

Trends In Oklahoma Agriculture

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TRENDS IN OKLAHOMA AGRICULTURE

by

David Henderson and Luther Tweeten*

The structure of Oklahoma Agriculture has changed persistently since the 1890 land rush opened the state to agricultural development. As agriculture developed, the number of Oklahoma farms steadily increased to 213,325 in 1935. Then farm numbers steadily decreased to 69,719 in 1974. Another turnaround began and the number of Oklahoma farms increased to 72,523 in 1982. Other structural elements of Oklahoma's agriculture have changed concurrently with the number of Oklahoma farms and farmers.

The impetus for structural change in Oklahoma agriculture has varied throughout the state's history. The early growth in farm numbers was stimulated by the low cost of land under the 1862 Homestead Act and the labor intensive agricultural practices of the period. The large decrease in farm numbers between 1935 and 1974 was stimulated by changing technology. Mechanization, improved seed varieties, increased use of fertilizers, and irrigation all contributed to decreasing farm numbers and increasing farm size. The small gain in farm numbers over the past decade has been a result of growth in the number of part-time small farms. Thousands of Oklahomans

*Respectively, Research Assistant and Regents Professor, Department of Agricultural Economics, Oklahoma State University. Research under Hatch 1974 of the Oklahoma Agricultural Experiment Station. Comments of Daryll Ray and Larry Sanders were very helpful.

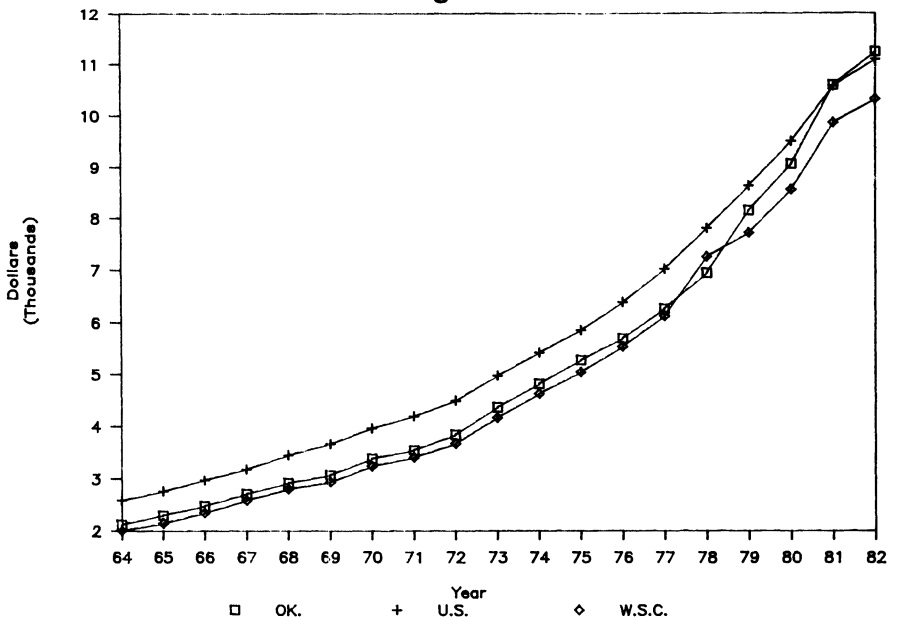
have returned to their rural roots, establishing small farms near their off-farm places of employment.

Within its borders, Oklahoma has a diverse environment. The state has different climatic zones, several mountain ranges, large hilly regions, plains, prairies, and five Standard Metropolitan Statistical Areas. The diversity of Oklahoma's environmental regions has induced Oklahoma's farmers to adopt different land use and management practices across the state. As a result, agricultural structure varies across the state. A primary purpose of this report is to document the spatial diversity of agricultural structure within the state.

Changes in Oklahoma Farm and Nonfarm Income

Figure 1 shows trends in personal per capita income for Oklahoma, the West South Central (WSC) region, and the United States.¹ Annually during the 1960s, Oklahoma's personal per capita income exceeded that of the WSC

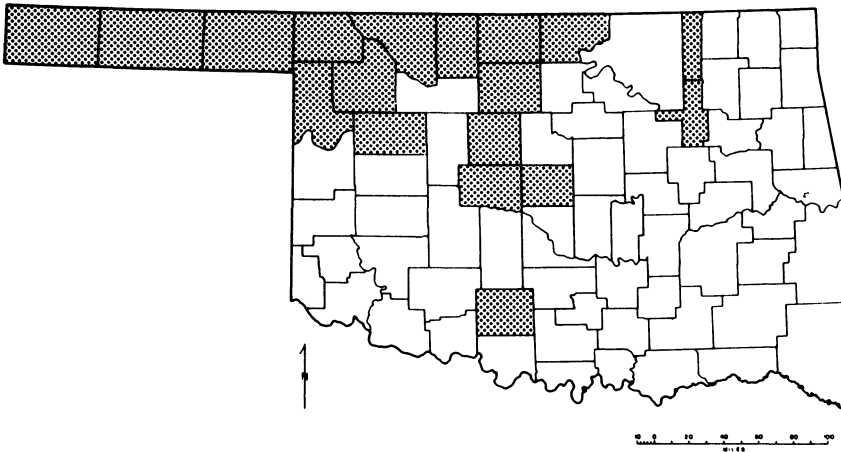
Trends in Personal per Capita Income
Figure 1



region by an average of 5 percent, and averaged 84 percent of U.S. personal per capita income. During the decade of the 1970s, Oklahoma's personal per capita income increased to average 89 percent of U.S. personal per capita income and was 3 percent higher than that in the WSC region. In 1981, personal per capita income surpassed that in the United States and for the first three years of the 1980s exceeded that of the WSC region by an average of 7 percent.¹

Oklahoma's personal per capita income was \$11,247 in 1982. Figure 2 shows the Oklahoma counties where personal per capita income was above the state average. Twelve of the counties illustrated are major agricultural producers in Oklahoma. Cimarron county had the highest 1982 personal per capita income at \$19,570 and it also had the state's lowest rural population density at less than one person per square mile. Alfalfa, Beaver, Dewey,

**Oklahoma Counties Above State Average Personal per Capita Income
Figure 2**



¹The West South Central region includes Arkansas, Louisiana, Oklahoma, and Texas.

Harper, and Grant counties had a rural population density of less than three persons per square mile. Although Oklahoma's agricultural counties represent a small proportion of the state's total population, they have contributed to the state's rising personal per capita income.

Oklahoma Farm Income

The proportion of total Oklahoma private personal income from farming is depicted in Figure 3. That proportion averaged 7.4 percent of the state's total personal income over the 1964-82 period, but tended to decrease after 1973. The general decline was a result of the relatively rapid growth in nonfarm personal income compared to personal farm income. Private personal income from farming more than doubled from \$637 million in 1964 to \$1,274 million in 1982, while private personal income from nonfarming activities quadrupled from \$6,395 million in 1964 to \$26,473 million in 1982.

Percentage of Total Oklahoma Personal Income from Farming
Figure 3

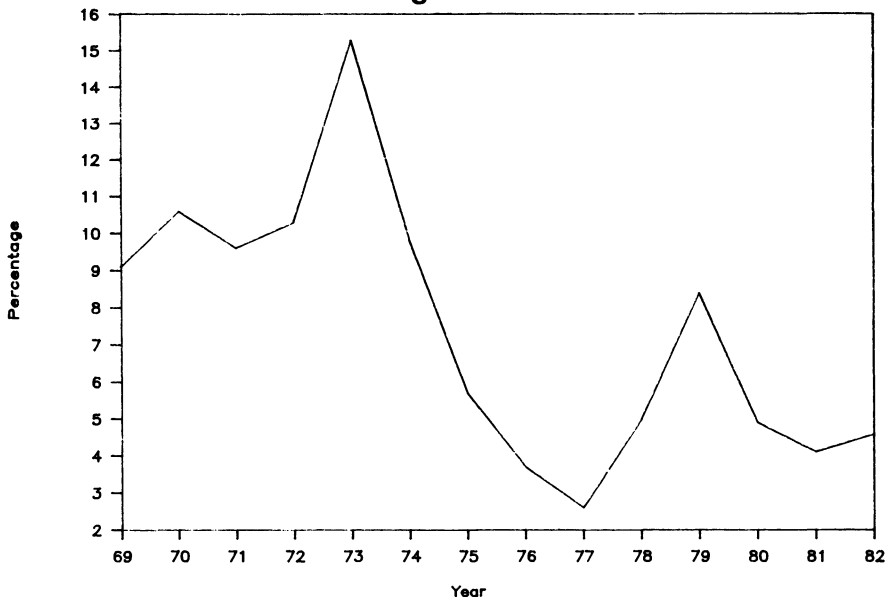
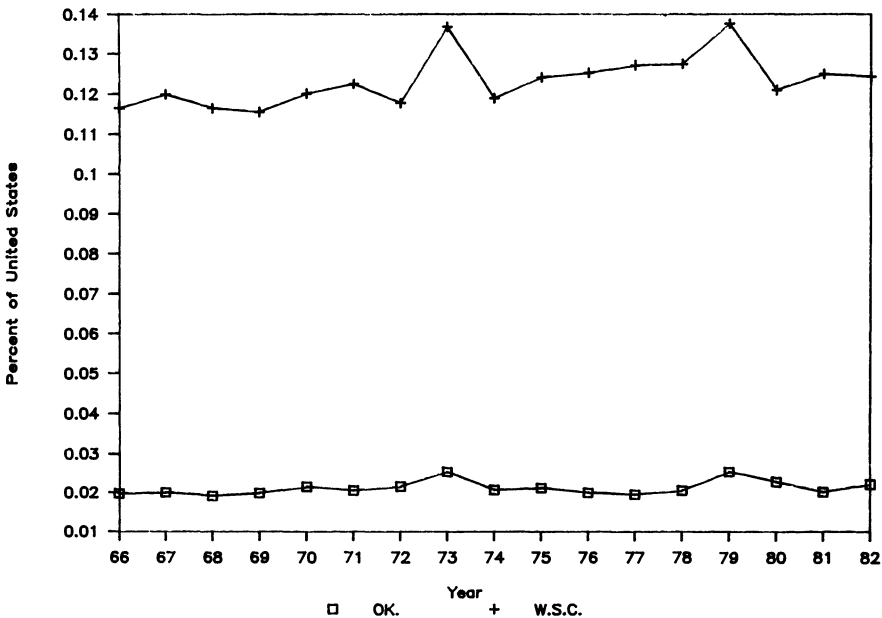


Figure 4 shows farm marketings in Oklahoma and the WSC region as a proportion of total U.S. farm marketings. Oklahoma consistently maintained its relative market share at about 2 percent of total U.S. farm marketings. The WSC region's proportion of total U.S. farm marketings varied much more, fluctuating between a low of 11.5 percent in 1969 and a high of 13.7 percent in 1979. In 1982, Oklahoma ranked twentieth among all states in total farm marketings.

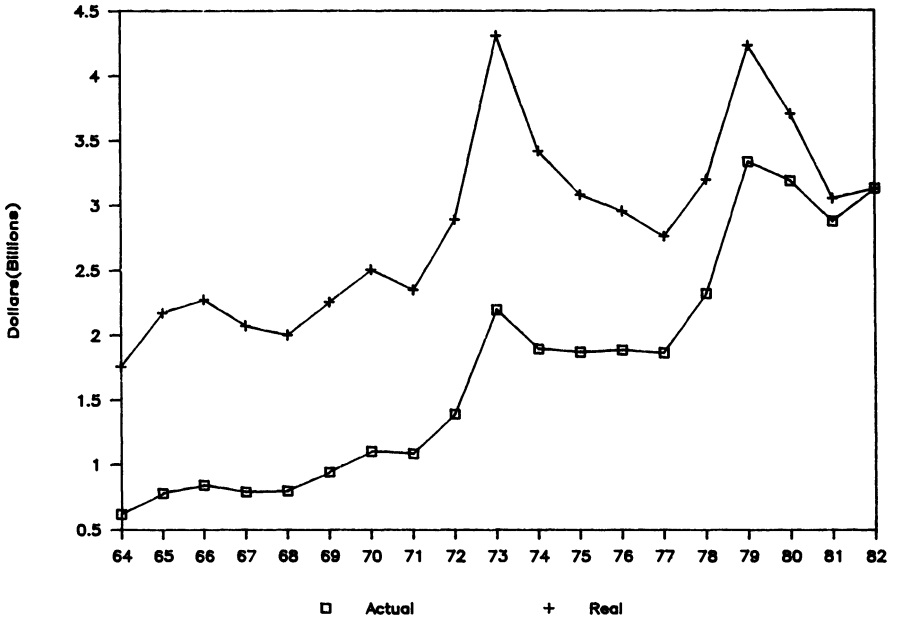
Cash Receipts from Farm Marketings as Percentage of Total U.S. Sales
Figure 4



Farm marketings in the state increased on the average by 72 million real (1982) dollars per year over the 1964-82 period.² Figure 5 depicts the actual and real growth of Oklahoma farm marketings from 1964 to 1982. Real gross

²Real dollars are historical dollars converted into 1982 constant dollars by the GNP Implicit Price Deflator (1982 = 100) to account for inflation that occurred during the period.

**Farm Income from Farm Marketings
Figure 5**



farm marketings nearly doubled from \$1,759 million in 1964 to \$3,131 million in 1982. The compound average real growth was 3 percent per year. The largest gains were made in the 1972 to 1973 period and the 1977 to 1979 period. The only period of significant loss in real farm marketings occurred between 1979 and 1981.

Figure 6 illustrates the 1982 relative per farm marketings for Oklahoma Counties. Texas County had the highest gross farm income with \$284,053 thousand and Latimer County had the lowest gross farm income with \$4,539 thousand. Per farm gross income was highest in Texas County at \$357,299 and lowest in Latimer County at \$7,853. Gross farm income continued to be the highest in Oklahoma's Plains and Prairie regions, with the most significant increases occurring in Oklahoma's northeast corner within the Cherokee prairie counties.

County per farm Marketings, Oklahoma, 1982
Figure 6

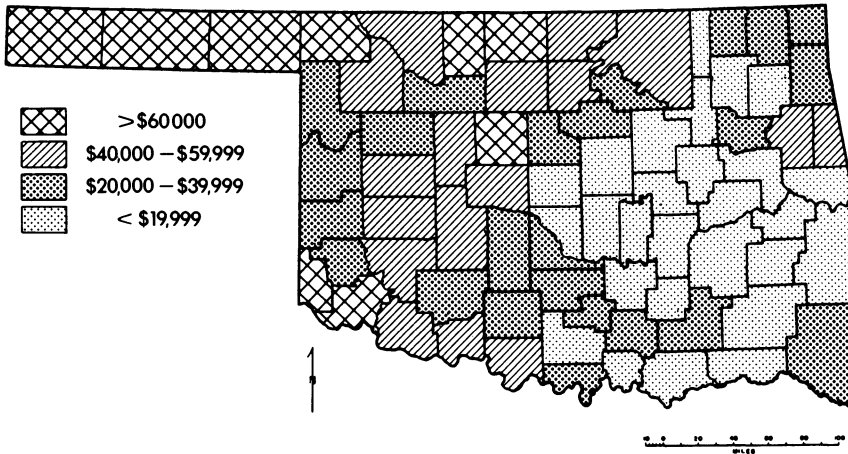


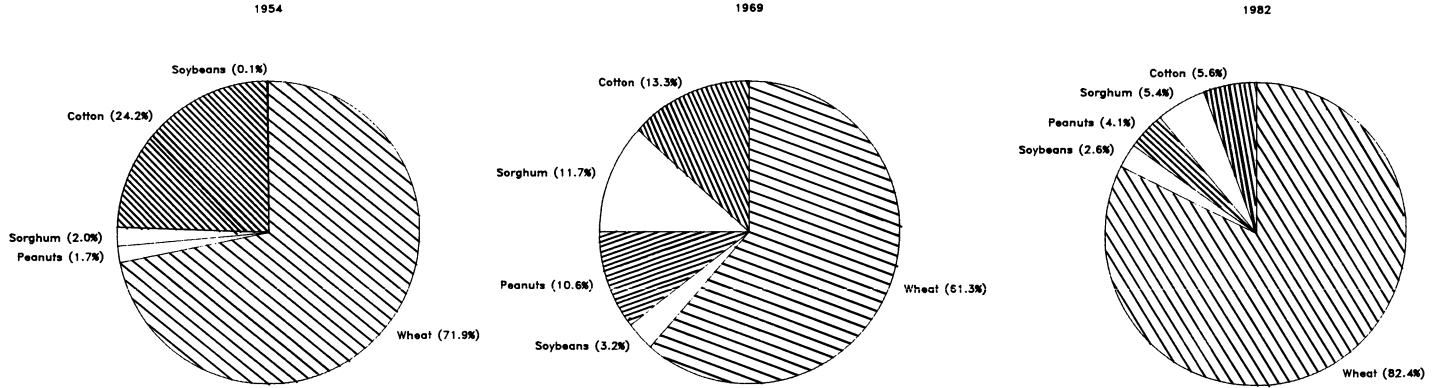
Figure 7 shows the proportion of Oklahoma farm market income from the state's ten leading agricultural commodities from 1954 to 1982. The sale of cattle and calves, along with wheat, have increasingly dominated Oklahoma farm income. The two commodities accounted for 61.8 percent of the state's total agricultural sales in 1954, 63.6 percent of total sales in 1969, and 76.3 percent of total sales in 1982. The state's agriculture not only is highly specialized but has tended to become more specialized.

Livestock Income

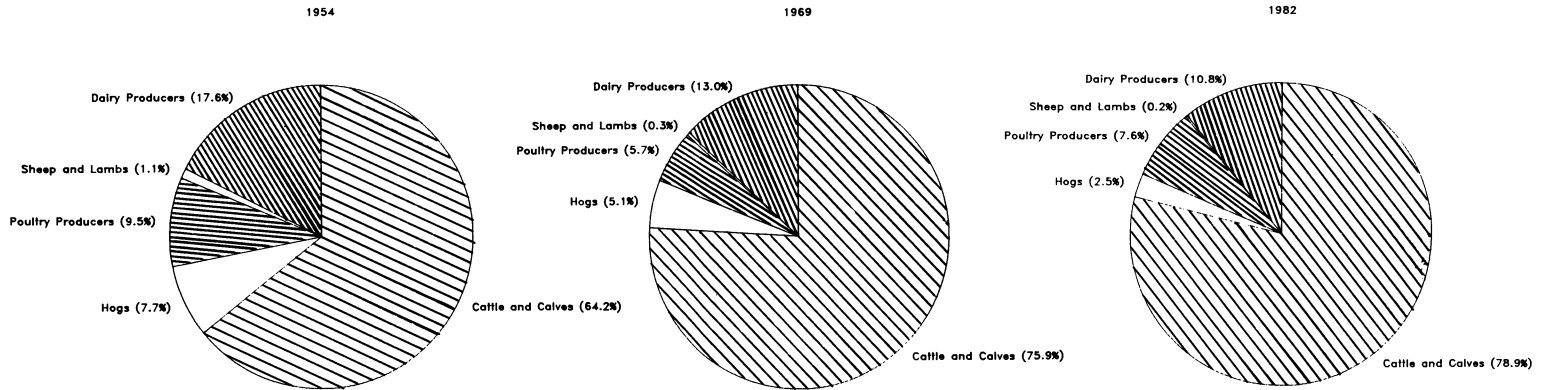
The proportion of farm income from livestock and livestock products has tended to increase in Oklahoma. The average proportion increased from 56.9 percent between 1950 and 1954 to 64.7 percent of total farm income between 1979 and 1983. Total real farm income from all livestock and livestock products more than doubled from \$1,024 million in 1954 to \$2,090 million in 1982. Not all livestock increased during the period. The real value of hog sales decreased from \$133,569 thousand in 1954 to \$42,609 thousand in

Oklahoma Farm Market Income Figure 7

Selected Crops



Selected Livestock

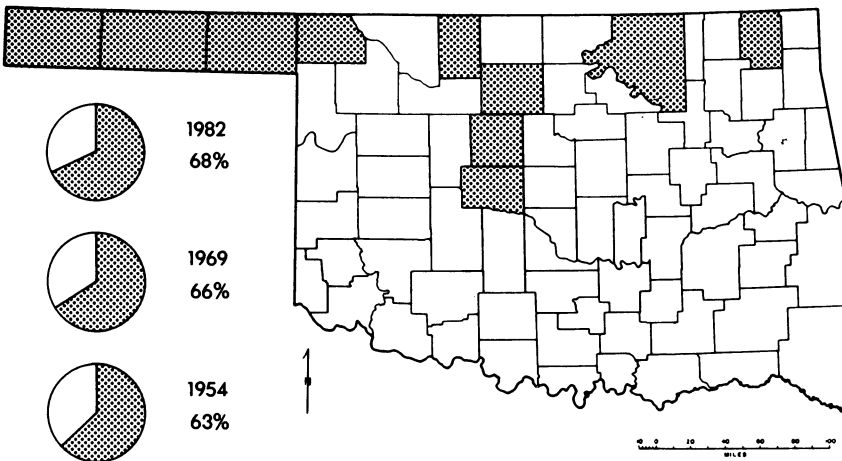


1982. The real value of sheep and lamb sales also decreased during the period from \$12,270 thousand in 1954 to \$2,697 thousand in 1982.

Real farm income from the sale of cattle and calves increased from \$816,919 thousand in 1954 to \$1,727,838 thousand in 1982. Figure 8 illustrates the ten leading counties, by sales, and their relative share of the state's total cattle and calve market. Farm income from cattle and calves has steadily increased from 34.9 percent of Oklahoma total farm sales in 1954, to 45.6 percent in 1969, to 54.1 percent in 1982. Cattle and calves have traditionally been the staple commodity providing income to most Oklahoma farmers, with much of the calf production coming from small cow-calf operations. In 1982, 30.3 percent of Oklahoma's 58,236 cattle and calf producers ran a herd of less than 20 head.

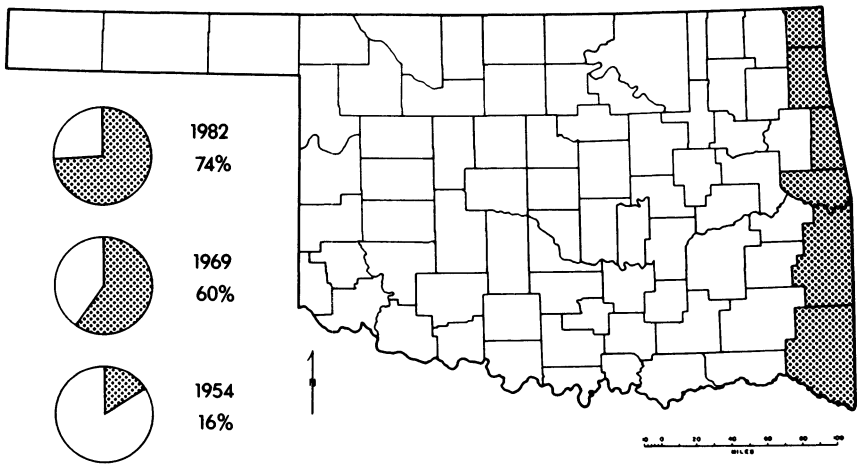
Real farm income from the sale of poultry products decreased from \$138,531 thousand in 1954 to \$79,541 thousand in 1969, then increased to \$118,856 thousand in 1982. The large increase in farm income from poultry

Ten Leading Cattle and Calf Counties
Figure 8



products from 1969 to 1982 resulted from spectacular increases in the sale of broiler chicks and turkeys. Figure 9 illustrates that the growth in farm income from poultry products has been concentrated in the six Oklahoma counties bordering Arkansas. The six counties illustrated accounted for 16.1 percent of total poultry income in 1954, 60.4 percent in 1969, and 74.9 percent in 1982.

Six Leading Poultry Counties
Figure 9

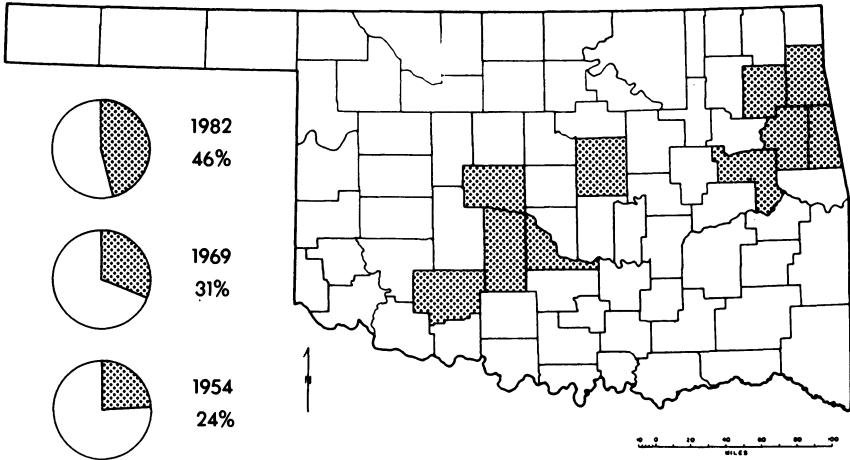


Real farm income from the sale of dairy products decreased from \$204,941 thousand in 1954 to \$165,606 thousand in 1982. Figure 10 illustrates that dairy production has tended to become more concentrated around Oklahoma's Standard Metropolitan Statistical Areas where most of the state's milk processing facilities are located. The illustrated counties' proportion of total dairy income increased from 24 percent in 1954, to 31.3 percent in 1969, to 46.1 percent in 1982.

Crop Income

The proportion of total farm income from crops has tended to decrease. Crop income as a proportion of total farm income fell from an average of 43.1

**Ten Leading Dairy Counties
Figure 10**

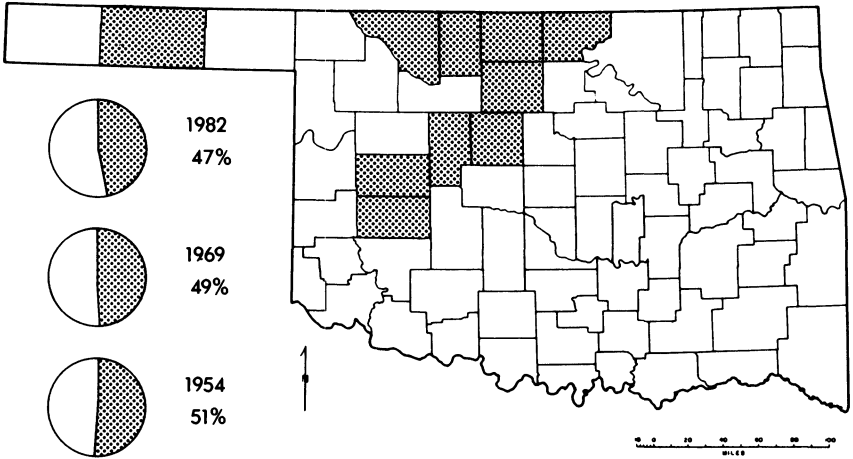


percent in 1950-54 to 35.3 percent in 1979-83. Total real farm income from crops decreased from \$1,082,361 thousand in 1954 to \$1,064,521 thousand in 1982. Real gains were made in wheat, sorghum, peanuts, and soybeans with real losses occurring in cotton, corn, and hay.

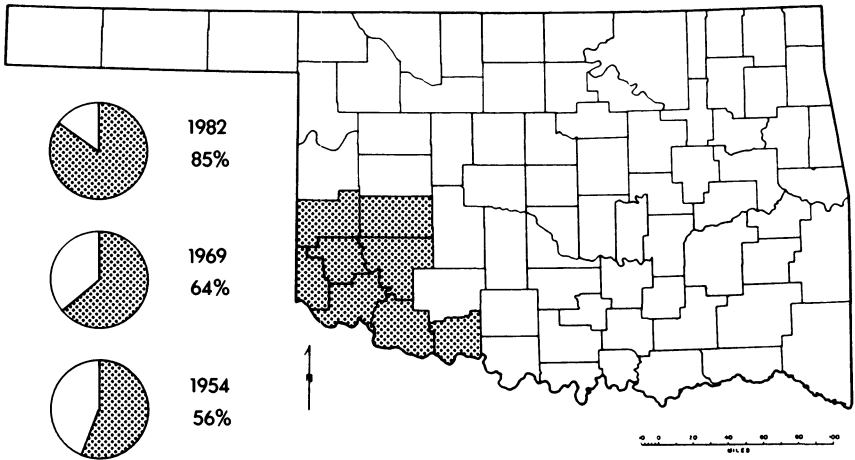
Real farm income from the sale of wheat increased from \$673,123 thousand in 1954 to \$752,284 thousand in 1982. The proportion of total farm income from wheat sales was 25.9 percent in 1954, 15.5 percent in 1969, and 22.2 percent in 1982. The large variation in the proportion of total farm income from wheat among years is due to weather, commodity program, and price fluctuations. Figure 11 shows Oklahoma's top ten wheat counties which accounted for 50.8 percent of total wheat sales in 1954, 48.9 percent in 1969, and 47.3 percent in 1982.

Real farm income from cotton decreased from \$201,410 thousand to \$119,372 thousand in 1982. The proportion of total farm income from cotton steadily decreased from 9.9 percent in 1954, to 3.4 percent in 1969, to 2.1 percent in 1982. Figure 12 illustrates that farm income from cotton has increasingly become concentrated in the southwest corner of Oklahoma. The

**Ten Leading Wheat Counties
Figure 11**



**Eight Leading Cotton Counties
Figure 12**

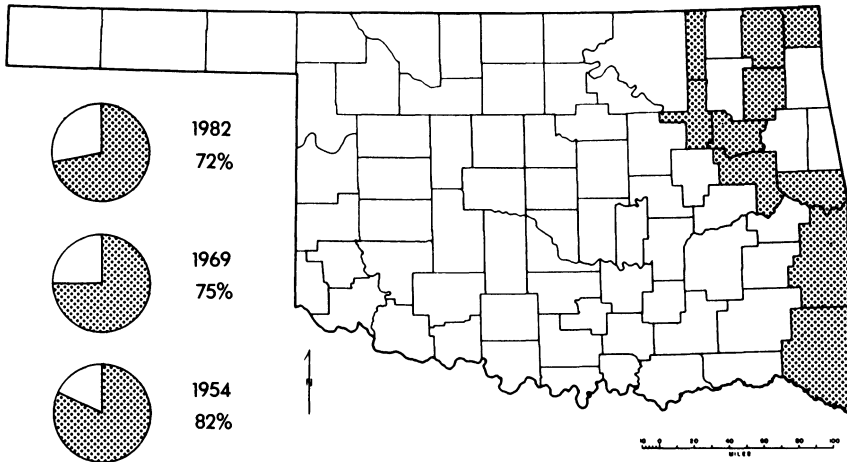


concentration of cotton income has occurred as farmers in the eastern and central parts of the state have dropped cotton from their crop complexes.

Real farm income from soybeans increased from \$8,012 thousand in 1954 to \$32,292 thousand in 1982. Although soybeans represent a small

proportion of the state's total farm income, the sale of soybeans has steadily increased from .04 percent in 1954, to .8 percent in 1969, to .9 percent in 1982. Figure 13 illustrates that soybean income has been concentrated in the Cherokee prairies and the valleys of Oklahoma's eastern mountain ranges.

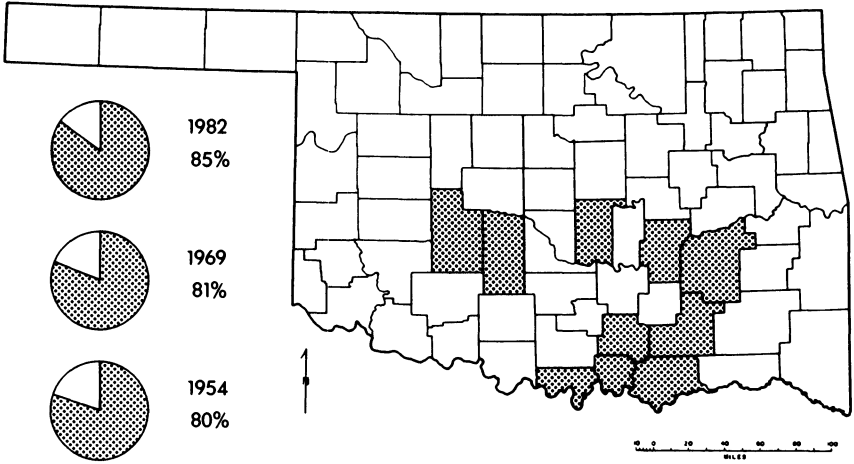
Ten Leading Soybean Counties
Figure 13



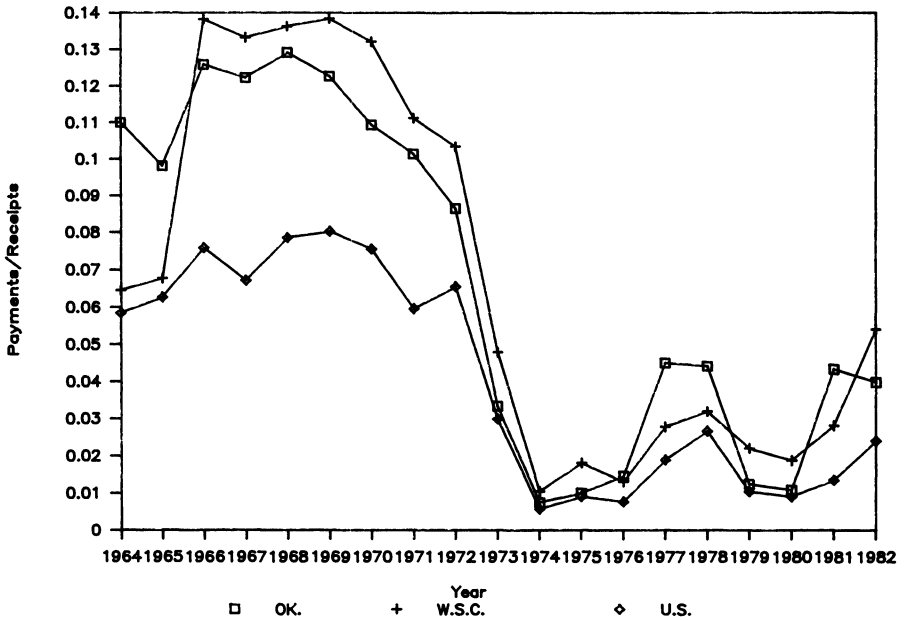
Real farm income from peanuts increased from \$19,268 thousand in 1954 to \$40,582 thousand in 1982. The proportion of total farm income from peanuts increased from 1.6 percent in 1954, to 2.7 percent in 1969; then decreased to 2 percent in 1982. Figure 14 illustrates that peanut production is concentrated in the Red and Grand Prairies of Oklahoma. The ten top counties accounted for 79.8 percent of total Oklahoma peanut sales in 1954, 81.1 percent in 1969, and 84.7 percent in 1982.

Figure 15 shows government payments to producers as a percentage of total market sales. The general trend has been for the proportion of government payments to decrease until the 1980s. Historically, payments to producers have been higher in Oklahoma than in the U.S. and lower in

Ten Leading Peanut Counties
Figure 14



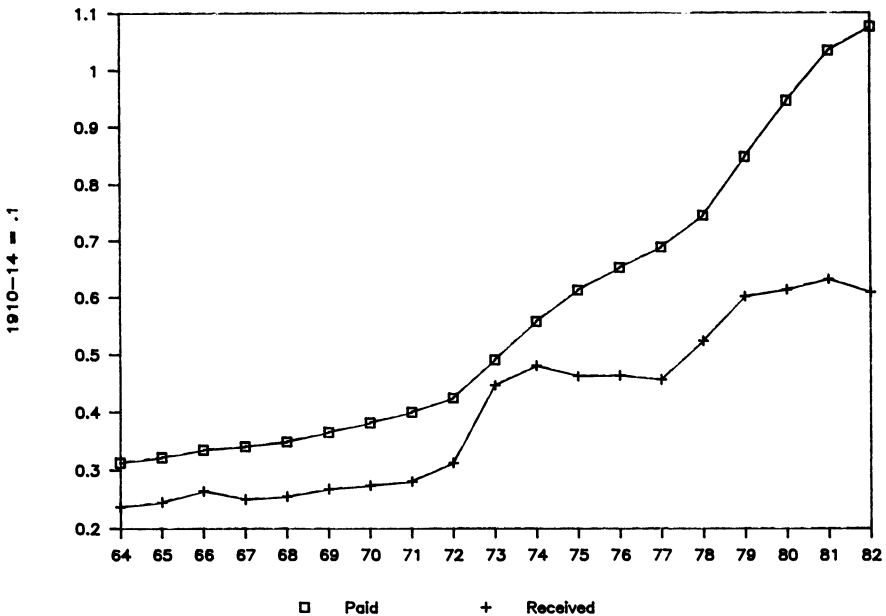
Direct Government Payments
Figure 15



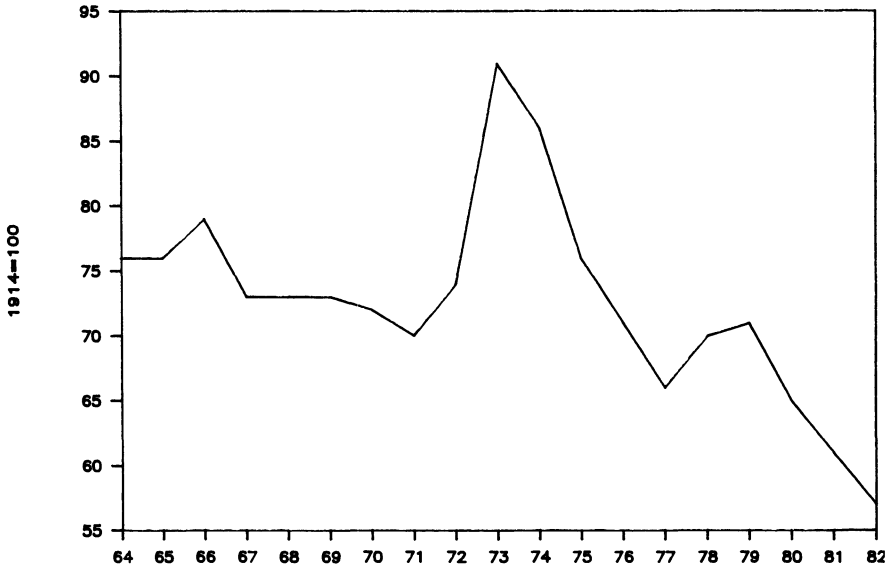
Oklahoma than in the WSC region. The bulk of the direct payments in Oklahoma have gone to wheat and cotton producers and for conservation programs. A transition to a market orientated farm policy would have its greatest impact on producers in Oklahoma's wheat and cotton counties.

Primary determinants of farm income are prices paid by farmers for their inputs, prices received by farmers for their output, and the ratio of indices of prices received to prices paid, or "parity ratio." Figure 16 shows the terms of trade and Figure 16a shows the parity ratio for all farmers in the U.S. Although these indices differ somewhat from Oklahoma indices, U.S. and Oklahoma indices move together. The differences reflect different transportation costs, input mix, and output mix within the country. Input prices paid by farmers exceeded output prices received by farmers during the whole period and the spread tended to increase more rapidly after 1974. As a percent of the 1910-14 ratio, parity decreased from 76 in 1954 to 57 in 1982.

Oklahoma Prices Paid and Received
Figure 16



**Parity Ratio
Figure 16a**



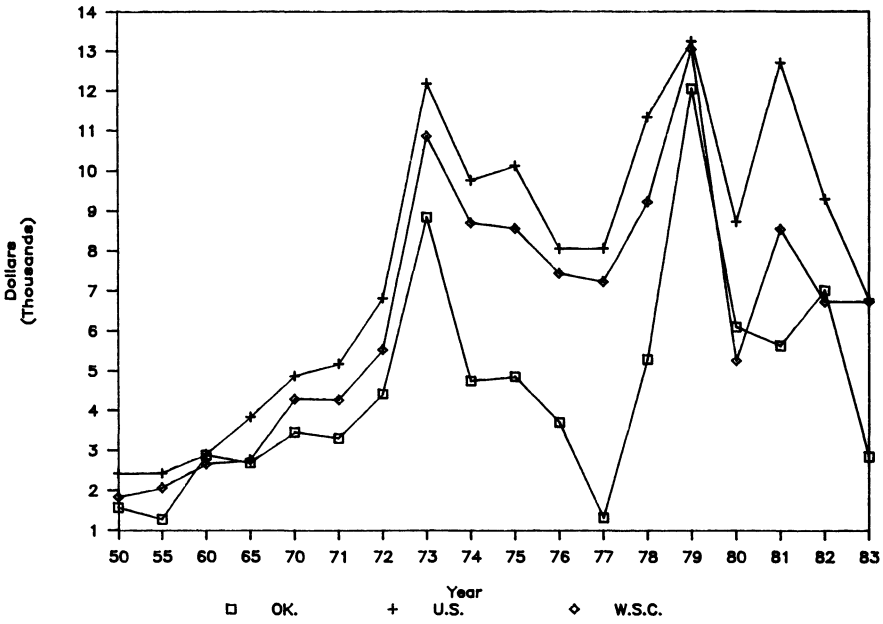
Net farm income for Oklahoma, WSC region, and U.S. is shown in Figure 17. Oklahoma per farm net income tended to be below that in the WSC region and the U.S. for the period. One contributing factor to Oklahoma's relatively low per farm net income is the relatively high proportion of small-size part-time farmers in the state. The low per farm net income of Oklahoma's small part-time farmers, when averaged with larger full-time commercial farmers, lowers the state's average per farm net income.

Oklahoma Off-Farm Income

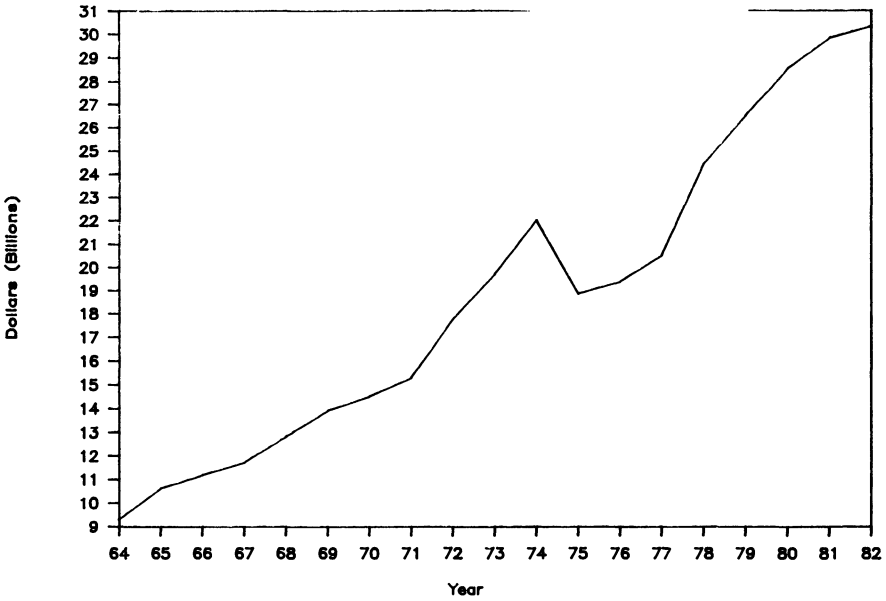
Most personal income for Oklahoma's part-time farmers comes from off-farm sources. Figure 18 shows that off-farm income for the U.S. tripled in the last two decades.³ The exact proportion of farmers' income from off-farm

³Off-farm income includes wages, salaries, professional income, dividends, rents, royalties, unemployment compensation, and social security.

**Per Farm Net Income
Figure 17**

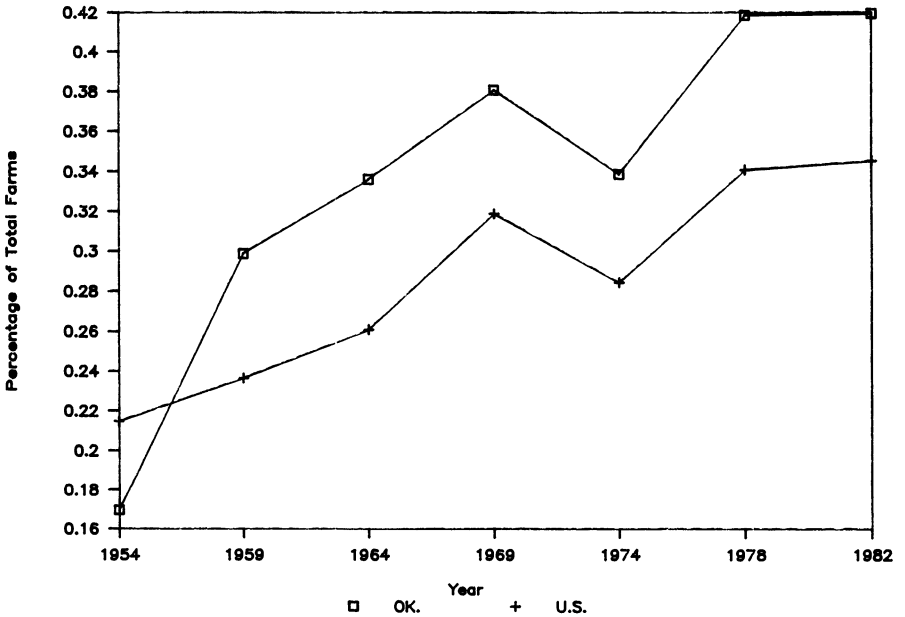


**Total Off-Farm Income for U.S. Farmers
Figure 18**



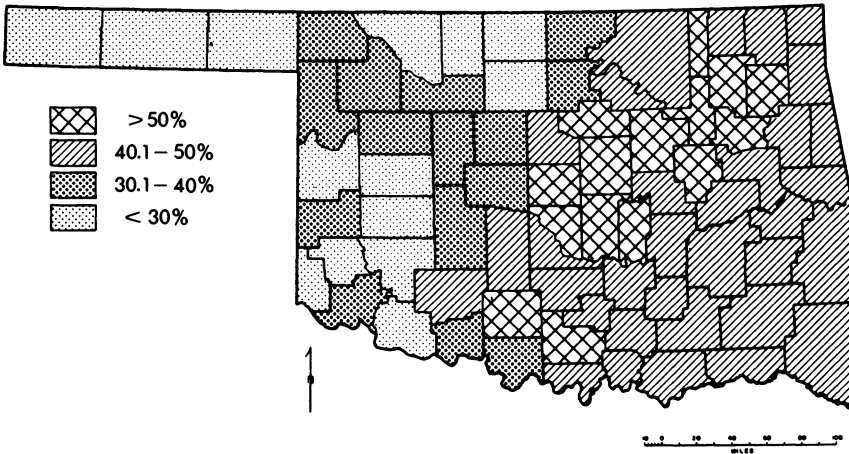
sources is not known for the entire period, but a recent survey estimated that Oklahoma off-farm income averaged \$26,828 per farm in 1982. Figure 19 reveals that part-time farmers made up a larger proportion of Oklahoma farmers than of U.S. farmers for the last two decades.

**Part-Time Farmers in Oklahoma
Figure 19**



The proportion of Oklahoma part-time farmers increased from 16.9 percent of total farmers in 1954 to 42.7 percent in 1982. Figure 20 illustrates the county proportions of farmers employed 200 days or more a year off the farm in 1982. The counties in the eastern part of the state tend to have a higher proportion of off-farm employment than do the counties in the western part of the state. Of the counties where the proportion is greater than 50 percent, eight are within Oklahoma's Standard Metropolitan Statistical Areas and six more border the SMSA's. SMSA's offer greater off-farm employment opportunity. These farms tend to be dominated by hobby farmers and have become a place of residence for many urban workers.

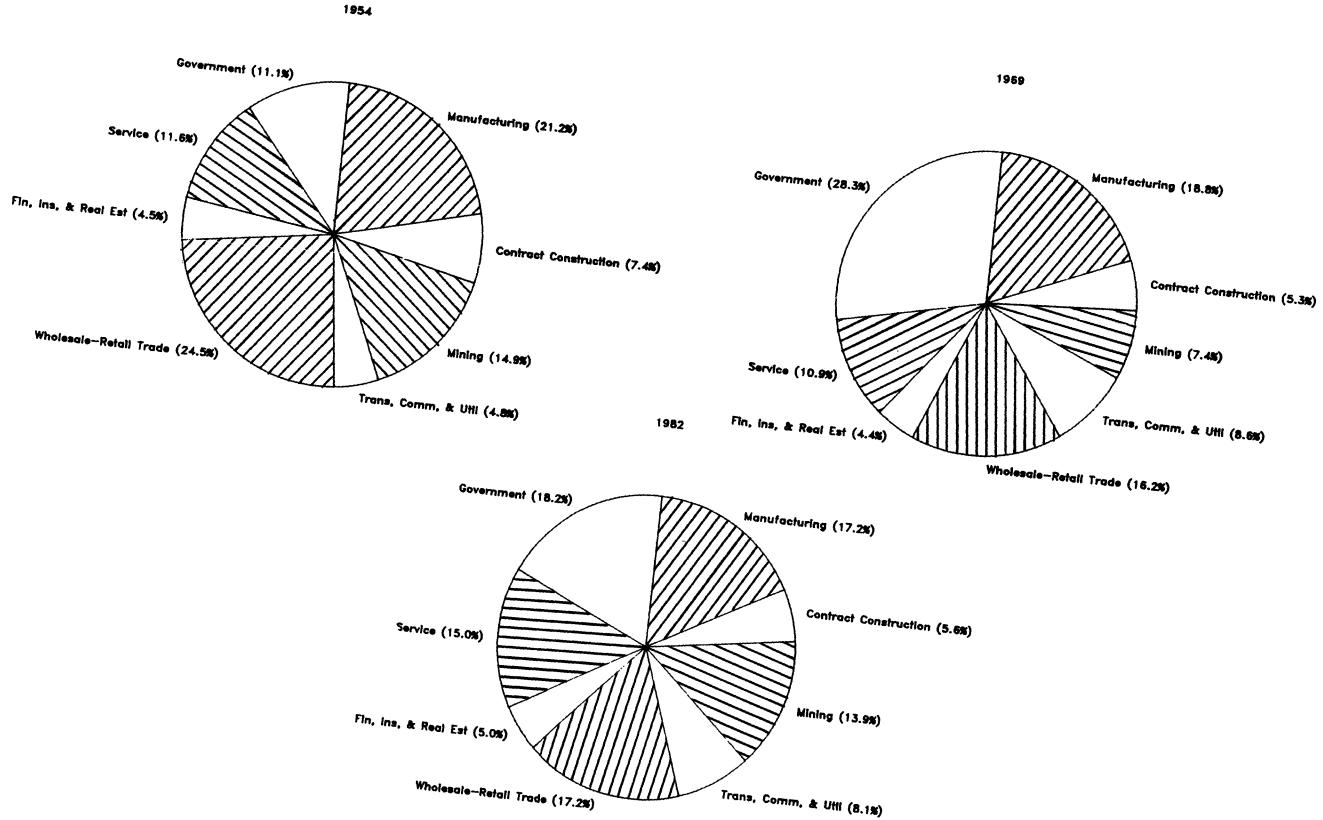
County Proportions of Oklahoma Part-Time Farmers
Figure 20



Figures 21 and 22 show potential sources of off-farm employment and off-farm income available to Oklahoma farmers. Manufacturing, government, service, and wholesale-retail trade dominate potential employment and income opportunities, increasing steadily from 45.7 percent in 1950, to 59 percent in 1969, to 65.7 percent in 1982. Local government has traditionally been the primary source of off-farm employment and income in rural areas, but the service and retail sectors have tended to become more important in recent years.

Table I shows the high proportion of Oklahoma farms with a relatively low gross farm income. Most of the low income farms are located in the non-plains region of the state. The proportion of farms in the largest sales class increased 6 percent during the period while their relative proportion of farm sales increased 35 percent. Part of this spectacular increase was caused by a real increase in the scale and number of larger commercial farms and part by "bracket creep" brought on by inflation. Most of the farms in the largest sales class are full-time commercial farmers and tend to be concentrated in the plains and prairie regions of the state.

Sources of Off-Farm Employment Figure 21



Sources of Off-Farm Income

Figure 22

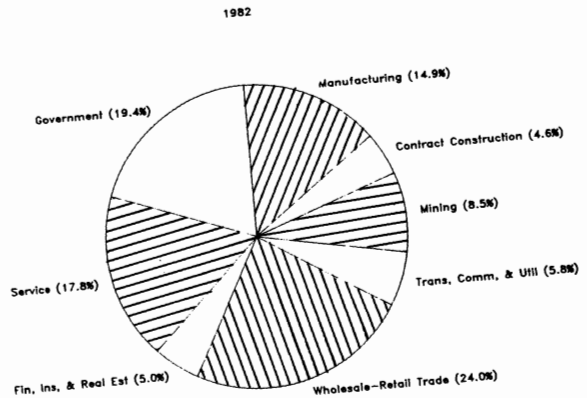
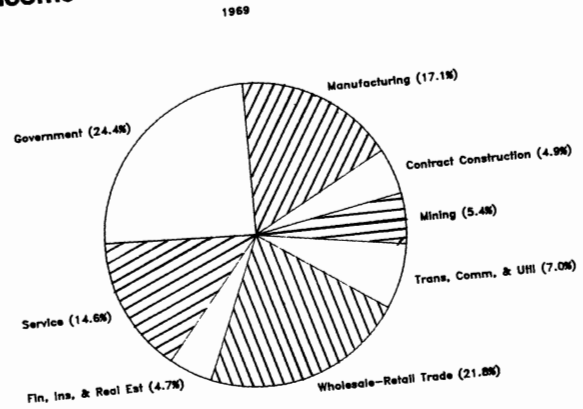
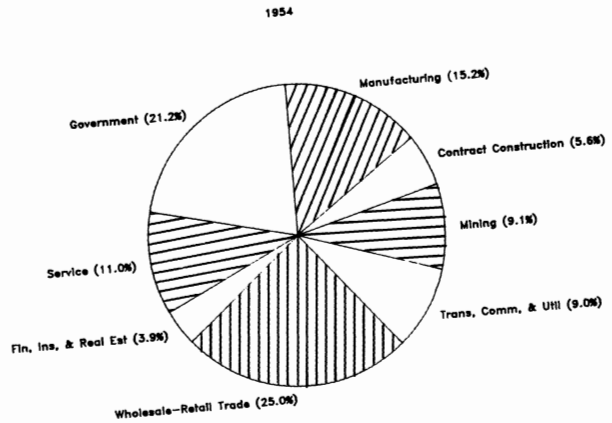


Table I
Oklahoma Farms by Sales Class, 1969, 1974, 1979, and 1982

SALES CLASS	1969		1974		1979		1982	
	FARM NUMBERS	PERCENTAGE	FARM NUMBERS	PERCENTAGE	FARM NUMBERS	PERCENTAGE	FARM NUMBERS	PERCENTAGE
(DOLLARS)								
LESS THAN \$2,500	32,471	39.1	23,360	33.5	16,150	22.4	20,261	27.9
2,500 - 14,999	35,972	43.3	25,773	37.0	31,966	44.3	28,594	39.4
15,000 - 39,999	10,828	13.0	11,560	16.6	12,957	17.9	11,356	15.7
40,000 - 99,999	2,940	3.5	5,606	9.5	7,431	10.3	7,232	10.0
100,000 OR MORE	786	.9	2,375	3.4	3,686	5.1	5,038	6.9
	82,997	99.8	69,674	100.0	72,190	100.0	72,481	99.9

SOURCE: CENSUS OF AGRICULTURE

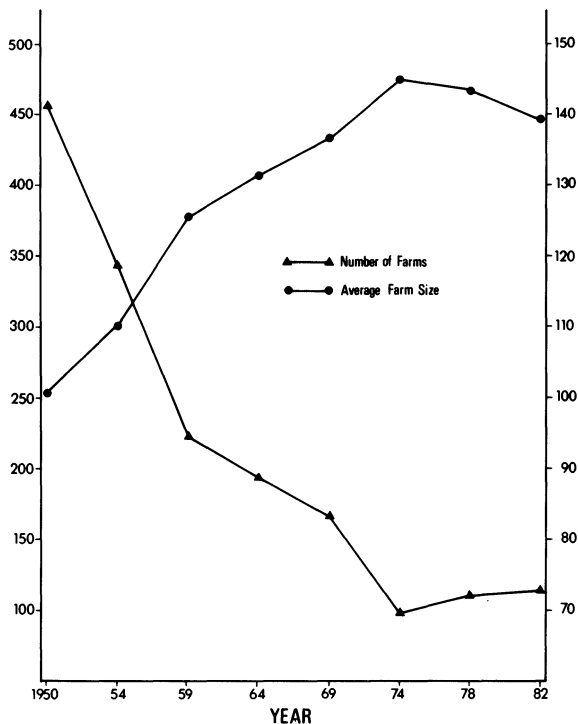
Resources, Efficiency, and Organization

Organization

Figure 23 shows the change in the number of farms and average farm size for Oklahoma between 1950 and 1982. During the 1970s the pattern reversed of decreasing farm numbers and increasing average farm size which had characterized Oklahoma farm structure since the mid-1930s. From 1974 to 1982 farm numbers increased by 2,804 and the average size of an Oklahoma farm decreased by 29 acres. The increase in farm numbers and decrease in average farm size was brought about by a relatively large increase in the number of 1-49 acre farms.

Table II depicts the relative changes in the proportions of farms by various acreage sizes for Oklahoma from 1964 to 1982. The small 1-49 acre farms increased the most with a net 3.7 percentage point gain. Most of the small farms are part-time farms located in the non-plains regions, whose residents are engaged in cow-calf operations and are employed off the farm. Some of the small farms are residences for the older farming population which have retired. The largest farms, 1,000 acres or more, increased by a net of 2.9 percentage points. Most of the increase in the largest farms was in the plains and prairie regions (mostly western Oklahoma) of the state. Growth in the

**Average Farm Size and Farm Numbers
Figure 23**



**Table II
Percentage of Farms in Various Size Classifications,
Oklahoma, Census Years 1964-1982**

ACRES						NET PERCENTAGE CHANGE	NET NUMBER CHANGE
	1964	1969	1974	1978	1982	BETWEEN 1964 - 1982	BETWEEN 1964 - 1982
1 - 9	2.1	3.9	3.2	3.8	4.5	2.4	1,361
10 - 49	13.4	9.2	8.6	10.9	14.7	1.3	-1,228
50 - 179	32.6	32.1	32.6	32.7	32.5	-.1	-5,336
180 - 499	30.6	31.5	30.4	28.2	25.7	-4.9	-8,468
500 - 999	13.8	14.6	14.7	13.9	12.2	-1.6	-3,412
1,000 or more	7.5	8.6	10.3	10.5	10.4	2.9	1,080
TOTAL	100.0	100.0	100.0	100.0	100.0	0.0	-16,003

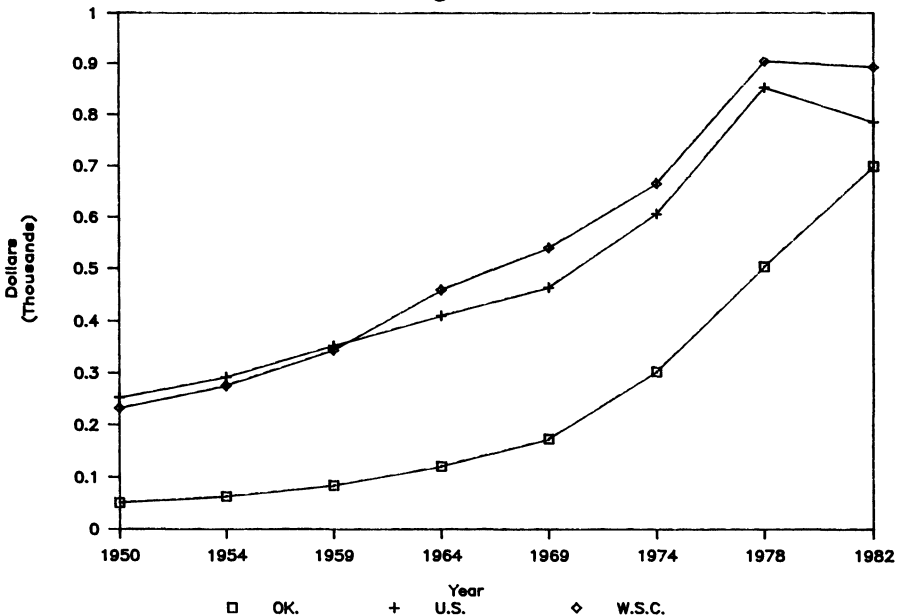
SOURCE : Census of Agriculture

largest farms represents continuing farm consolidation to achieve economies of size. Mid-size farms account for a declining share of all farms.

A comparison of the real value of land and buildings per acre for the U.S., the WSC region, and Oklahoma is shown in Figure 24. The real value of land and buildings per acre has tended to be lower in Oklahoma than in the U.S. and the WSC region. The average value of land and buildings on an Oklahoma farm in 1982 was \$311,642. All Oklahoma counties in the non-plains and prairie regions (mostly eastern Oklahoma) were below the state average. The relatively lower value of farm real estate in Oklahoma compared to the U.S. was apparent because the relatively high value of land and buildings in the plains regions of the state was more than offset by the relatively low value of land and buildings in eastern Oklahoma.

Total Oklahoma farm labor, family and hired, has steadily decreased in recent decades. Family labor tended to decrease more than hired labor,

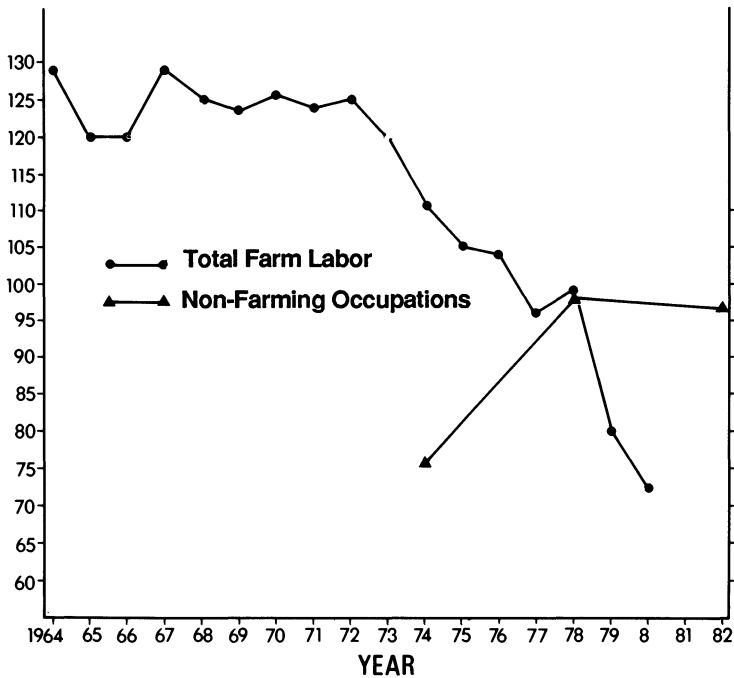
Per Acre Value of Land and Buildings
Figure 24



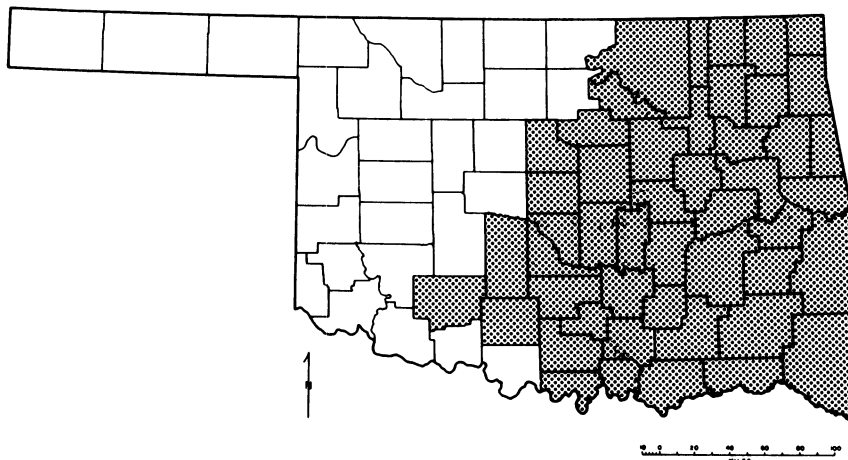
dropping from 109,000 workers in 1964 to 55,500 workers in 1980. The decrease in farm labor is associated with the substitution of capital for labor on Oklahoma farms. Part of the decrease in family labor is attributable to the increase in non-farming occupations of Oklahoma farm residents. Figure 25 shows the decrease in total farm labor and the increase in non-farming occupations on Oklahoma farms.

Figure 26 illustrates the 1982 county proportions of Oklahoma farmers by primary occupation, either farming or non-farming as based on primary source of income. The general trend in the plains region was for farming to be the primary occupation and for off-farm employment to be a supplement to family income. The hill and mountain regions show a trend towards small cow-calf operations with some form of off-farm employment as the major source of income.

Oklahoma Farm Labor and Occupation
Figure 25



**Oklahoma Counties Where Proportion of Non-Farm Occupation
Is Greater Than 50 Percent Among All Farms
Figure 26**

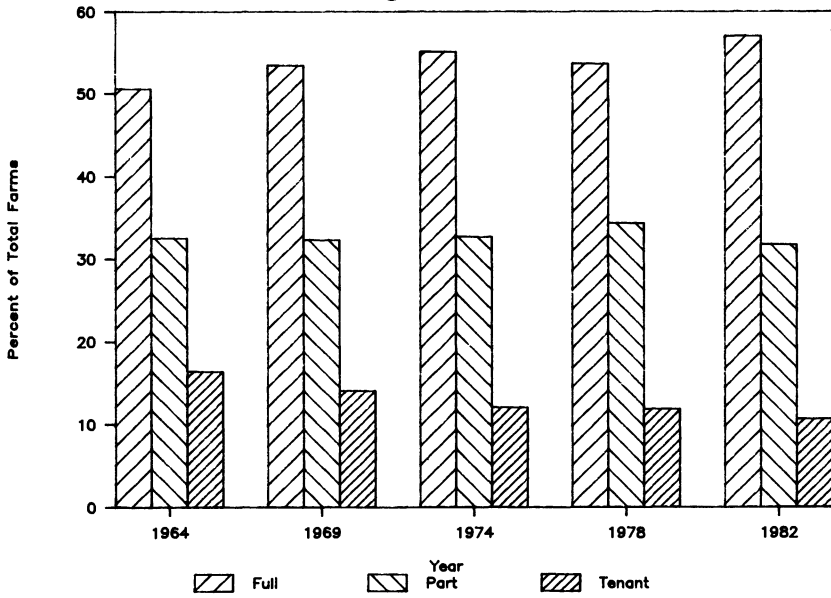


The trend in Oklahoma farm tenure has been towards an increase in full and part ownership coupled with a decrease in tenancy (Figure 27). Figure 28 illustrates a tendency for a higher proportion of part ownership in the plains counties. Part ownership, as a management strategy, offers the security and an investment outlet of a "home-owned" unit combined with rented land to achieve economies of larger farm size and a higher standard of living.

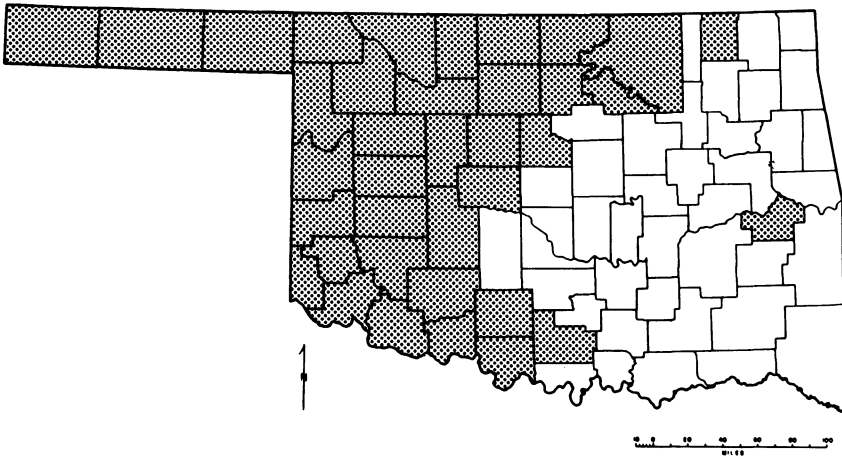
The pattern of larger-scale farming in the plains counties is also apparent in the relative value of equipment and machinery per farm. The average value of machinery and equipment per Oklahoma farm in 1982 was \$32,109. Figure 29 illustrates that almost all the plains and prairie counties were above the state average and all the hill and mountain counties were below the state average. The disparate value of Oklahoma's machinery and equipment, net farm income, value of land and buildings, and farm size is strongly related to regional land-use practices in the state.

Oklahoma has experienced large changes in land use since 1945. Harvested cropland decreased from 14,088,470 acres in 1945 to 8,961,353

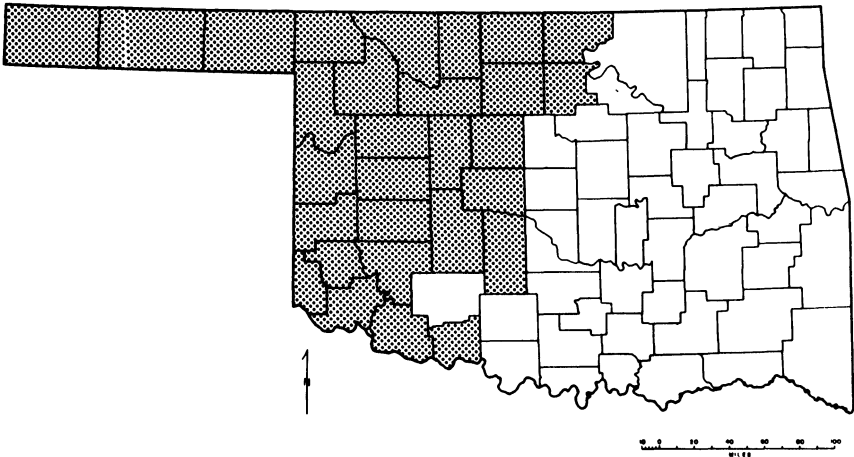
Oklahoma Full, Part-Time, and Tenant
Figure 27



Oklahoma Counties Above State Average Proportion of Part Ownership
Figure 28



Counties Above State per Farm Average Value of Machinery and Equipment Figure 29

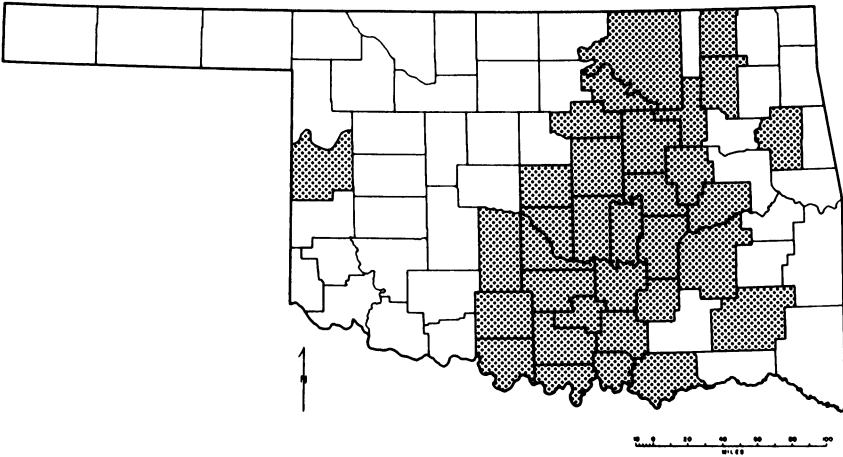


acres in 1982. At the same time pasture land increased over 4 million acres. Figure 30 illustrates that large amounts of cropland have been retired in east central Oklahoma. The large decrease in the amount of harvested cropland in the hill and mountain regions of the state is associated with the structure of those regions.

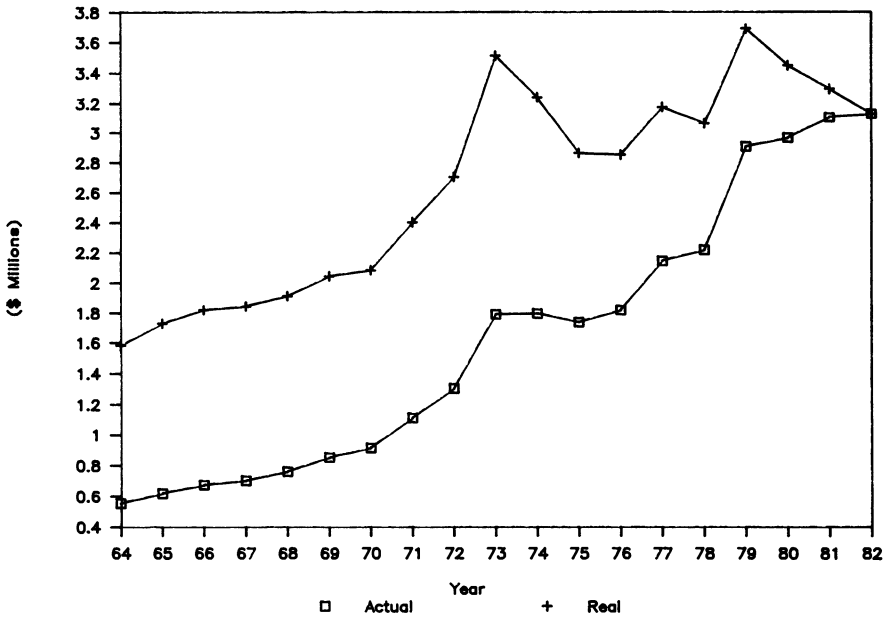
Resources

Actual and real total farm production expenses are shown in Figure 31. Total current operating expenses averaged 71.7 percent of total production expense from 1964 to 1982, with 1973 being the highest year at 75.1 percent of total production expenses. Feed expenses increased at an average rate of 16.5 percent a year, livestock purchases at 10.1 percent annually, seed at .9 percent annually, fertilizer and lime at 12.6 percent annually, and interest on the farm mortgage at an average rate of 24.5 percent a year. Taxes on farm property and net rent to nonfarm landlords both decreased at an average rate

**Oklahoma Counties Where Harvested Cropland has
Decreased More than 50 Percent Since 1945**
Figure 30

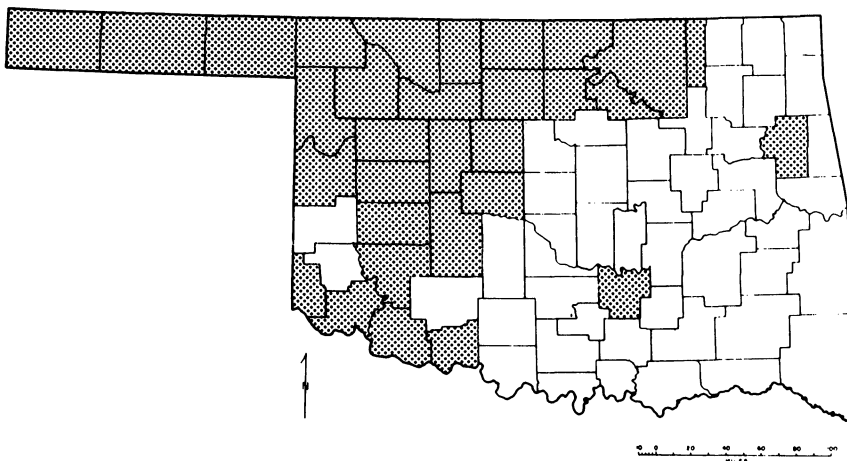


Total Farm Production Expenses
Figure 31



of 4.9 percent a year. Generally, farm production expenses follow the same pattern as interest expense illustrated in Figure 32, with the plains and prairie regions using more production inputs than the other regions of Oklahoma.

Oklahoma Counties with Above State Average per Farm Interest Expense Figure 32

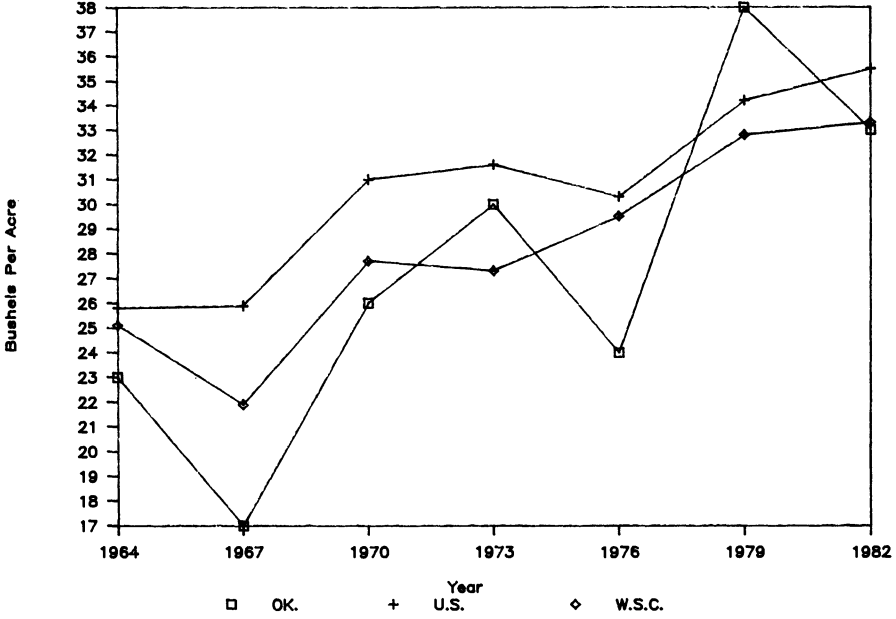


Efficiency

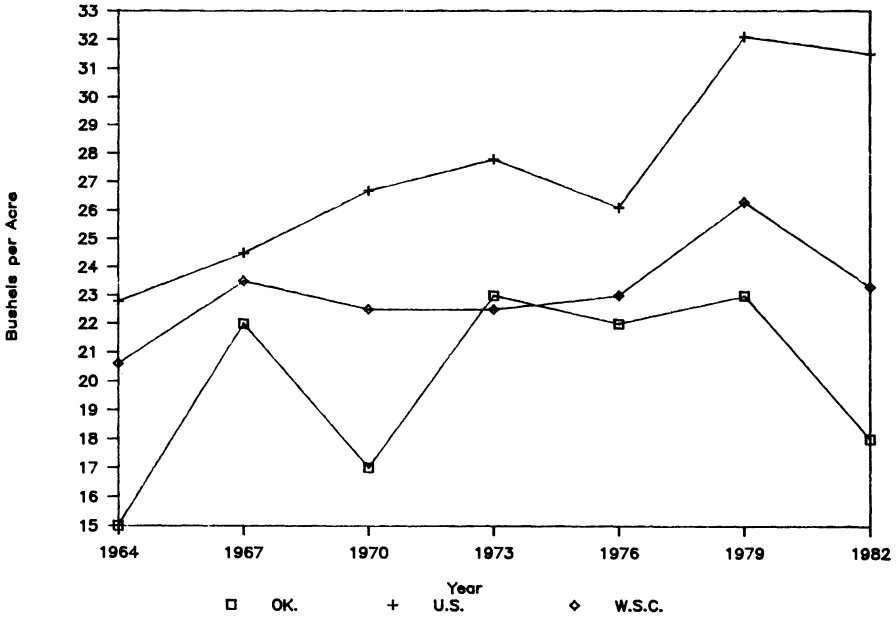
Figures 33, 34, 35, and 36 illustrate yield trends for major Oklahoma crops compared to the U.S and the WSC region from 1964 to 1982. Oklahoma yields have trended upward over the period. Oklahoma wheat yields averaged 16.2 bushels per acre over the 1945-63 period and 25.8 bushels over the 1964-82 period. Oklahoma soybean yields average 12.4 bushels per acre over the 1945-63 period and 19.5 bushels per acre over the 1964-82 period. Oklahoma cotton yields averaged 210 pounds per acre over the 1945-63 period and 290 pounds per acre over the 1964-82 period. Peanut yields increased from an average of 831 pounds per acre over the 1945-63 period to 1,972 pounds per acre over the 1964-82 period.

The increases in crop yields have been accompanied by increases in the use of irrigation, commercial fertilizers, and improved varieties. Oklahoma

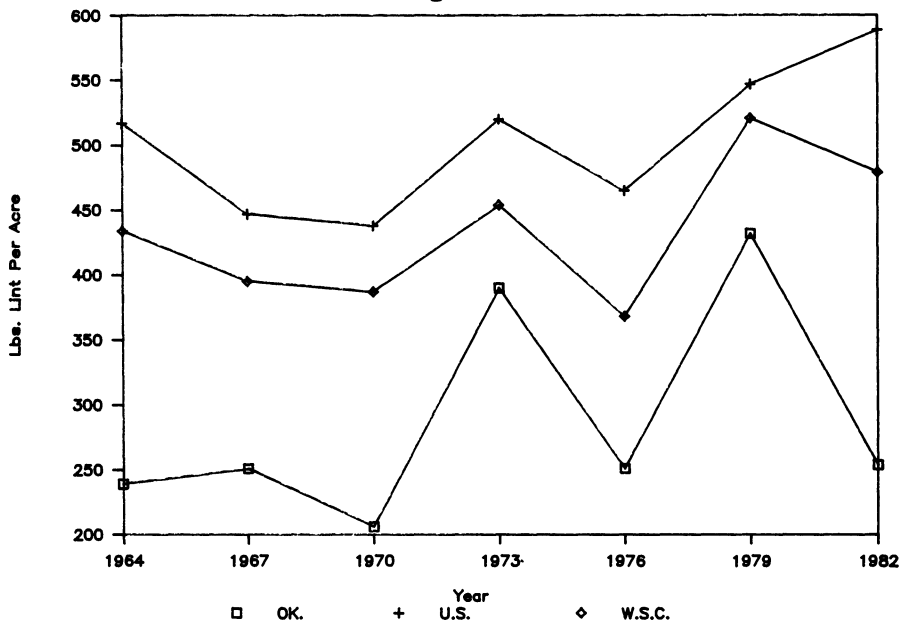
**Wheat Yield
Figure 33**



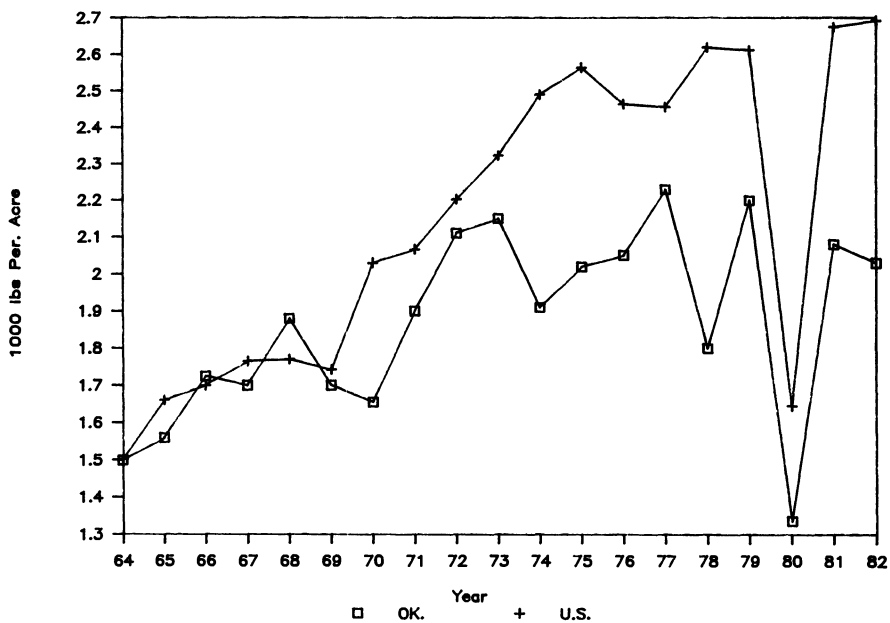
**Soybean Yield
Figure 34**



**Cotton Yield
Figure 35**



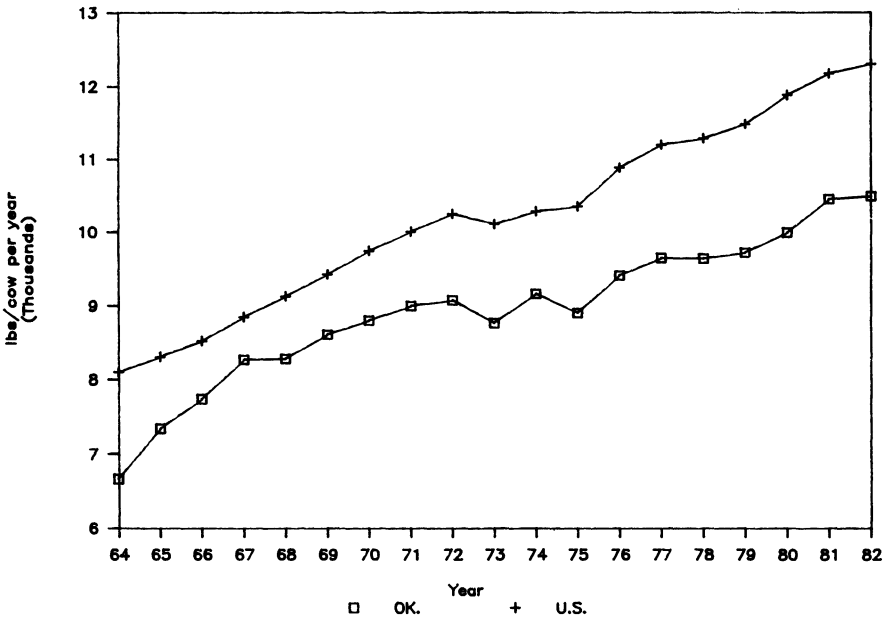
**Peanut Yield
Figure 36**



farmers used an average of 151,158 tons of fertilizer per year in the 1945-63 period and an average of 673,415 tons of fertilizer per year in the 1964-82 period. Commercial fertilizer use increased an average of 16,947 tons per year in the 1945-63 period and 18,388 tons per year in the 1964-82 period. Irrigated land increased from 34,000 acres in 1949 to 302,000 acres in 1964. Irrigated land reached a period maximum of 602,000 acres in 1978, then declined to 491,000 acres in 1982.

Figures 37 and 38 show output per animal unit for milk and egg production in the U.S. and Oklahoma from 1964 to 1982. Milk production per cow averaged 4,432 pounds for the 1945-63 period and 8,949 pounds per cow in the 1964-82 period in Oklahoma. Egg production per layer increased from an average of 171 eggs per year in the 1945-63 period to 219 eggs per year in the 1964-82 period. Oklahoma egg productivity increased to match that of the U.S. in 1980, but then slipped in the 1982-83 period.

Milk Production per Cow
Figure 37



Egg Production per Layer
Figure 38

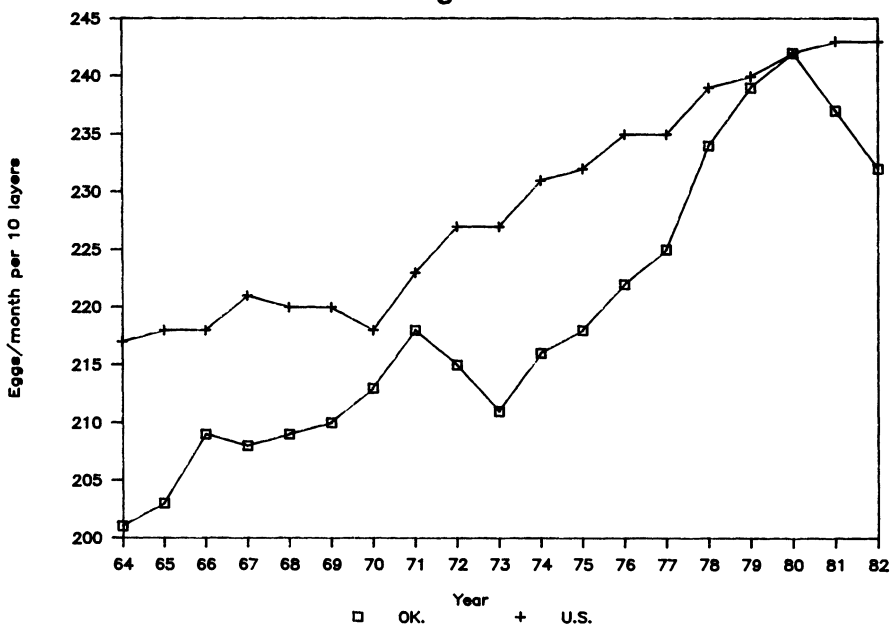
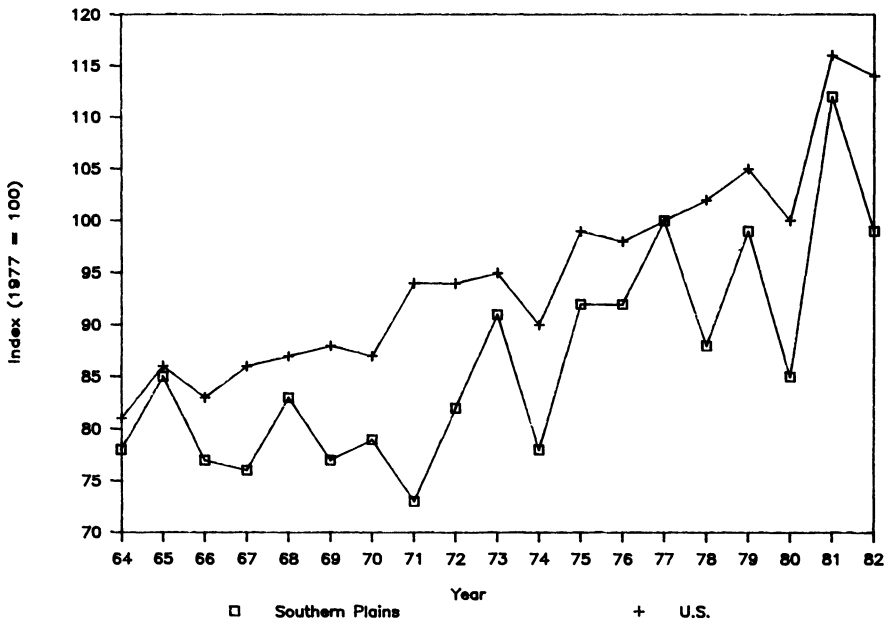


Figure 39 shows total farm productivity for the Southern Plains and the U.S. from 1964 to 1982.⁴ The Southern Plains show much more variability than the U.S. as a whole, in part because the Southern Plains are more susceptible to climatic variation such as droughts. Productivity in the Southern Plains increased at an average rate of 1.1 percentage points a year during the 1964-82 period.

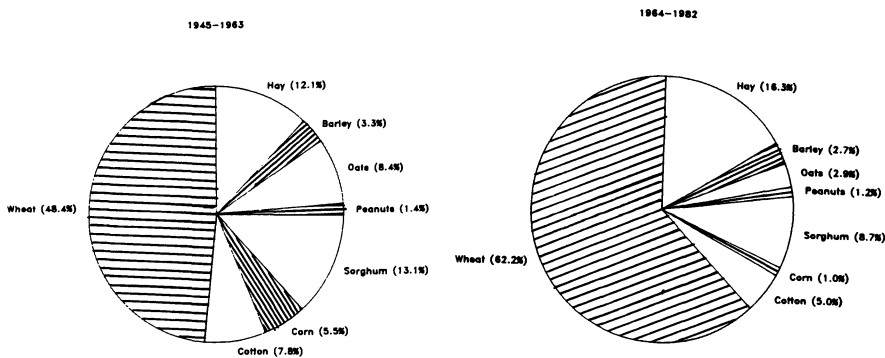
Figure 40 shows the relative change in crops for Oklahoma from 1945 to 1982. Corn, sorghum, and cotton all tended to decrease in importance in Oklahoma throughout the whole period. Peanuts remained stable and wheat, hay, and soybeans increased in importance. Generally, the trend has been for row crops to decrease in importance, especially in the non-plains regions of

⁴The Southern Plains includes Texas and Oklahoma. Productivity measured by total farm output per unit of all production inputs.

Total Productivity (Output/Input)
Figure 39



Crop Production (Percentage of Total)
Figure 40



the state where conservation programs have induced farmers to shift from row crops to forage crops and the production of cattle and calves.

Figure 41 shows the relative changes in livestock in Oklahoma since 1945. Cattle and calf inventories have tended to steadily increase while dairy cattle, hog, and sheep inventories have steadily decreased throughout the period. All chicken and turkey inventories decreased in the 1945-63 period, then increased dramatically in the 1964-82 period. The large increase in chicken inventories stems primarily from the large increase in the production of broilers.

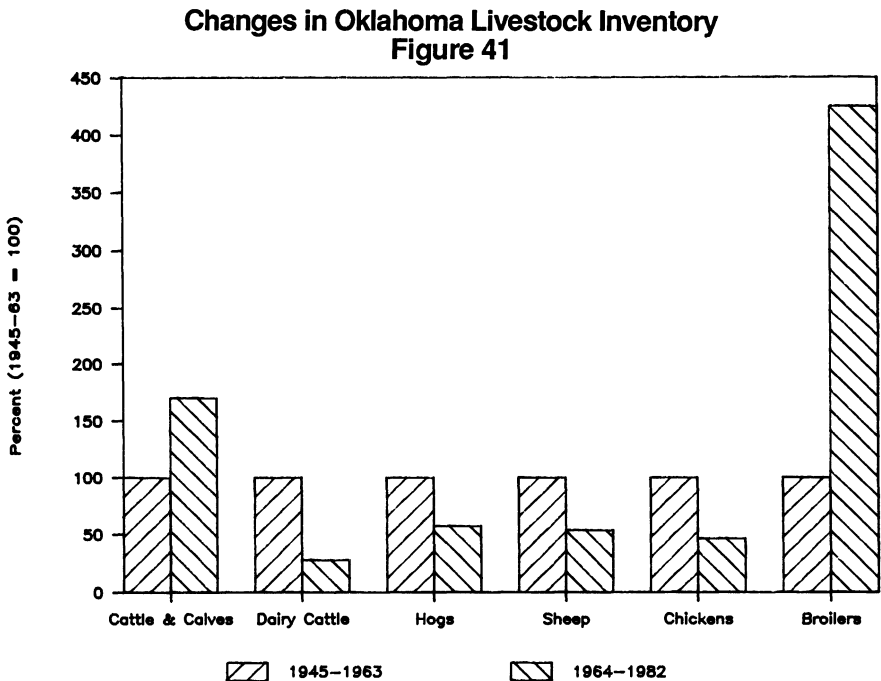


Table III shows trends in Oklahoma livestock income (sales) compared to U.S. livestock income for the 1964-82 period using real (1973) dollars. Cattle and calf sales increased 43 percent in Oklahoma during the period and 23 percent in the U.S. Constant dollar sales for poultry products increased 100 percent in Oklahoma during the period and increased 12 percent in the U.S.

Table III
Percentage Change in Livestock Sales
From 1964-1982 (1982 Dollars)

CATEGORY	OKLAHOMA (PERCENT)	UNITED STATES (PERCENT)
CATTLE and CALF	43.0	23.0
POULTRY	100.0	12.0
SWINE	-26.0	48.0
DAIRY	-3.0	23.0
SHEEP and LAMB	-70.0	-40.0

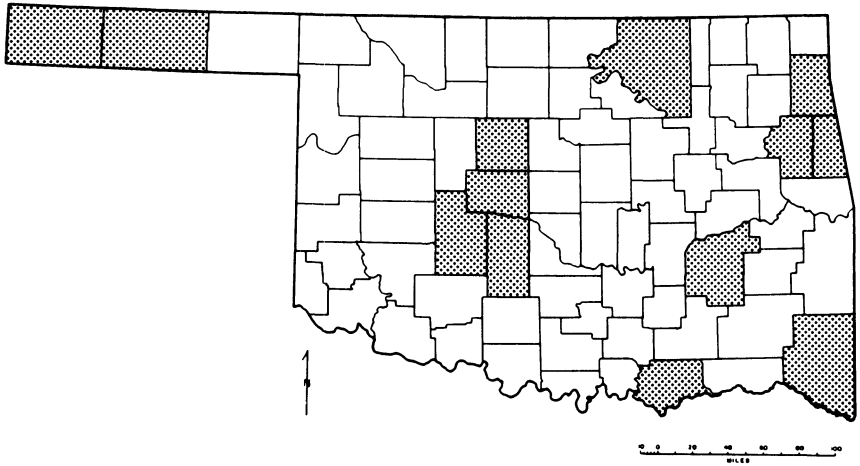
SOURCE : Census of Agriculture

Hog sales increased in the U.S. by 48 percent while they declined in Oklahoma by 26 percent over the period. Dairy sales increased in the U.S. by 23 percent over the period and declined 3 percent in Oklahoma. Sheep and lamb sales decreased by 40 percent in the U.S. and by 70 percent in Oklahoma.

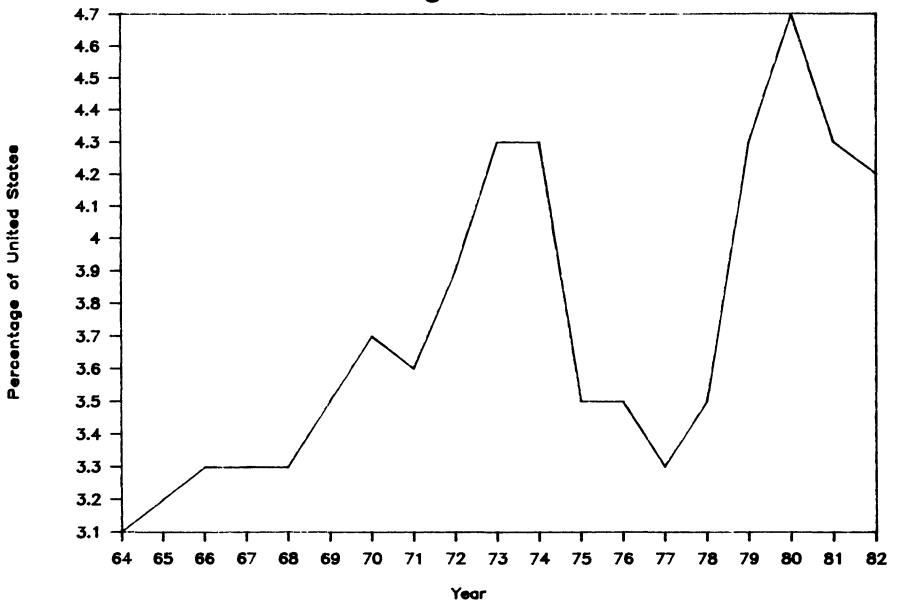
Figure 42 shows the Oklahoma counties which were in the top 100 counties for the U.S. in 1964 and in 1982 for livestock production. Canadian was the only Oklahoma county in the 1964 top 100 in livestock production that dropped out by 1982. Adair, Cherokee, Delaware, and McCurtain were the first Oklahoma counties to be in the top 100 poultry producers in the U.S. Cimarron and Kingfisher were new counties in the top 100 in 1982 in cattle and calves sold.

Compared to the United States, Oklahoma has maintained a comparative advantage in the sale of cattle and calves. Figure 43 shows Oklahoma cattle and calve sales as a percentage of total U.S. cattle and calve sales. Over the 1964-82 period, Oklahoma averaged 3.7 percent of total U.S. sales. In the first

**Oklahoma Counties in Top 100 Livestock Producing Counties
Figure 42**



**Oklahoma Cattle and Calf Sales
Figure 43**



half of the period, Oklahoma averaged 3.5 percent of total sales and in the second half of the period Oklahoma farmers increased their average relative share to 4.0 percent of the total market.

Table IV shows trends in Oklahoma crop income compared to U.S. crop income. Wheat sales increased 90 percent in the U.S. and 104 percent in Oklahoma over the 1964-82 period. For all crops listed below except barley, peanuts, soybeans, and cotton, the increase in crop sales was greater in Oklahoma than in the U.S.

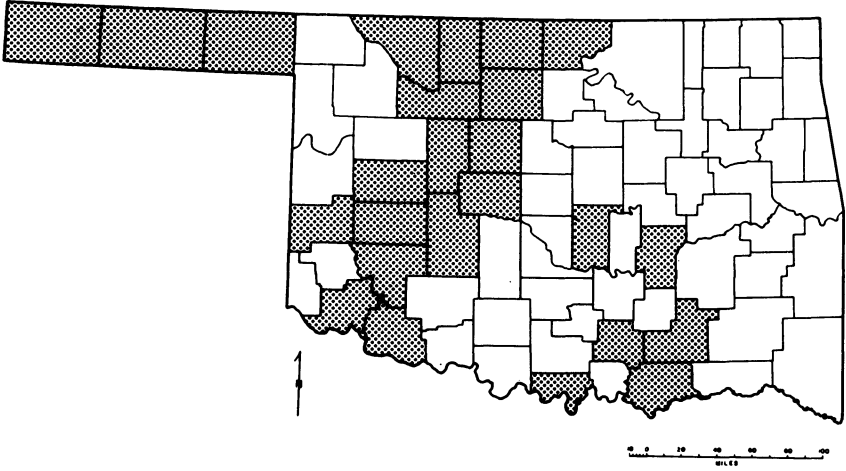
Figure 44 shows the Oklahoma counties which were in the top 100 crop producing counties of the U.S. for 1964 and 1982. Oklahoma lost six counties out of the top 100 crop producing counties during the 1964-82 period. Two were wheat counties, Major and Beaver; three were peanut counties, Atoka, Johnston, and Pottawatomie; and one was a cotton county, Beckham. Of Oklahoma's 19 counties in the top 100 in 1982, thirteen were wheat counties,

Table IV
Percentage Change in Crop Sales
From 1964-1982 (1982 Dollars)

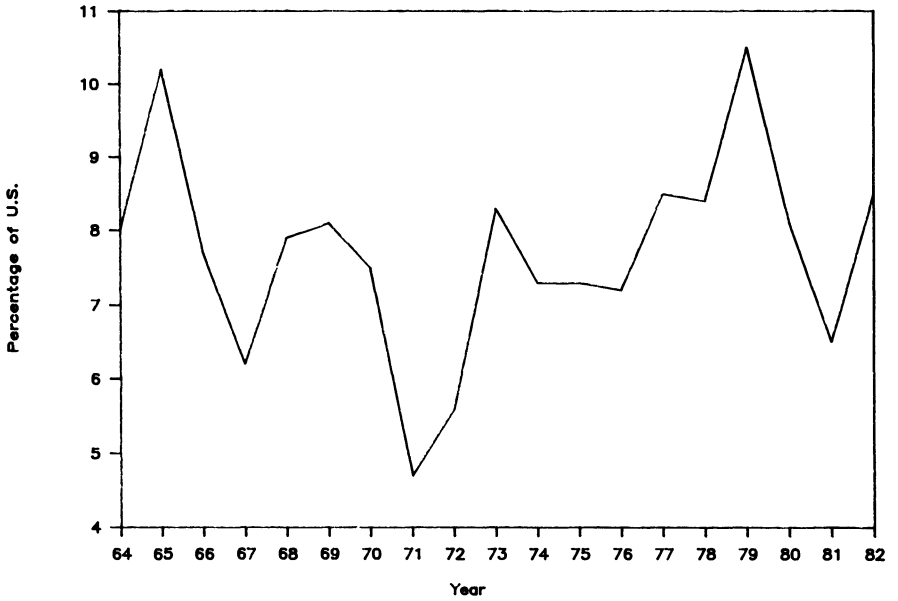
CATEGORY	OKLAHOMA (PERCENT)	UNITED STATES (PERCENT)
WHEAT	104.0	90.0
SOYBEANS	83.0	117.0
PEANUTS	-28.0	22.0
COTTON	-67.0	-53.0
SORGHUM	19.0	-28.0
BARLEY	-55.0	13.0

SOURCE : Census of Agriculture

**Oklahoma Counties in Top 100 Crop Producing Counties
Figure 44**



**Oklahoma Wheat Sales
Figure 45**



four were peanut counties, two were cotton counties, and two were sorghum counties. Oklahoma had six counties in the top 100 barley producing counties in 1964 and none in 1984 as producers switched from barley to wheat.

Compared to the United States, Oklahoma has increased its comparative advantage in the sale of wheat. Figure 45 shows Oklahoma wheat sales as a percentage of total U.S. wheat sales. Oklahoma wheat sales averaged 7.7 percent of total wheat sales between 1964 and 1982. In the first half of the period Oklahoma averaged 7.4 percent of total U.S. wheat sales and during the last decade Oklahoma farmers increased their relative average to 8.0 percent of the total sales.

Summary

Oklahoma's agricultural structure has become more heterogeneous, yet also more specialized as it has developed. The states structural divergence is rooted in various comparative advantages. Some areas of Oklahoma, primarily the plains and prairie regions, have a physical comparative advantage over other major areas of Oklahoma. Other areas of Oklahoma, around the SMSA's and other economic nodes, enjoy an economic comparative advantage in terms of market access, general infrastructure, and transportation costs.

The comparative physical advantage of the plains and prairie regions generally lies in favorable topography and soil. These general physical characteristics translate into an economic comparative advantage in terms of economies of size. Farms in these regions are significantly larger than in other areas of Oklahoma and have larger harvested crop acreages. The comparative cost advantage is in lower per acre costs of equipment. Generally this comparative cost advantage applies to the cotton, peanut, sorghum, soybean, and wheat producing areas of Oklahoma.

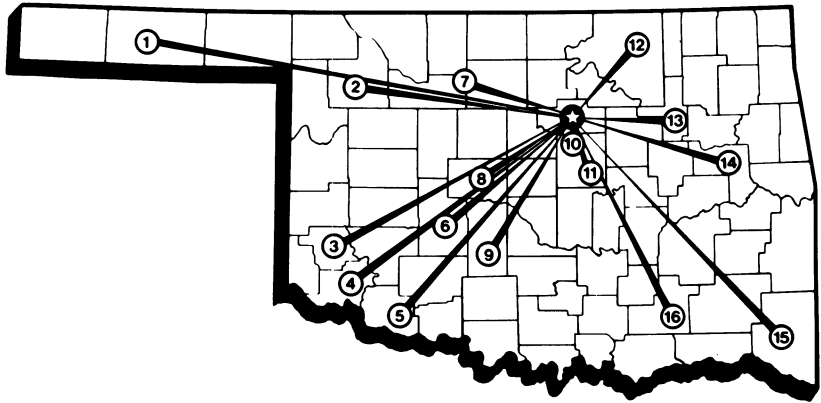
Other areas of Oklahoma have different comparative advantages which also have effected agricultural structure. The agricultural areas around Oklahoma's SMSA's and smaller economic nodes have a comparative advantage in off-farm labor markets. The economic nodes provide an outlet for surplus farm labor and contribute to survival of Oklahoma's small part-time farmers. The economic nodes also provide a comparative advantage to nearby milk producers in terms of lower storage and transportation costs. Poultry producers in eastern Oklahoma enjoy a comparative advantage over other Oklahoma poultry producers by being close to Arkansas poultry infrastructure.

The various comparative advantages found within Oklahoma are the driving forces behind the state's dynamic agricultural structure. The structural trend in plains and prairie regions is towards fewer but larger farms, increased part-ownership, increased debt financing, increased per farm gross income, and increased capital-labor ratios. The structural trend in the non-plains and prairie regions of the state has been towards more but smaller farms, full-ownership, less debt financing, relatively low per farm gross income, and full-time off-farm employment. These general structural attributes along with markets and technology will continue to be the primary forces shaping the structure of Oklahoma's agriculture into the twenty-first century.

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OKLAHOMA AGRICULTURAL EXPERIMENT STATION System Covers the State



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- 2. **Southern Great Plains Field Station – Woodward**
- 3. **Sandyland Research Station – Mangum**
- 4. **Irrigation Research Station – Altus**
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