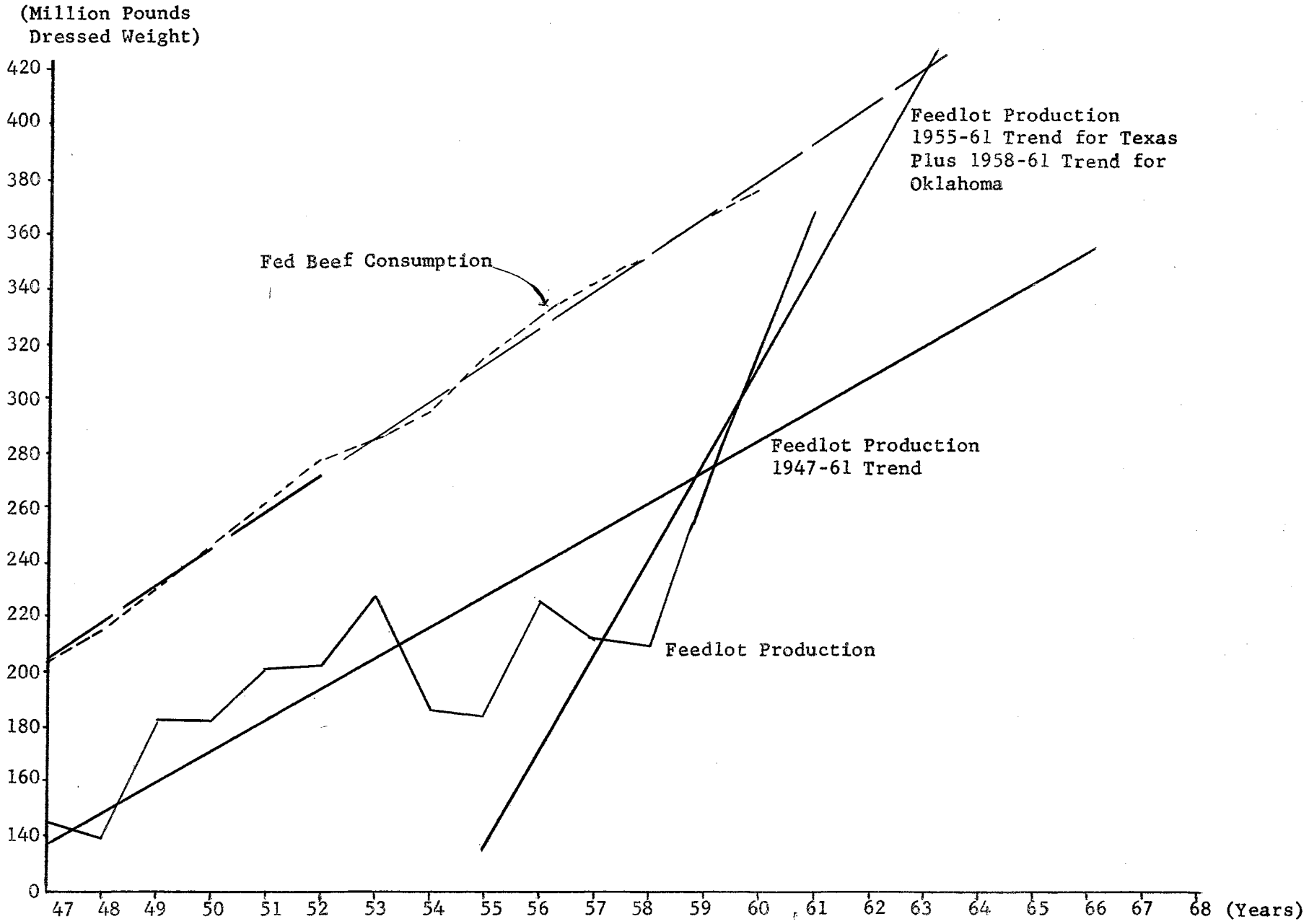

Figure 26. Estimates of Production and Consumption of Fed Beef, 1947-60 and Trends, Southern Plains

trend would equate production with consumption in 1964. Prospects for the Southern Plains simply reflect a summation of the conditions described for Oklahoma and Texas separately.

Present or near future convergence of total production and total consumption may not be particularly important or serious, depending upon effects of increased production upon:

1. Inshipments of fed dressed beef.
2. Outshipments of live or dressed fed beef.

In addition, the consumption figures and trends must be considered rough estimates.

These considerations are evaluated further and simultaneously in Appendix B, Tables V and VI.

The outcome of several different combinations of assumptions and alternatives are presented in these tables. Two levels of fed beef consumption for each area are considered for each state. Low level consumption consists of an extension of the 1947-61 trend. The high level consumption adopts the same trend at a level 10 percent higher than the 1961 base. Two rates of increase in feedlot production beyond 1961 also are considered. High level estimates were made for Oklahoma utilizing the 1958-61 trend; for Texas the 1955-61 trend is projected from the 1961 base. The low level production rate estimates are derived by averaging the high rate estimates and estimates based upon the 1947-61 trend in production. These data provide four separate sets of postulated conditions for each area.

Within each of the four sets of conditions, nine combinations of alternatives were postulated with respect to future inshipments and outshipments of live or dressed fed beef. It was assumed, alternatively,

that outshipment (1) dropped immediately to zero, (2) continued at the constant volume found for 1960, or (3) increased such that they represented the constant percentage of feedlot production found for 1960. Since survey data were not available on Texas, a figure of 20 percent for 1960 was arbitrarily selected to represent outshipments from that state. This is less than half the percentage figure reported by the Oklahoma survey, but it represents a much larger volume of outshipments. Outshipment alternatives, accordingly, probably are liberal.

It was assumed, alternatively, that inshipments could (1) drop to zero as required by increases in local feedlot marketings, (2) continue unchanged at the constant volume revealed by the surveys for 1959, or (3) increase at a constant percentage of total beef consumption consistent with survey estimates for 1959. Inshipments of dressed fed beef were estimated conservatively and inshipments of fed beef in live form were neglected entirely. In each situation, therefore, the estimates are purposely biased to increase or favor feedlot potentials.

Findings may be interpreted by proceeding in the manner outlined below for Oklahoma:

Situation 1. (High rate of production increase and low level consumption.)

Considering projected levels of production and consumption, Oklahoma feedlot production was about equal to total fed beef consumption in the state in 1961. This is the least favorable of the four production-consumption situations.

a. If inshipments drop as production increases and outshipments continue at the 1960 volume, Oklahoma consumers could absorb production increases at the 1958-61 rate of growth until 1966.

At that time, feedlot production will have expanded to 134 million dressed pounds or 268,000 head. If outshipments expand at a constant percentage of production, Oklahoma consumers could absorb production increases at the 1958-61 rate of growth until 1975. At that time, feedlot marketings would have risen to 222 million dressed pounds or 444,000 head.

b. If inshipments continue at the 1959 volume and outshipments drop significantly, producers will be faced with a distressed situation. But, if outshipments remain at the 1960 level, Oklahoma consumers could absorb production increases at the 1959-61 rate of growth until about 1962. A constant percentage of outshipments would permit production to expand at the 1958-61 volume until 1964.

c. Inshipments at a constant percentage of consumption would halt production increases at the 1958-61 rate of growth about one year earlier than a constant 1960 volume of inshipments.

Situation 2. (High level production and consumption.)

If fed beef consumption is 10 percent higher than estimated, production could expand at the 1958-61 rate of growth for longer periods of time, depending upon imports and exports.

a. Total feedlot production would not become equivalent to fed beef consumption in the state unitl 1962.

b. Under the most favorable circumstances in which inshipments dropped, production rose and outshipments remained a constant percentage of production, production could expand at the 1958-61 rate until 1981. At that time, more than one-half million head of cattle would be marketed from Oklahoma feedlots.

c. Under less favorable circumstances in which inshipments continued at the 1959 volume, or at any higher level, production could not expand at the 1958-61 rate beyond 1961. A modification in this rate of growth probably would be required much sooner.

Situation 3. (Low rate of production increase, high level consumption.)

Low level consumption and production is another moderately favorable condition. At the low rate of increase in production, however, output could expand indefinitely if inshipments were to drop as production expanded and a constant percentage of outshipments was maintained.

Situation 4. (High level consumption, low rate of increase in production.)

This situation is more consistent than the alternatives with the aim of a long period of sustained growth in feedlot production. In this sense, it is the most favorable of the four.

It is clear that if outshipments cannot be increased and inshipments cannot be reduced, feedlot production cannot expand in Oklahoma even at the reduced rate of growth beyond 1964 or 1965. This assumes a 10 percent higher level of consumption than the estimate derived through application of the 1947-60 trend in consumption. At the lower level of consumption, production could not expand at the assumed rates beyond 1962, unless outshipments are increased or inshipments reduced.

Short term potentials for Texas producers are slightly better than those indicated for Oklahoma producers, but longer term Texas potentials fall short of those for Oklahoma. Higher projected rates of growth in feedlot marketings in Texas account for these differences. Texas feedlot production presently is lower relative to consumption in that state than is true for Oklahoma.

The longer term potentials for the Southern Plains as a whole are less favorable or encouraging than those for either Oklahoma or Texas considered separately. The reason is that adjustments for the relatively large movement of fed cattle from Oklahoma to pakcers in Texas sharply reduces aggregate outshipments of the two states. According to these findings, total feedlot marketings from Southern Plains feedlots cannot expand even at the lower average rate of growth beyond 1962 or 1963 unless inshipments are reduced or outshipments increased.

Several important generalizations emerge from these considerations. These may be summarized as follows:

1. Consumption of fed beef by the Southern Plains population alone clearly cannot sustain the present rate of growth in feedlot production and marketings beyond the immediate future unless inshipments drop sharply.
2. Inshipments cannot be reduced unless (a) every avenue for reducing costs of producing and marketing fed beef are explored and (b) sizes and types of fed beef are produced that meet the exacting requirements of consumers and the larger volume retailers in the region. The feedlot survey revealed indications that much of the fed beef produced in Oklahoma and Texas is too heavy and too well finished for many Southern regional meat packers, retailers and consumers.
3. With sufficiently large outshipments of live or dressed fed beef, production within the region could expand almost indefinitely. Live animal shipments for slaughter elsewhere probably can be relied upon to relieve conditions resulting from production temporarily in excess of local requirements. However, live

animal outshipments alone probably cannot be depended upon to sustain the present or even a sharply reduced rate of growth in production.

4. Substantial increases in outshipments of dressed fed beef, now virtually zero, would require significant changes in market structure. More large volume, federally inspected and specialized, fed beef slaughterers will be required in the Southern Plains, to (a) supply the large volume distributors and retailers with fed beef in the volume, according to the established specifications, at the cost required and (b) establish and successfully retain large volume accounts in markets outside the region. Establishment of large specialized interstate suppliers, of course, would require confidence in the future of the feeding industry in the Southern Plains, imagination, some risk, and considerable capital investment.

Hogs and Pork

Oklahoma's principal competitor in the production and marketing of hogs is the Corn Belt and other areas of the North Central region. This region accounts for 75 percent of the hogs on farms in the United States and for 83 percent of the total marketings. It enjoys a steadily rising percentage of total production. Production and slaughter in the Far West and the Northeast have declined sharply and shipments of dressed pork to these areas from the midwest have risen. Competitive advantages of the Corn Belt area in the production and marketing of hogs arise, primarily, from: (1) Concentration and uniformity of fairly large family size farms. (2) Abundant concentrate feed resources. (3) Economies of size or scale

in the production of hogs. (4) Lower average farm prices of hogs resulting from the heavy surplus situation of the area, which means that meat packers can buy hogs cheaper there than elsewhere. (5) The concentrated nature of production which reduces procurement costs of packers and other marketing agencies. (6) The numerous large-volume packing and processing plants in the area which enjoy advantages of size or scale and a number of alternatives available in the handling or processing of pork. (7) The volume that can be sold by Corn Belt packers on a carlot basis; and (8) A fairly rapid rate of technological innovation.

The larger midwestern packers enjoy several advantages in selling. They are advantageously located with respect to the nation's principal consuming centers in the Northeast. As prices rise in each direction from the Corn Belt, transportation costs on pork products are about offset by the higher prices. This means that packers in that area usually can sell competitively in any market in the nation. Many have well established brands and trade names. Top brands seem to have considerable appeal to consumers in markets where the larger packers become established. This provides them with advantages over local packers in dealing with retailers--particularly the larger retailers. In addition, top brands frequently can be sold at premium prices.

Midwestern pakcers are in position to differentiate their pork products and discriminate among areas on a type of product, brand or quality basis. They can design products, brands, or qualities to more nearly meet the peculiar tastes and requirements of particular areas. They can sell as much as possible of a particular product in their preferred or higher priced markets and design cheaper products for distribution in the lower priced areas. Also, some may be in position to protect their preferred

markets by dumping excess supplies of the product in markets such as the South or the West at or near cost. No information is available as to whether or not such practices actually are employed. Some Corn Belt packers, however, would have some incentive to sell some portion of their supply at cost in secondary markets. The practice would help maintain packing plant volume at a higher level and tend to reduce per unit packing and processing costs.

Oklahoma packers and processors do have some advantages. These arise, primarily, from (1) proximity to local consumer outlets, (2) an intimate knowledge of local tastes, preferences, and consumption requirements, (3) ability to design some products and services to meet local requirements of the many small retail outlets in the state, (4) nonunionization of most plants permitting greater flexibility in the use of labor, (5) a lower average level of wages, (6) use of much family labor in the smaller plants, and (7) some restrictions on interstate shippers arising from Federal inspection requirements.

To meet Federal inspection requirements a significantly larger capital investment sometimes is required. In addition, federally inspected packers must meet certain minimum quality requirements which sometimes increase costs. Their hams, bacon and other pumped items cannot be sold at finished weights in excess of original green weights. No such restrictions apply to nonfederally inspected Oklahoma packers. They can sell finished products at weights as much as 120 or 130 percent of the original weight. Assuming that the local plants can find outlets for such products this is a tremendous advantage. At $.40 per pound the additional pumping to 120 or 130 percent means $8 to $12 more per 100 pounds of pork sold.

Most of Oklahoma's present sources of competitive advantage in pork packing and processing likely will become less important in the future and may disappear entirely. The pumping restrictions on federally inspected pakcers are under heavy fire. Last year these restrictions were temporarily suspended. A bill in Congress this year would make virtually all packers subject to the federal inspection requirements. In addition, continued improvements in highways and transportation facilities continue to bring the outside competition closer to Oklahoma. In accordance with recent trends, transportation rates on dressed meat relative to rates applicable to slaughter livestock likely will fall. Labor unions are becoming a more important factor in Oklahoma meat packing and processing plants and family labor is becoming less important. Any mergers, consolidations, or plant construction which tended to increase average sizes and volumes of the plants in Oklahoma, would tend to hasten unionization, reduce flexibility in the use of labor, and increase labor costs. Finally, advantages that local packers have in selling to small retailers are rapidly disappearing for reasons mentioned earlier.

Immediately after World War II, Oklahoma apparently was in a deficit supply situation and found it necessary to import hogs for slaughter (Figure 27). At the same time, however, the state was a net exporter of dressed pork. Oklahoma marketings, however, were rising sharply and during 1949-51 local production replaced inshipments of live hogs. For a time it appeared that Oklahoma was an exporter of live hogs for slaughter. In 1952, production and marketins of hogs began to decline and in 1953 the drop was precipitous. By 1954 marketings had dropped to less than half of the 1951 volume. Slaughter also dropped sharply in 1953, but not so much as marketings resulting in a shift from an export basis on dressed

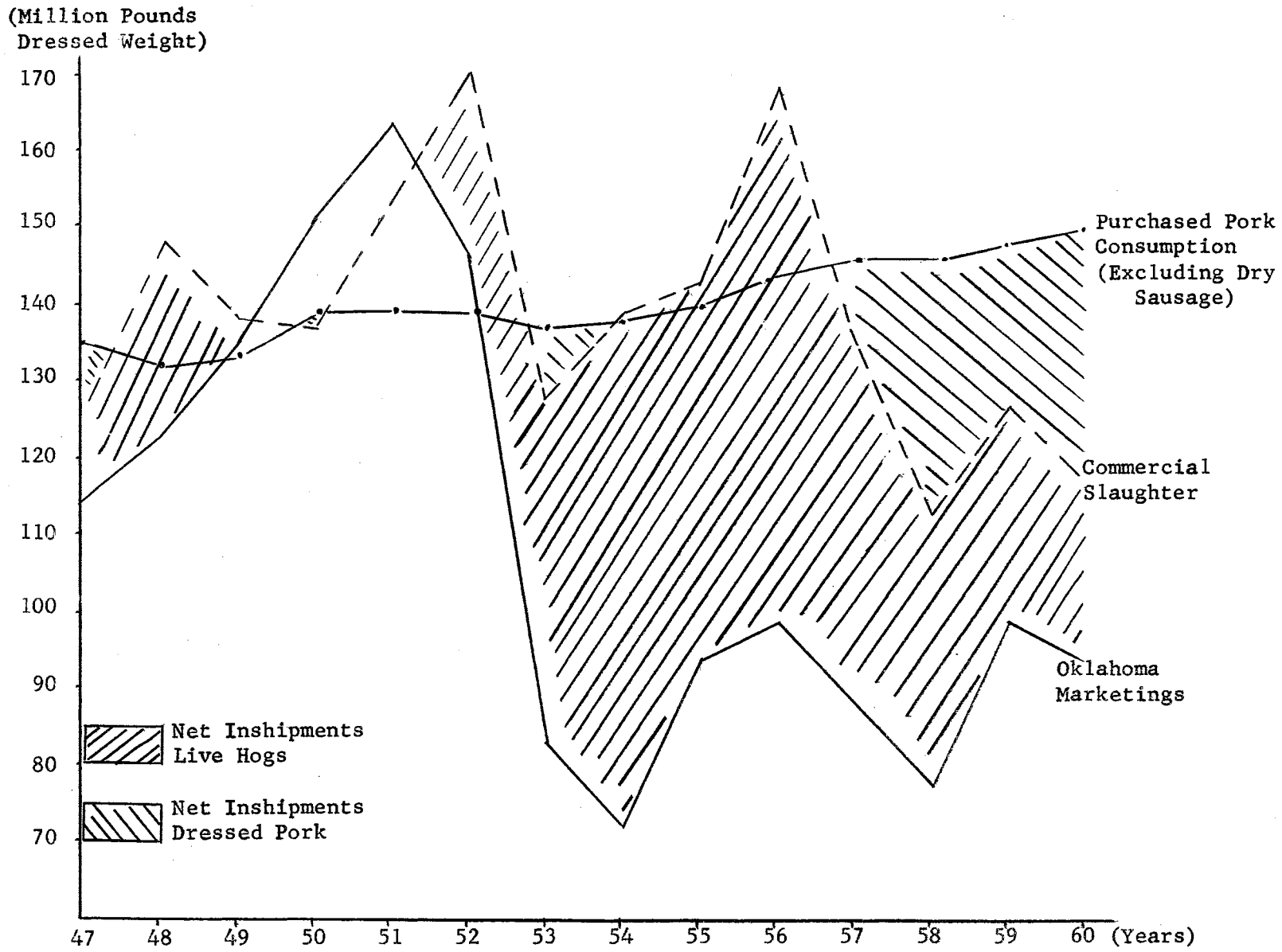

Figure 27. Purchased Consumption of Fresh and Smoked or Cured Pork, Hog Slaughter and Hog Marketings in Dressed Weight (Including Lard), Oklahoma, 1947-60

pork during 1950-52 to an import basis in 1953. But, then, slaughter again began to rise. This ushered in a period of exceptionally large imports of live hogs for slaughter. In 1956, imports of live hogs amounted to 70 million dressed pounds or about 470,000 hogs.

The sharp decline in slaughter beginning with 1957 corresponds with the time that Armour stopped slaughtering hogs in Oklahoma City. During 1956-58 net imports of live hogs for slaughter dropped sharply (Figure 27). The state shifted to a net import basis on dressed pork. These net inshipments have risen to sizeable proportions during recent years and have exceeded net inshipments of equivalent dressed quantities of live hogs. Net inshipments of about 50 million pounds are indicated for 1959. Total imports actually were considerably larger than this. Some portion of the slaughter, 14 percent in 1959, is channelled to sausage and as indicated earlier, 52 million pounds of dressed pork were exported from Oklahoma in 1959. This means that total imports of pork may have reached 96 million pounds that year. These data suggest that some increase in Oklahoma hog production could be absorbed within the state without difficulty. This assumes, however, that (1) packers would stop importing hogs as production rose, (2) imports of dressed pork could be displaced, and (3) the present level of outshipments could be maintained.

Texas apparently is a massive net importer of both live hogs and dressed pork (Figure 28). Net imports of live hogs into Texas are more than five times larger than those for Oklahoma. Texas inshipments of both live and dressed pork in 1960 were nearly three times larger than Oklahoma's total consumption and more than 4 1/2 times larger than total production in Oklahoma. Hog production could double in Oklahoma if the state could provide as much as 20 percent of the net shipments into Texas.

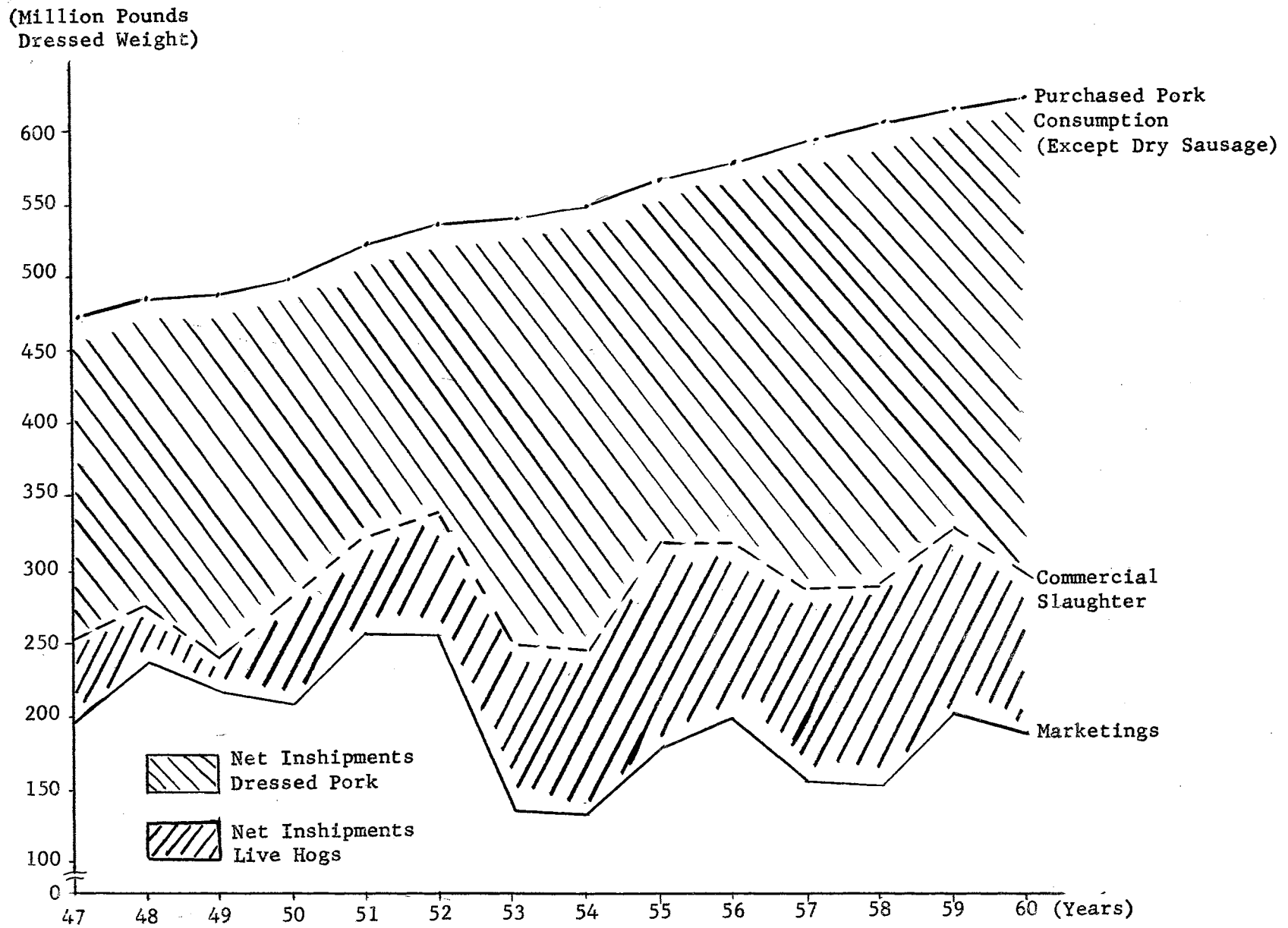

Figure 28. Purchased Consumption of Fresh and Smoked or Cured Pork, Hog Slaughter and Hog Marketings, in Dressed Weight (Including Lard), Texas, 1947-60

Although Oklahoma undoubtedly enjoys a freight rate advantage over the Corn Belt on shipments into Texas, the small and scattered nature of production in Oklahoma does not attract the larger volume Texas buyers. Some Texas packers maintain order buyers in Northern markets and through telephone calls can buy unlimited quantities and can depend upon a steady, regular supply. This, however, suggests pooling arrangements among Oklahoma producers and a strong, effective shipping association.

Given the present structure of Oklahoma's packing industry, shipments of dressed pork to Texas or elsewhere could not be increased greatly even if the state had an exportable supply. The reason is that only one Oklahoma packer handling hogs is authorized by law to ship meat in interstate commerce. This, again, suggests the need for structural changes at the packer level. If such changes are not forthcoming it might be possible for hog producers to join together and establish a cooperative hog slaughtering facility. This could be a plant that would slaughter, but would not disassemble or process pork. It would be a federally inspected plant capable of shipping and selling on a wholesale basis to large volume packers, processors and distributors in Oklahoma, Texas and elsewhere.

Concluding Comments

Throughout this report it has been assumed that significant changes in the nature and structure of production and marketing systems for livestock in Oklahoma represent worthy goals. This basic assumption, however, is subject to serious question. Historical patterns of production and marketing and the present structure of the marketing system developed in response to underlying economic forces. Long run welfare goals of Oklahoma producers and marketing firms might be more nearly realized by devoting

available economic resources to production of raw feed and livestock materials for use and finishing elsewhere. Even if this is not true, welfare and efficiency goals of the livestock and meat industry of the nation might be more nearly approached through present patterns of production and marketing in Oklahoma than through those that might be developed. This is an area deserving of further inquiry.

Additional problems and areas for future research include the following:

1. A number of production economic studies of livestock marketing systems have been made. Additional studies are needed. These include studies of sheep, hogs, forage and concentrate production systems.
2. Economic studies of various systems of cattle feeding are needed. Cost data and information on economies of scale in cattle feeding are required.
3. Detailed data on meat packing plant costs along with economies associated with scale, specialization, technology and other factors are urgently needed for further evaluation of competitive potentials.
4. Considerably more adequate and reliable data are needed on a national basis, on truck and rail transportation rates and costs; livestock production by grade and class; interstate movements of livestock by species, class and grade; interstate movements of meat by species, class and grade; and consumption of meat by state or region, species, class, and grade. Until these data are developed research on interstate or interregional competitive relations must proceed on the basis of highly questionable estimates and untested assumptions.

5. Spatial equilibrium studies and other studies of the equilibrium price and distribution effects of projected or postulated changes in production, consumption and market structure are needed.
6. Special studies of forces underlying structural changes and adjustments and economic effects flowing from structural changes should be made. Possibilities of applying market chain concepts and procedures should be investigated.
7. Detailed inquiry regarding prices, price relationships and pricing efficiency were avoided in this study. Several studies of this nature, however, are needed. Price relationships among spatially and temporally separated markets and among species, grades and classes of livestock and meat are needed. More information also is needed on effects of changes in structure and other factors on prices. Efficiency of prices in allocating and adjusting supplies among markets and effects of structural changes on pricing efficiency are required. Information also is needed on effects of various factors such as weight, grade, type of buyer, and services rendered on wholesale meat prices.
8. Various types of studies dealing with demand relationships should be made. Studies are urgently needed to determine demand and factors affecting demand for stocker-feeder cattle. Demand and price relationships among the various classes and grades of feeders are needed. Data on consumer demand in the Southern Plains by species, grade and class of meat are needed as demand and consumption patterns in this region appear to be distinctive. Relations among farm, wholesale and retail demand and price structures also require study.

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A P P E N D I X A

APPENDIX A

The least squares regression method was used to obtain trend equations for livestock numbers. The model: $Y_i = a + bX_i$ where

Y_i = value of i^{th} year

X_i = years

b = rate of change per year

a = constant

Trend equations for numbers of livestock on Oklahoma farms January 1 for years 1947 to 1961:

All Cattle and Calves . . .	$\hat{Y}_T = 2603 + 58.384X$
Dairy Cattle	$\hat{Y}_D = 1097 - 49.518X$
Cows	$\hat{Y}_{D1} = 697 - 31.041X$
Heifers	$\hat{Y}_{D2} = 173 - 7.785X$
Calves	$\hat{Y}_{D3} = 227 - 10.692X$
Beef Cattle	$\hat{Y}_B = 1507 + 107.902X$
Cows and Bulls	$\hat{Y}_{B1} = 767 + 56.286X$
Heifers and Steers . .	$\hat{Y}_{B2} = 314 + 17.081X$
Calves	$\hat{Y}_{B3} = 425 + 34.535X$

The following method was used to separate effects of dairy and beef on total trend deviations for the period 1947-49:[1]

(1) Using above trend equations, $\hat{Y}_i$'s for dairy, beef and total cattle and calves were computed for years 0, 1, 2,....14, (0 = 1947, 1 = 1948, etc.)

(2) Trend deviations $(Y_i - \hat{Y}_i)$ were computed for all years.

(3) Percentage deviations for each year were computed as follows:

$$\text{Total Cattle: } \frac{Y_T - \hat{Y}_T}{\hat{Y}_T} = \text{Dairy Cattle: } \frac{Y_D - \hat{Y}_D}{\hat{Y}_T} + \text{Beef Cattle: } \frac{Y_B - \hat{Y}_B}{\hat{Y}_T}$$

(All multiplied by 100)

[1] Adopted from Lorie (Footnote page 28).

APPENDIX TABLE A-I

TREND EQUATIONS FOR ESTIMATES OF PRODUCTION FOR SLAUGHTER, COMMERCIAL SLAUGHTER, PURCHASED CONSUMPTION, FEEDLOT PRODUCTION, AND FED BEEF CONSUMPTION FOR THE SOUTHERN PLAINS[a], BY STATES, BY CLASSES OF CATTLE, 1947-60

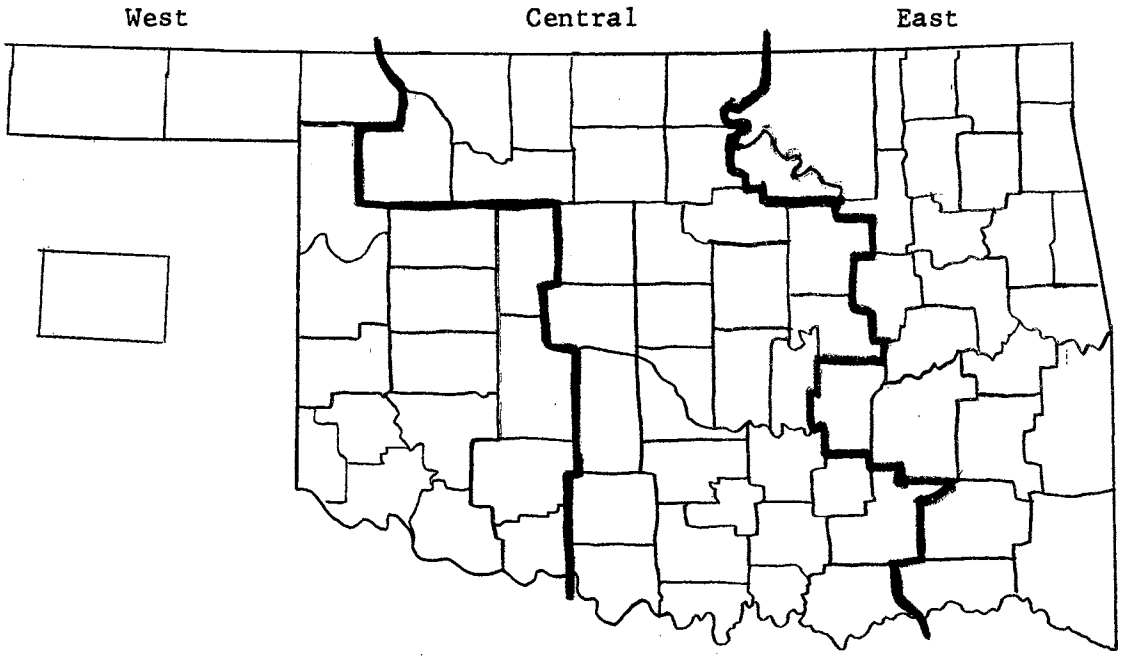
	Steers and Heifers	Cows and Bulls
Production for Slaughter		
Oklahoma	$\hat{Y} = 126,566.8571 + 2,422.8967X$	$\hat{Y} = 119,466.0714 + 99.0187X$
Texas	$\hat{Y} = 308,709.5714 + 3,716.1121X$	$\hat{Y} = 340,970.0000 - 1,486.5253X$
Commercial Slaughter		
Oklahoma	$\hat{Y} = 91,185.50 + 1,053.3440X$	$\hat{Y} = 78,218.21 - 550.7286X$
Texas	$\hat{Y} = 329,288.21 + 8,551.8253X$	$\hat{Y} = 281,119.93 + 2,204.7440X$
Purchased Consumption		
Oklahoma	$\hat{Y} = 100,257.07 + 1,507.3220X$	$\hat{Y} = 48,667.3571 - 346.5242X$
Texas	$\hat{Y} = 322,509.21 + 6,647.2275X$	$\hat{Y} = 155,226.0000 - 179.6066X$
	Total	
Feedlot Production		
Oklahoma	$\hat{Y} = 63,976.80 + 2,168.5500X$	
Texas	$\hat{Y} = 152,407.20 + 9,205.5857X$	
Fed Beef Consumption		
Oklahoma	$\hat{Y} = 69,180.6429 + 1,300.4670X$	
Texas	$\hat{Y} = 222,861.0000 + 5,410.7912X$	

[a]Oklahoma and Texas.

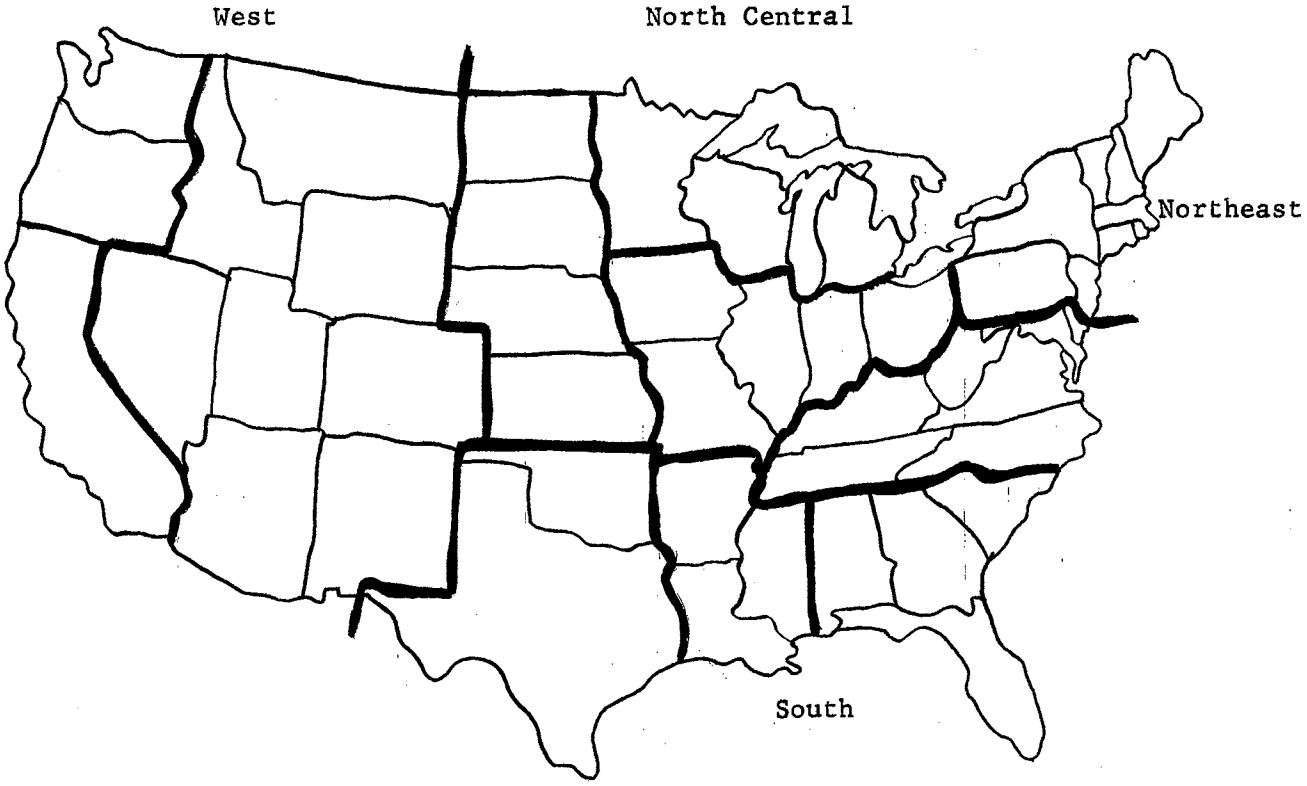
(Table Continued)

APPENDIX TABLE A-I (Continued)

	Calves	All Cattle
Production for Slaughter		
Oklahoma	$\hat{Y} = 112,239.2857 + 592.1055X$	$\hat{Y} = 246,032.7857 + 2,521.9308X$
Texas	$\hat{Y} = 313,237.0714 - 42.8768X$	$\hat{Y} = 649,679.5714 + 2,229.5868X$
Commercial Slaughter		
Oklahoma	$\hat{Y} = 39,767.36 - 460.2341X$	$\hat{Y} = 169,403.71 + 502.6154X$
Texas	$\hat{Y} = 234,287.36 + 1,340.2648X$	$\hat{Y} = 610,408.14 + 10,756.5692X$
Purchased Consumption		
Oklahoma	$\hat{Y} = 17,587.8571 + 132.2352X$	$\hat{Y} = 148,924.4285 + 1,160.7978X$
Texas	$\hat{Y} = 184,618.0000 + 2,487.6022X$	$\hat{Y} = 477,735.2142 + 6,467.6209X$



Appendix Figure B-I. Oklahoma: Areas Used In Study



Appendix Figure B-II. United States: Areas Used in Study

A P P E N D I X B

APPENDIX TABLE B-I

PERCENTAGE DISTRIBUTIONS OF STOCKER AND FEEDER HEIFERS AND STEERS BY GRADES FOR 12 TERMINAL SELECTED MARKETS, 1959-60[a]

Class of Livestock and Grades	Markets			
	Oklahoma City	Fort Worth	10 Other Markets	Total 12 Markets
	Percent			
Steers and Heifers:				
Prime	-	.06	2.83	2.78
Choice	23.17	11.85	49.08	48.54
Good	64.39	42.93	40.61	40.83
Other	12.44	45.16	7.48	7.85
Total	100.0	100.0	100.0	100.0
Steers:				
Prime	-	.08	3.35	3.30
Choice	21.48	11.32	49.51	49.00
Good	64.86	42.35	39.84	40.03
Other	13.66	46.25	7.30	7.67
Total	100.0	100.0	100.0	100.0
Heifers:				
Prime	-	-	1.45	1.42
Choice	25.70	13.11	47.92	47.31
Good	63.69	44.26	42.68	42.95
Other	10.61	42.63	7.95	8.32
Total	100.0	100.0	100.0	100.0

[a]The twelve markets include: Oklahoma City, Fort Worth, Chicago, St. Paul, Kansas City, Omaha, Sioux City, Denver, St. Louis, and St. Joseph.

Source: Livestock and Meat Statistics (Supplement for 1960), U. S. Department of Agriculture, Agricultural Marketing Service Statistical Bulletin 230, July, 1961.

APPENDIX TABLE B-II

MEAT PACKING PLANTS: SELECTED DATA ON HOURS WORKED, WAGES AND VALUE ADDED, OKLAHOMA WITH COMPARISONS, SELECTED CENSUS YEARS[a]

	1939	1947	1954	1958	Percentage Change 1947-58
Annual Average Number of Hours Worked Per Production Worker (Hours)					
Oklahoma		2,254	2,226	2,105	-6.6
West South Central		2,300	2,188	2,027	-11.9
North Central		2,271	2,106	2,045	-10.0
United States		2,250	2,114	2,049	-8.9
Annual Average Wages Per Production Worker (Dollars)					
Oklahoma	1,155	2,337	3,652	4,752	103.3
West South Central	1,137	2,418	3,519	4,136	71.1
North Central	1,379	2,922	4,318	5,456	86.7
United States	1,348	2,806	4,099	5,094	81.5
Average Wages Per Man-Hour of Production Labor (Dollars)					
Oklahoma		1.04	1.64	2.26	117.3
West South Central		1.05	1.61	2.04	94.3
North Central		1.29	2.05	2.67	107.0
United States		1.25	1.94	2.49	99.2
Value Added Per Production Worker (Dollars)					
Oklahoma	3,417	4,975	7,421	12,402	149.3
West South Central	3,358	5,927	8,427	9,956	68.0
North Central	3,441	5,697	8,275	11,540	102.6
United States	3,519	5,849	8,310	11,583	98.0
Value Added Per Man-Hour (Dollars)					
Oklahoma		2.21	3.33	5.89	166.5
West South Central		2.58	3.85	4.91	90.3
North Central		2.51	3.93	5.64	124.7
United States		2.60	3.93	5.65	117.3

[a]Based on reports from a limited number of plants in Oklahoma, ranging from 25 in 1939 to 49 in 1958.

Source: U. S. Bureau of Census, Census of Manufactures, for Census years indicated.

APPENDIX TABLE B-III

PREPARED MEAT PLANTS: SELECTED DATA ON NUMBER OF HOURS WORKED, WAGES, AND VALUE ADDED, OKLAHOMA WITH COMPARISONS, SELECTED CENSUS YEARS[a]

	1947	1954	1958	Percentage Change 1947-58
Annual Average Number of Hours Worked Per Production Worker (Hours)				
Oklahoma	2,301	1,961	1,916	-16.8
West South Central	2,138	2,031	2,119	-.9
North Central	2,152	2,107	2,029	-5.7
United States	2,144	2,074	2,032	-5.2
Annual Average Wages Per Production Worker (Dollars)				
Oklahoma	2,209	2,742	3,650	65.2
West South Central	1,801	2,722	3,125	73.5
North Central	2,618	3,835	4,489	71.5
United States	2,511	3,682	4,438	76.7
Average Wages Per Man-Hour of Production Labor (Dollars)				
Oklahoma	.96	1.40	1.91	99.0
West South Central	.94	1.25	1.59	69.1
North Central	1.22	1.82	2.21	81.1
United States	1.17	1.78	2.18	86.3
Value Added Per Production Worker (Dollars)				
Oklahoma	8,669	12,703	31,427	262.5
West South Central	7,058	10,540	14,637	107.4
North Central	7,085	9,887	12,390	74.9
United States	6,833	9,782	12,124	77.4
Value Added Per Man-Hour (Dollars)				
Oklahoma	3.77	6.48	16.40	335.0
West South Central	3.30	5.20	6.91	109.4
North Central	3.72	4.13	5.32	43.0
United States	3.19	4.72	5.97	87.1

[a]Based on reports from a limited number of plants in Oklahoma: 7 in 1947, 12 in 1954, and 13 in 1958.

Source: Derived from U. S. Bureau of Census, Census of Manufactures for indicated census years.

APPENDIX TABLE B-IV

NUMBERS AND DRESSED WEIGHT OF LIVESTOCK SLAUGHTERED BY OKLAHOMA PACKERS; PERCENTAGE DISTRIBUTION BY CLASSES, 1959

Species	Number	Dressed Weight[b]	Percent of Total Dressed Weight
		1,000 Pounds	
Cattle	295,000[a]	143,518	49.3
Beef H & S	108,000	89,870	30.9
Cows and Bulls	187,000	53,648	18.4
Calf and Veal	70,000[a]	20,039	6.9
Sheep and Lambs	6,800[a]	340	.1
Hogs	724,000[a]	126,998	43.7
Total	1,095,800	290,895	100.0

[a]These figures represent "commercial slaughter," as reported by the Statistical Reporting Service, U. S. Department of Agriculture, Livestock and Meat Statistics, Supplement for 1959, Statistical Bulletin No. 230, June, 1960. Data on slaughter of beef heifers and steers and of cows and bulls were estimated from 1959 meat distribution survey data. Survey estimates of total volumes for cattle, calves and hogs slightly exceeded these volumes.

[b]Estimated on the basis of various published data and meat distribution survey estimates.

APPENDIX TABLE B-V

FED BEEF: APPROXIMATE YEAR IN WHICH PRODUCTION INCREASES WOULD CONVERGE WITH CONSUMPTION UNDER ALTERNATIVE COMBINATIONS OF ASSUMPTIONS, OKLAHOMA TEXAS AND SOUTHERN PLAINS

Production Alternatives	Low Level Consumption 1947-60 Trend			High Level Consumption (Low Level + 10%)		
	Assume Inshmts. Drop to Zero as Prod. Incr.	Assume Inshmts. Continue at Const. 1959 Volume	Assume Inshmts. Continue at Const. 1959 %	Assume Inshmts. Drop to Zero as Prod. Incr.	Assume Inshmts. Continue at Const. 1959 Volume	Assume Inshmts. Continue at Const. 1959 %
Oklahoma:						
High Rate of Prod. Growth:						
(1958-61 trend from 1961)		(1)			(2)	
1. Assume outshmpts. zero	1961	1950-58	1950-58	1962	1950-58	1950-58
2. Assume outshmts. at const. 1960 vol.	1966	1962	1961	1968	1963	1962
3. Assume outshmts. at const. 1960 %	1975	1964	1963	1981	1968	1965
Low Rate of Prod. Growth:						
(Average of 1958-61 and 1947-61 trend)		(3)			(4)	
1. Assume outshmts. zero	1961	1950-58	1950-58	1964	1950-58	1950-58
2. Assume outshmts. at const. 1960 vol.	1972	1962	1961	1975	1965	1964
3. Assume outshmts. at const. 1960 %	-	1973	1965	-	a	1972
Texas:						
High Rate of Prod. Growth: (1955-61 trend)		(1)			(2)	
1. Assume outshmts. zero	1963	1960	1960	1965	1961	1961
2. Assume outshmts. at const. 1960 vol.	1966	1961	1961	1969	1964	1963
3. Assume outshmts. at const. 1960 %	1969	1962	1962	1974	1966	1964
Low Rate of Prod. Growth:						
(Average 1955-61 + 1947-61 trend)		(3)			(4)	
1. Assume outshmts. zero	1965	1960	1960	1973	1961	1961
2. Assume outshmts. at const. 1960 vol.	1972	1962	1961	1981	1967	1965
3. Assume outshmts. at const. 1960 %	1985	1965	1962	-	1982	1969

(Continued)

APPENDIX TABLE B-V

Production Alternatives	Low Level Consumption 1947-60 Trend: Assume Inshmts. Drop to Zero as Prod. Incr.	Low Level Consumption 1947-60 Trend: Assume Inshmts. Continue at Const. 1959 Volume	Low Level Consumption 1947-60 Trend: Assume Inshmts. Continue at Const. 1959 %	High Level Consumption (Low Level + 10%): Assume Inshmts. Drop to Zero as Prod. Incr.	High Level Consumption (Low Level + 10%): Assume Inshmts. Continue at Const. 1959 Volume	High Level Consumption (Low Level + 10%): Assume Inshmts. Continue at Const. 1959 %
Southern Plains:[b]						
High Rate Prod. Growth:		(1)			(2)	
1. Outshmts. zero	1962	1959	1959	1964	1960	1960
2. Outshmts. at const. 1960 vol.	1965	1961	1961	1967	1963	1962
3. Outshmts. at const. 1960 %	1968	1961	1961	1972	1964	1963
Low Rate Prod. Growth:		(3)			(4)	
1. Outshmts. zero	1963	1959	1959	1969	1960	1960
2. Outshmts. of const. 1960 vol.	1970	1961	1961	1976	1965	1963
3. Outshmts. at const. 1960 %	1982	1962	1961	-	1973	1966

[a]Beyond 1990.

[b]Adjusted for outshipments of fed cattle from Oklahoma and Texas.

APPENDIX TABLE B-VI

APPROXIMATE FEEDLOT VOLUME AT WHICH PRODUCTION INCREASES WOULD CONVERGE WITH CONSUMPTION UNDER ALTERNATIVE COMBINATIONS OF ASSUMPTIONS, OKLAHOMA, TEXAS AND SOUTHERN PLAINS, MILLIONS OF POUNDS, DRESSED WEIGHT[a]

Production Alternatives	Low Level Consumption 1947-60 Trend			High Level Consumption (Low Level + 10%)		
	Assume Inshmts. Drop to Zero as Prod. Incr.	Assume Inshmts. Continue at Const. 1959 Volume	Assume Inshmts. Continue at Const. 1959 %	Assume Inshmts. Drop to Zero as Prod. Incr.	Assume Inshmts. Continue at Const. 1959 Volume	Assume Inshmts. Continue at Const. 1959 %
			Million Pounds			
Oklahoma: 1961 = 89.5		(1)			(2)	
High Rate Prod. Growth: (1958-61 trend)						
1. Outshipments zero	87	b	b	100	b	b
2. Outshmts. at constant 1960 vol.	134	92	90	150	101	100
3. Outshmts. at constant 1960 %	222	115	105	278	153	125
Low Rate of Production (Average of 1958-61 and 1947-61 trend)		(3)			(4)	
1. Outshmts. zero	88	b	b	103	b	b
2. Outshmts. at constant 1960 vol.	151	94	88	171	111	104
3. Outshmts. at constant 1960 %	-	159	110	-	c	154
Texas: 1961 = 277.3						
High Level Prod. Growth: (1955-61 trend)		(1)			(2)	
1. Outshmts. zero	320	216	215	380	256	252
2. Outshmts. at constant 1960 vol.	404	285	273	468	360	320
3. Outshmts. at constant 1960 %	500	306	290	610	398	370
Low Level Prod. Growth: (Av. 1955-61 + 1947-61)		(3)			(4)	
1. Outshmts. zero	348	216	214	480	256	254
2. Outshmts. at constant 1960 vol.	463	288	276	628	372	332
3. Outshmts. at constant 1960 %	698	336	294	-	645	400

(Continued)

APPENDIX TABLE B-VI (Continued)

Production Alternatives	Low Level Consumption 1947-60 Trend			High Level Consumption (Low Level + 10%)		
	Assume Inshmts. Drop to Zero as Prod. Incr.	Assume Inshmts. Continue at Const. 1959 Volume	Assume Inshmts. Continue at Const. 1959 %	Assume Inshmts. Drop to Zero as Prod. Incr.	Assume Inshmts. Continue at Const. 1959 Volume	Assume Inshmts. Continue at Const. 1959 %
			Million Pounds			
Southern Plains:[d] 1961 = 366.8						
High Level Prod. Growth		(1)			(2)	
1. Outshmts. zero	405	267	267	474	315	310
2. Outshmts. at constant 1960 vol.	515	352	348	588	416	400
3. Outshmts. at constant 1960 %	620	374	364	758	478	436
Low Level Prod. 1961 = 366,775		(3)			(4)	
1. Outshmts. zero	422	265	264	540	317	309
2. Outshmts. at constant 1960 vol.	577	352	348	717	454	413
3. Outshmts. at constant 1960 %	857	380	366	-	640	476

[a]May be converted to number of cattle by multiplying by 2 and adding 1,000 (assumes 500-pound carcass).

[b]Less than 1958 volume.

[c]Exceptionally large volume.

[d]Adjusted for outshipments of fed cattle from Oklahoma to Texas.

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