

CHANGING CHARACTERISTICS AND STRUCTURE
OF KANSAS FARMS

by

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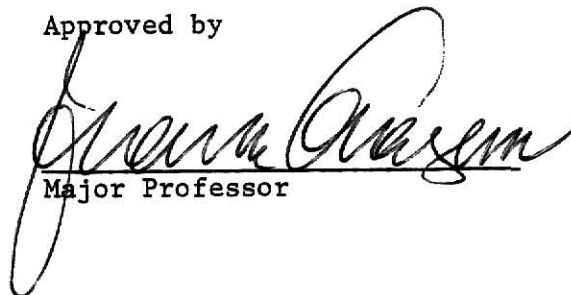
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Chapter 1

INTRODUCTION

Agriculture is the number one industry in the state of Kansas. Over the past four decades, this industry has been, also, one of the state's most changing industries. In 1980 the Kansas farming sector operated with 50 percent of the number of farms of forty years ago (8). The remaining farms are getting larger, more highly capitalized, and more specialized.

Transition from small self-sufficient farms to highly commercial farms is going on each day. The expansion in the farm firm is generally characterized by increasing the proportion of capital to labor and that of variable capital to fixed capital.

Among other factors, economies of size, labor-saving technologies, market conditions, and land values are considered the driving force behind the farm concentration (fewer, but larger).

The direction and the speed of the changing farm structure are always associated with public concern. The concern has intensified in recent years due to a growing specialization and industrialization of agriculture.

Inflation of land values, increases in capital requirements beyond the means of young farmers, the continued increases in size and decline in the number of farms, as well as continued release of labor from agriculture are some of the factors contributing to public's concerns.

The ongoing changes in the structure of agriculture not only affect the farming sector, they have an impact in other sectors of the economy as well. Capital intensive agriculture and the corresponding decline in the farm work force and population have had an impact on the economic and social viability of rural communities.

Underlying forces to changing the size of farms are the declining per unit costs of operation as farms expand in acreage or in numbers of livestock. Since many of the changes leading to size economies are of relatively recent origin the degree and the range of potential cost saving economies is not known for Kansas farms. Thus, the objectives of this study are: to make an empirical evaluation of economies of size of Kansas farms as a whole, and for different types of farming (cash-crop dry-land farms, and cash-crop irrigated farms) and for different locations of the state. The study compares Kansas farms according to their level of income (gross income), farm size (crop acres), age of operator, and by state's Farm Management Associations.

In addition the study deals with farm structure and characteristics of Kansas farms tracing the changes over time. The years considered are 1973, 1975, 1977, and 1980.

Chapter 2

REVIEW OF LITERATURE

2.1 Theoretical Considerations

The concept of the economies of size comes from the economic theory of the firm under perfect competition: the concept relies on a rigorous set of assumptions describing the relationship between firm size and its efficiency.

Economies of size are usually described in terms of short-run and long-run cost situations. The short-run period is assured to be long enough to permit changes in output which are technologically possible without altering the firm size. The long-run involves a longer time period, that can allow for types of adjustments both in degree of resource utilization, and firm size. Thus, short-run cost economies are resulting from changes in the degree of intensity with which the fixed resources are utilized. Long-run cost economies are resulting from the efficiencies obtained by changing firm size.

This concept is illustrated in Figure 2.1. It explains the hypothetical relationship between short-run and long-run cost curves.

The short-run average total cost (SRAC) is the average total cost TC (fixed and variable), per unit of output (Q). That is $SRAC = \frac{TC}{Q}$. The long-run average total cost (LRAC) is the total costs TC (no fixed costs, because all inputs are variable) per unit of output (Q).

The relationship between SRAC curves and LRAC curve

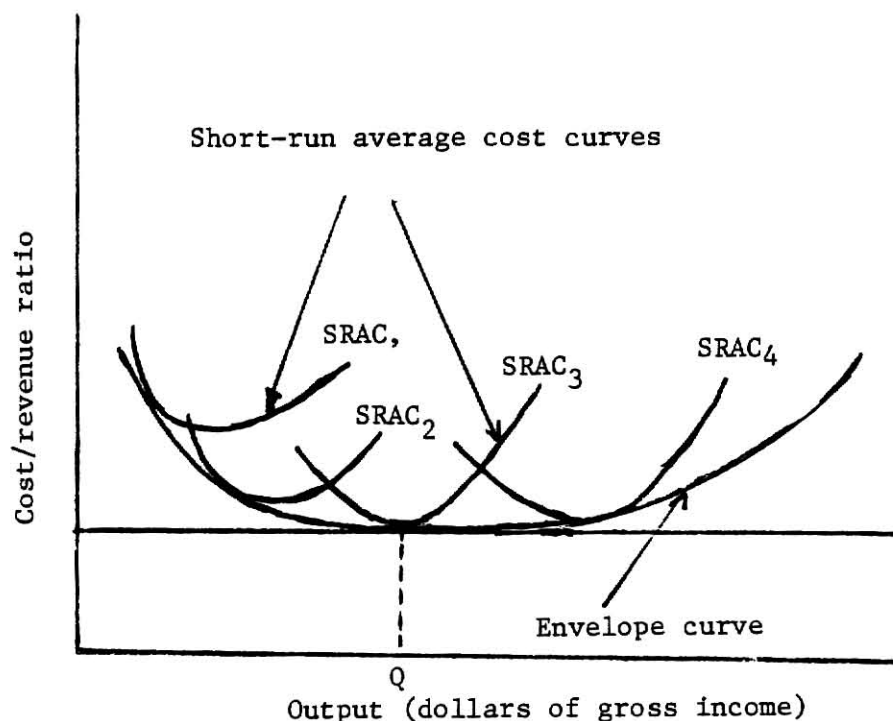


Figure (2.1)

The short-run average total costs relationships assume one or more inputs are fixed in the short-run. Adding more variable inputs to fixed inputs, results in increasing output rates, and average costs per unit of output initially decline sharply because the associated fixed costs are spread over more units of output. At some point, average cost curve levels off and then rises again due to diminishing returns to the variable resources. This gives an answer as to why the typical short-run average cost curves have a U shape. In Fig. (2.1), each firm size is represented by a separate short-run curve, SRAC, SRAC₂, SRAC₃....

The long-run average cost curves assume that all resources are variable--including firm size. In the long-run firms can increase their levels of output, either by changing the intensities with which any existing sizes are used, or by changing the size of their plants.

From Fig. (2.1), it can be noticed that the long-run average cost curve is composed of points belonging to various short-run average total cost curves. The long-run average total cost curve is tangent (envelope) to the short-run average total cost curve at that point, which is common to both curves. The tangency point does not occur at the minimum point of the short run average total cost curve, except for the short-run average total cost curve, which corresponds to the optimum firm size. The optimum firm size is defined as that size which enables the firm to produce at the minimum possible long-run average cost.

Sometimes, long-run average cost curve is called a planning curve, because it indicates the minimum possible cost at which the firm can produce any particular rate of output.

2.2 Empirical Studies

Economists have used a number of different approaches in their attempts to improve our understanding of direction and speed of changes that have taken place in agricultural industry. In their understanding, cost economies occur when inputs can be substituted for each other. Labor-saving technology, which has become accepted, and available is still being the catalyst of farm concentration.

Some economists have studied farm structural changes by using number and size of farms, and how they change over time. John T. Scott stresses that "farm size distribution is important for policy purposes-- for local communities, for professional farm management, for credit institutions, for farm supply business, and for businessmen handling the marketing of farm products" (15, p. 2). Other economists measured the efficiency either by average total costs curves, or by cost/revenue ratios. Among those economists, Madden, reviewed various economies of size studies for different types of farming, and for various locations in the United States. In addition Madden assimilated those studies in his often cited report "Economies of Size in Farming." Madden pointed out that the typical long-run average cost curve reaches a minimum at a relatively small size of operation and remains, more or less, constant through the very large size (10). Tweeten attempts to show the persistence of low-resource returns in agriculture. He also shows the decreasing range of average costs for farms with relatively large yearly gross sales (economic class I and II farms). His study indicates the problem of "dualism" in American agriculture. According to Tweeten most size economies in 1969 were achieved by class II farms, with gross returns of 40,000 and above. For larger farms (econ. class I) the advantages from farm size enlargement become less significant. Small farms do not recover their expenses. Tweeten emphasized that "small farms survive by accepting a low return on their labor and equity capital" (16, p. 187).

Some other studies have substantiated Tweeten's results. B. F. Hall and P. Leveen in California argued that the long-run average total cost curve is relatively flat after its initial rapid decline. In addition they found that some other factors, such as, resource quality, management, and the overall institutional structure are also important in declining production cost (6).

Some other economists emphasized that farmers are influenced in their decision making more by farm income than by decreasing production costs, and that no cost advantages exist for having larger farms. According to T. Miller, G. Rodwald, and McElroy that "increasing farm size does not necessarily mean increase in farm efficiency or productivity. In fact small farms in many field crop regions are nearly as technically efficient as large farms, and farmers of all size of operation tend to enlarge their farms in search of higher income rather than to increase per unit cost efficiencies" (11, p. 7).

Because of rapid changes in the United States farm structure, some economists have attempted to predict the farming situation in the near future. The transition from small farms to larger ones will continue for the rest of this century. By the year 2000 the largest farms, one percent of all farms, will account for about a half of all farm production. Small farms, which are 50 percent of all farms, will produce only one percent of all farm production (9).

Until 1970 public programs were favoring large farms and they have encouraged farm enlargement, although they were initially aimed to benefit small farms and to allow family farms to stay in business (17).

Changes in market system such as, increasing purchases by processors directly from farmers, greater use of contractual arrangements, and the associated decline of local market, influenced the access of smaller farms to markets. Hence, smaller farms could not interact in an increasingly complex coordinating, structure (5).

Kansas, as a leading producer of some agricultural commodities, too, has been subject to farm structural changes. Between 1969 and 1978, the number of Kansas farms has declined by 10.5 percent, that is from 86,059 to 77,091 farms. That decrease is less than the U.S. average, 19.0 percent, from 2.999 million farms in the U.S. in 1969 to 2.428 million in 1978. The average Kansas farm increased to 619 acres in 1978, up 75 acres since 1964 and 45 acres since 1969 (13).

While family ownership increased from 82.7 percent of the total in 1969 to 88.3 percent in 1978, partnership remained, almost, unchanged at 9.5 percent. But the number of corporations increased three fold from 328 in 1969 to 1,478 in 1978 (13).

The average age of Kansas farm operators in 1978 was 50.5 years, seven months less than the average age of Kansas farm operators in 1969 (13).

When S. Zenger and B. Schurle tested the impact of diversification of farm risk, they concluded that crop production costs per

acre, operator's age, rainfall and diversification were not significantly related to income variability (19).

In Western Kansas, the rural population is already sparse. Shrinking farm numbers and increasing farm size, in that area, indicate considerable reduction in farming opportunities likely in the near future (12).

In spite of the trend towards larger and fewer farms, there are signals that there will be a room for small farms especially when operators of small farms find opportunities to supplement their incomes by off-farm employment. Stimulation in economic growth in local industries and services would increase off-farm jobs for small farmers (14).

One has to appreciate that empirical studies can not include all relevant factors affecting farms and farm production. In addition they are limited by areas and type of farmings. In this aspect F. Orazem and J. Doll stress that,

While empirical studies are usually applicable only to specific areas and enterprises, they do furnish some general guidelines for anticipated outcomes for the same enterprises in other areas. More important, such studies are time-dated; they are based on specific production practices and technologies used during a given period of time (3. p. 225).

Time is extremely important because technology and production methods can be changed from time to time, and thus affect the nature of cost relationships and size economies.

Chapter 3

KANSAS FARMS OVERVIEW

3.1 Farm Numbers

The 63rd Annual Report and Farm Facts (7) indicates that in 1920 there were 167 thousand farms. That number dwindled to 72 thousand farms by 1980. Figure 3.1 and the data in Table 3.1 trace the magnitude of this trend.

Since 1920 Kansas farm numbers have been on the decline. The decline was relatively slow until 1940, when it intensified in each decade; from 4.2 percent between 1930 and 1940 to 21 percent between 1960 and 1970. Between 1970 and 1980 the percentage decline of farm numbers was less intense, 17.2 percent. However, during the three decades, the farm numbers shrunk by 56.67 percent.

Acceleration of the percentage decline in farm numbers since 1940 was mostly due to technological innovations in farming, which appeared about 1940 and became widely available and accepted in latter years (1). The slowdown of the decline of farm numbers continued through the decade of the 1970's and early reports indicate even a slight increase in the number of farms for 1981.

3.2 Farm Acreage

The decline in farm numbers has been accompanied by an increase in the size of farms. Farm enlargement has been possible because of improved labor-saving technology and availability of more efficient

NUMBER OF FARMS AND AVR. FARM SIZE FOR THE PERIOD 1920-1980

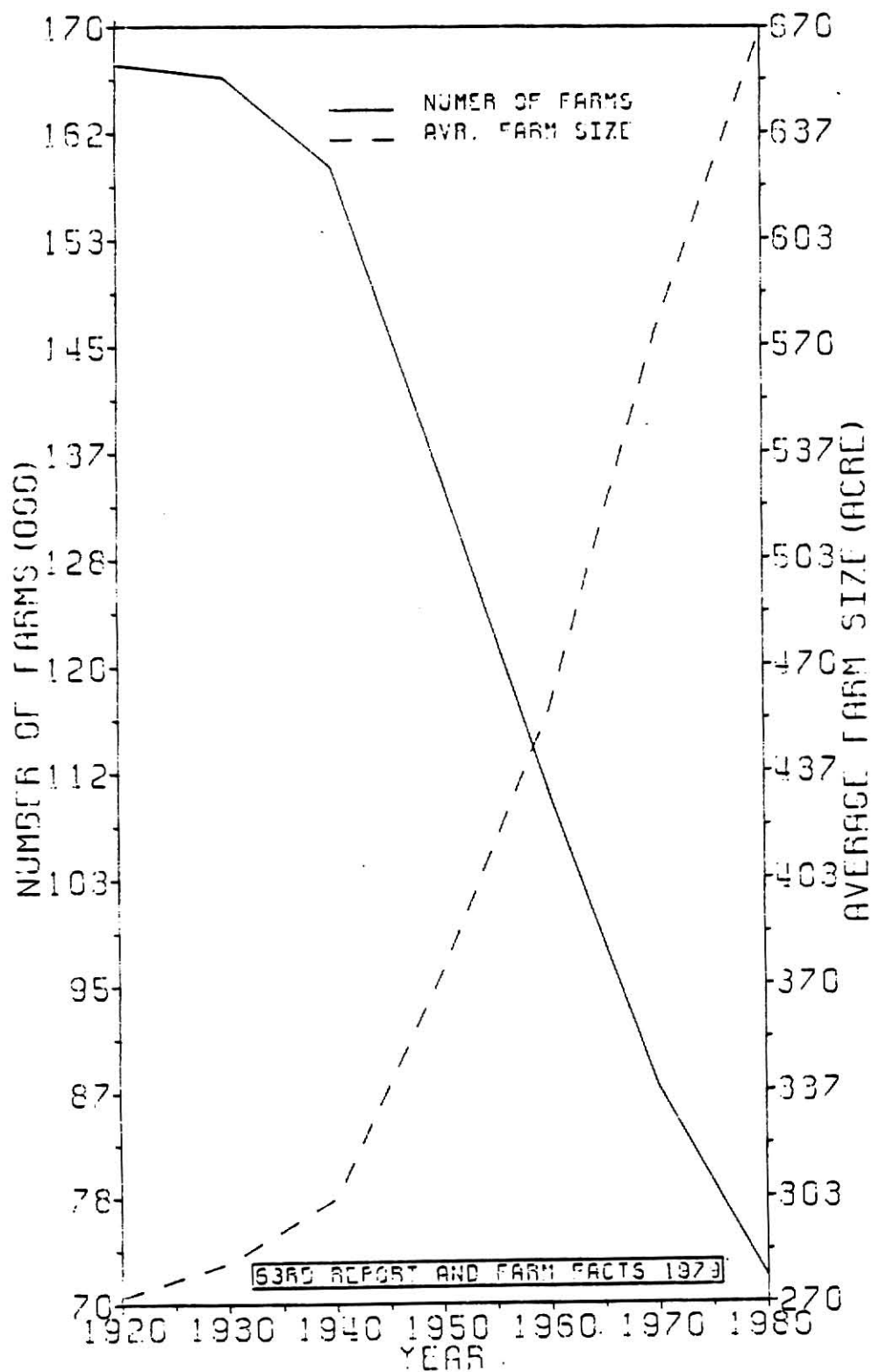


Figure 3.1

Table (3.1). Number of Farms, Farm Size, Land in Farms, and Value of Land and Building for the Period 1920-1980.

Year	Number of Farms		Average Size of Farms		Land in Farms		Value of Land & Building per Acre		
	(000)	Farms	% Change	Acres	% Change	(000) Acres	% Change	Dollars	% Change
1920	167		--	272	--	45,400	--	62.30	--
1930	166		- 0.6	283	+ 4.04	47,000	+3.52	48.56	- 22.05
1940	159		- 4.2	303	+ 7.07	48,200	+2.55	29.51	- 39.23
1950	135		-15.09	374	+23.43	50,500	+4.77	65.80	+122.98
1960	110		-18.52	456	+21.93	50,200	-0.59	101.00	+ 53.50
1970	87		-20.91	574	+25.88	49,900	-0.60	159.00	+ 57.43
1980	72		-17.24	669	+16.55	48,200	-3.41	484.00	+204.40

Data are extracted from the 63rd Report and Farm Facts 1979.

management. Figure 3.1 and table 3.1 provide data that reveal the impact of this land consolidation on acres per farm in Kansas. In absolute terms, farms were on the average 2.45 times larger in 1980 than in 1920. In 1920 Kansas farms measured 272 acres on the average; in 1980, 667 acres was an average size. During the decade of the 1930's, percentage increase in average farm size was 7.07 percent. This percentage jumped to 23.43 during the 1940's. The increase in average farm size reached a peak of 25.88 percent between 1960 and 1970. For the next decade (1970's), the percentage increase in average farm size slowed down and it dropped from 25.88 between 1960 and 1970 to 16.55 percent during the 1970's (Figure 3.1).

3.3 Land in Farms

While the number of farms, and the average farm size changed dramatically during the last six decades, the land in farms fluctuated very little, between -4 and +4 percent. Data in table 3.1 show the undergoing changes in land in farms. The land in farms increased by 6.2 percent between 1920 and 1980 (table 3.1).

One can conclude that the amount of land in farms is not significantly affected by structural changes in Kansas farms; when farm numbers shrink, and farming units get larger, the total farm land remains intact.

3.4 Value of Land and Buildings

Figure 3.2 and table 3.1 are of great help in visualizing the value of land and buildings, and how their values have dramatically

VALUE OF LAND AND BUILDING FOR 1920-1980

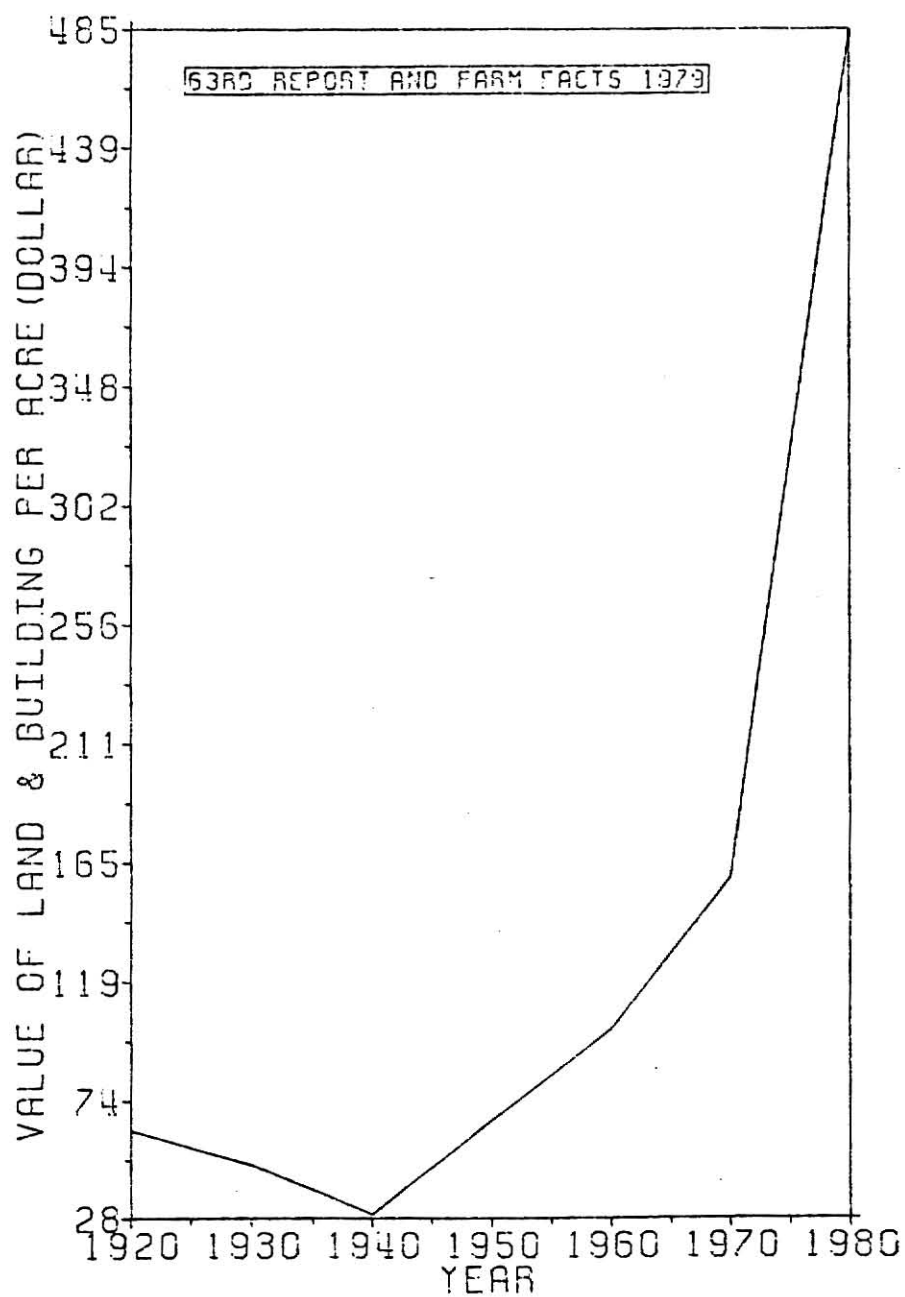


Figure 3.2

changed over time. During the 1920's, 1930's, and beginning of the 1940's the value of land and buildings was in continuous decline. Decreasing the value of land and buildings during those years caused by the great depression, followed by World War II. People at that time, because of uncertainty and other factors, had lost motivation of buying and/or investing any assets into farming. The value of land and buildings reached a bottom between 1930 and 1940, when it was 29.51 dollars per acre. However, the value of land and buildings increased sharply in each decade. The largest rise in the value of land and buildings was during the 1970's. In 1920 the per acre value of land and buildings was 62.3 dollars. This value has increased to 484 dollars by 1980 in terms of current dollars.

Chapter 4

PROCEDURE AND DATA

Data for this study were obtained from the K-MAR-105 Whole-Farm and Enterprise Data Bank and Retrieval System. These data contain approximately 216 variables per farm, including financial information, measures of size, and other information, that helps describing the farm for approximately 1,300 to 1,500 farms for the years 1973 through 1980. These data are stored in a computer tape in such a way that the user(s) can obtain whatever information is required; quickly, and easily. Computer techniques (in this case SAS) can be used to generate and obtain needed information.

Almost all of the farms for the years 1973, 1975, 1977, and 1980 were chosen to be analyzed for this study. In other words, the number of farms for this analysis was 1498, 1470, 1493, and 1333 for the years 1973, 1975, 1977, and 1980, respectively.

Of the several approaches that can be used to study economies of size, an approach similar to Tweeten's approach is used for this study. The long run average unit cost curves throughout this study are obtained by computing for each economic class the ratio of all costs (all farm costs plus unpaid family labor plus 6 percent charge for current and intermediate and long-term assets [4]) divided by all returns (all farms' incomes plus government payments). Tables and graphs as well as results of this calculation are presented in the next chapter.

For studying economies of size and for comparing farms with respect to their level of income, farms are classified into six economic classes. Farms, also, were classified according to their size (crop acres), their location (associations), and age of operators and compared to farms with respect to mentioned variables. Cost per acre was calculated for whole farms for 1973, 1975, 1977, and 1980.

To ascertain the changing characteristics, and structure of farms by different income levels, and by different types of farming, per farm averages and percentages were calculated.

Chapter 5

RESULTS AND DISCUSSIONS

For this study, farm size was measured by gross farm income (all farm income plus government payments). The long-run average cost curves were calculated using the study method described in the previous chapter. Each long-run average cost curve is an average within an economic class of farms but it is also a marginal cost curve among economic classes.

Each figure depicting the cost economies in the next section, shows along with the long-run average cost curves, straight lines at \$1.0. These lines represent the break-even points; costs equal incomes, without any loss or any gain. The lines, also, indicate the average and marginal revenues. The difference between each long-run average cost and the line at \$1.0 reveals the positive or the negative profit of each economic class farm, depending whether the long-run average cost curve lies below or above the \$1.0 line.

5.1 Economies of Size of Kansas Farms (All Farm Management Association Farms)

Results of studying economies of size of Kansas Farm Management Association Farms are summarized in Table 5.1 (a more detailed information is given in Table 5.5). Figure 5.1 contains four long-run average cost curves (LRAC) indicating economies of size for the years of analysis: 1973, 1975, 1977, and 1980. As shown, the LRAC

LONG RUN COST PER UNIT OF FARM PRODUCTION BY ECONOMIC CLASS COMPARING FOUR YEARS 1973 , 1975 , 1977 AND 1980

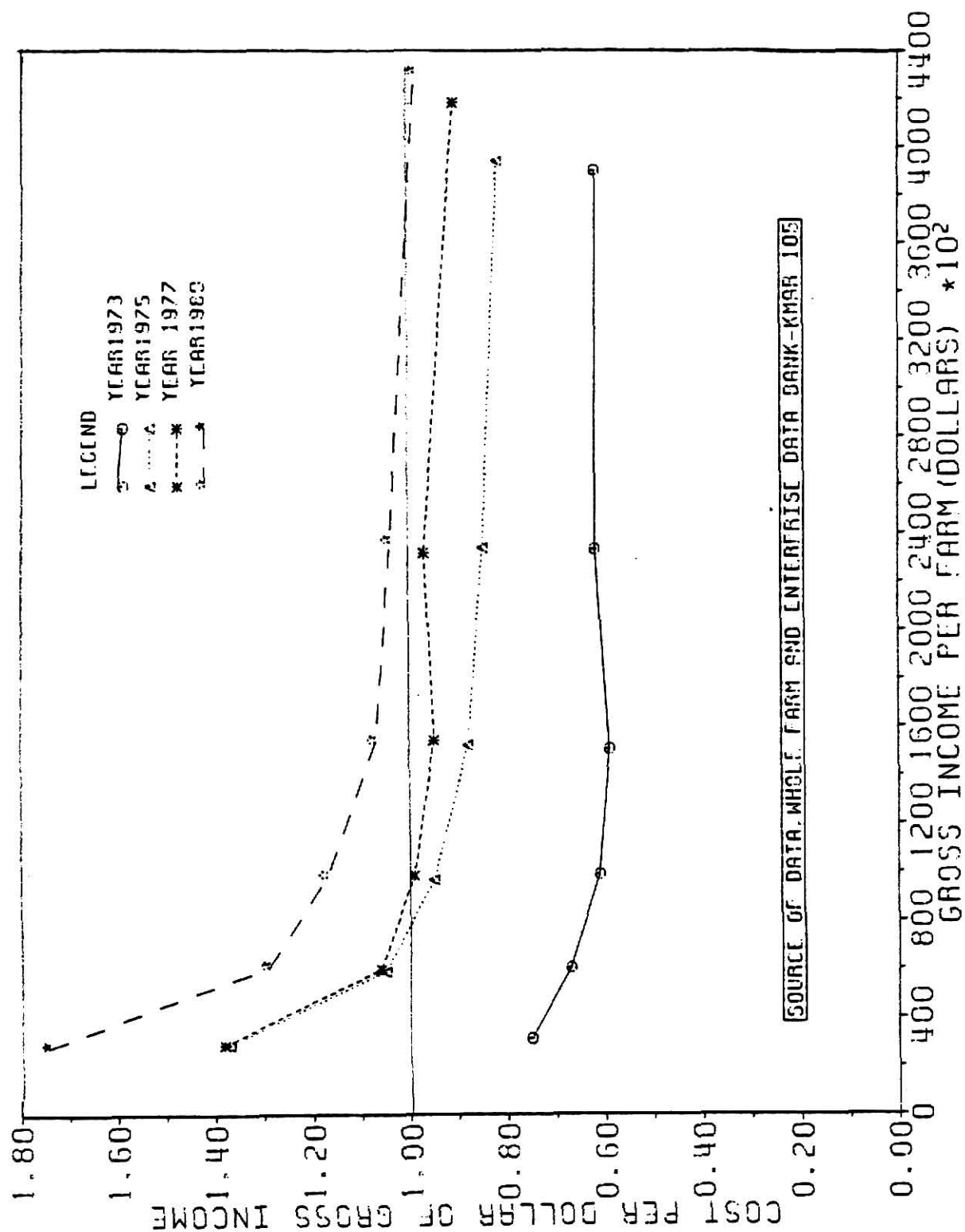


Figure 5.1

Table (5.1) Unit cost per dollar of gross income for Kansas Farm Management Associations Farms for the years 1973, 1975, 1977, and 1980

Item	\$40,000 Class I	\$40,000 and <\$80,000 Class II	\$80,000 and <\$120,000 Class III	\$120,000 and <\$200,000 Class IV	\$200,000 and <\$280,000 Class V	\$280,000 and over Class VI	All Farms
Cost per unit of gross income 1973	0.75	0.64	0.61	0.59	0.62	0.62	0.62
Cost per unit of gross income 1975	1.37	1.05	0.95	0.88	0.85	0.82	0.94
Cost per unit of gross income 1977	1.38	1.06	0.99	0.95	0.97	0.91	0.99
Cost per unit of gross income 1980	1.74	1.29	1.17	1.07	1.04	0.99	1.08

for the 1973 is the lowest curve, while the LRAC for the 1980 is the highest one. The LRAC for the 1977 is located above that for the 1975. This generally explains that the profitability of Kansas farms was decreasing from one year to another. Farms of 1973 were more profitable than farms of 1975. Farms of 1975 were more profitable than those of 1977, and so on. This indicates that costs have been increasing faster than the farm's gross income for the time period of 1973-1980. The index of prices paid by farmers increased during this period by 95.00 percent, while the index of prices received by farmers increased by only 37.43 percent. The ratio of the index of prices received by farmers and the index of prices paid by them was 1.28, 1.03, 0.90, and 0.88 for the years 1973, 1975, 1977, and 1980; taking 1967 as a base year (18).

The LRAC curve of the 1973 is relatively flat with cost declining by \$0.16 per dollar of gross income over the entire range or economic classes of farms; table 5.1. In 1973 smaller farms achieved nearly all of the cost efficiencies obtained on larger farms. Small farms with gross income of less than \$40,000 (class I) had to give up on the average \$0.75 to generate \$1.0 of gross income, while larger farms, with gross income over \$280,000 (class IV) appear to be the most efficient, with \$0.59 cost per dollar of gross income in 1973.

In 1975, the gap between small farms and large farms became significantly wide. Small farms (class I and class II) could not recover their expenses. By class III farms, the break-even points are achieved. As shown in figure 5.1, the LRAC curve for the 1975

has very little slope for larger farms (class IV through class VI) but it turns up to a great extent for smaller farms (class I through class III). As farm size increases, fewer economies advantages occurred. Smaller farms (class I) lost, on the average, \$0.37 for each dollar of gross income, while larger farms (class VI) gained, on average, \$0.18 for each dollar of gross income.

There are a lot of similarities between the LRAC curves of the 1975 and the 1977. The LRAC curve of the 1977 slopes sharply downward between economic class farm I and economic class III. Beyond this (class III), the LRAC curve of the 1977 is more or less flat. Small farms could not recover their costs, and their loss was \$0.38 per each dollar of gross income. In the same year, larger farms (class VI) were the optimal ones, with the cost per dollar of gross income of 0.91.

The LRAC curve of the 1980 shows that the gap between small and large farms is wider than ever. Cost per dollar of gross income of small farms (class I) was 1.74, while it was 0.99 for the large farms (class IV). In 1980, only class VI enjoyed some cost efficiencies. The remaining economic classes of farms suffered losses. The LRAC curve of the 1980's shows a slight slope between the third and the sixth economic classes of farms. The portion of the LRAC curve between the first and the third economic class has a very sharp slope.

5.2 Economies of Size by Type of Farms (Cash-crop dry-land farms, type 1 and cash-crop irrigated farms, type 2)

Evaluating and comparing economies of size for Kansas Farm Management Association cash-crop dry-land farms--Type 1, and cash-crop

irrigated farms--Type 2, for the years 1973, 1975, 1977, and 1980, was made and the results summarized in table 5.2 (and in greater detail in table 1, appendix) and illustrated in figure 5.2.1. For clarity, figure 5.2.2, and figure 5.2.3 are added to indicate the results of type 1 and type 2 farms, separately.

In general, larger sized cash-crop dry-land farms for all years of analysis did not enjoy substantially lower cost per unit dollar of gross income, when compared to medium sized farms. Thus, cost-gross income ratios generally fall sharply over the first two or three smallest economic classes of farms and then leveled off, or even rose slightly.

The entire LRAC curve of the 1973 lies below the break-even point line--figure 5.2.2. On the average class I farms had \$0.20 higher average cost per dollar of gross income than did class IV farms. On the other hand class VI farms had only \$.01 lower average cost per dollar of gross income than did class IV farms. The LRAC curve portion for the medium and large sized farms in 1975, 1977, and 1980 lies below the \$1.0 line, while the LRAC curve portions for smaller sized farms, for the same years, is located above the break-even point line. In 1975 the highest cost-gross income ratio 1.36 was found in class I farms, and the lowest cost-gross income ratio of 0.82 was found in class V farms.

The most efficient farms in 1977 were class VI with gross income of over \$280,000 and the cost-gross income ratio of 0.81, while the most inefficient farms were class I farms with gross income

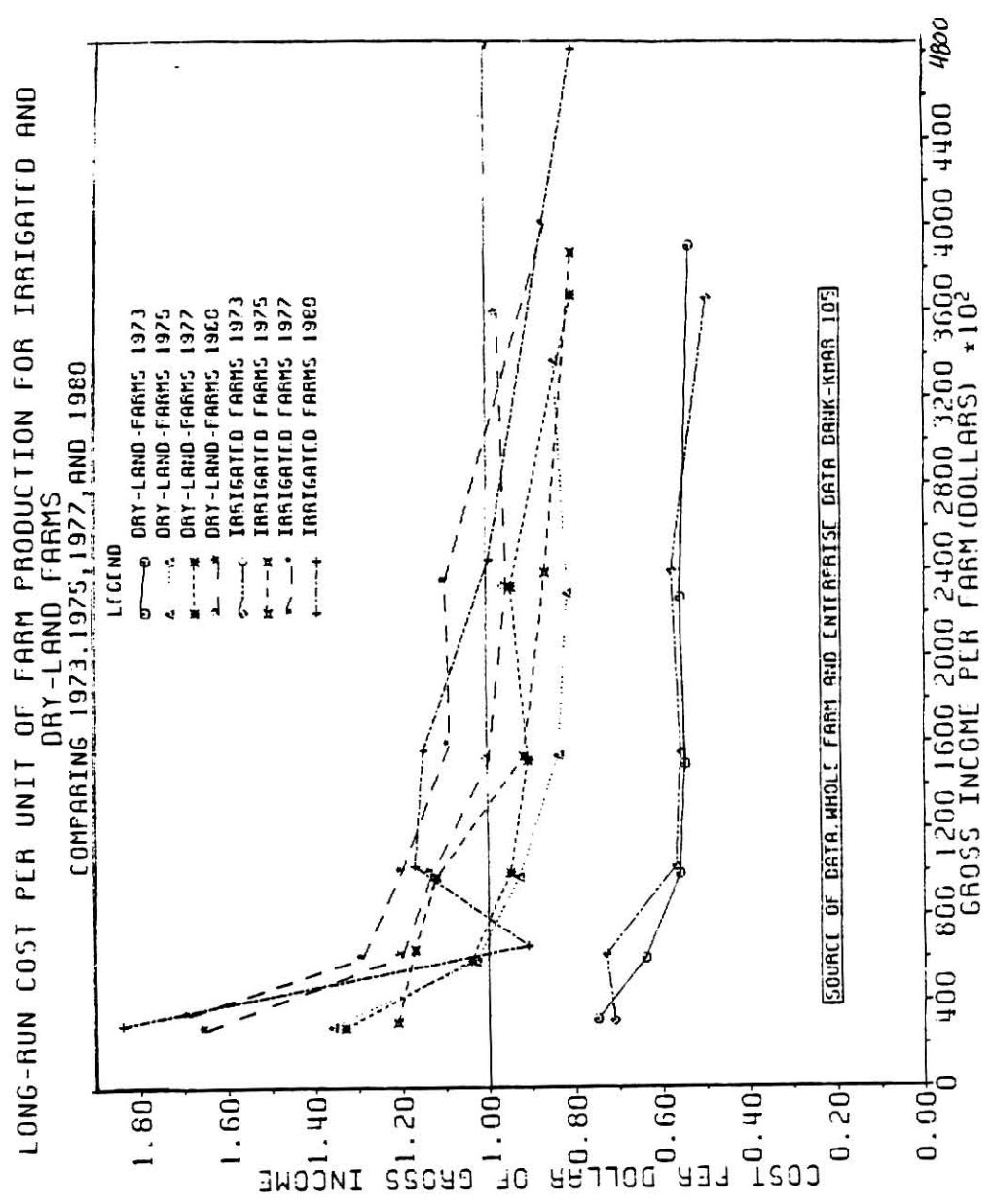


Figure 5.2.1

Table (5.2) Unit cost per dollar of gross income for cash-crop dry land and cash-crop irrigated farm for the years 1973, 1975, 1977, and 1980

Item	\$40,000 Class I	\$40,000 and <\$80,000 Class II	\$80,000 and <\$100,000 Class III	\$120,000 and <\$200,000 Class IV	\$200,000 and <\$280,000 Class V	\$280,000 and over Class VI	All Farms
Cash-Crop Dry Land Farms							
Cost per dollar of gross income 1973	0.75	0.64	0.57	0.55	0.56	0.54	
Cost per dollar of gross income 1975	1.36	1.03	0.93	0.84	0.82	0.85	
Cost per dollar of gross income 1977	1.33	1.04	0.95	0.91	0.95	0.81	
Cost per dollar of gross income 1980	1.65	1.20	1.13	1.00	0.96	0.98	
Cash-Crop Irrigated Farms							
Cost per dollar of gross income 1973	0.71	0.73	0.57	0.56	0.58	0.50	
Cost per dollar of gross income 1975	1.21	1.17	1.12	0.92	0.87	0.81	
Cost per dollar of gross income 1977	1.69	1.29	1.20	1.09	1.10	0.87	
Cost per dollar of gross income 1980	1.84	0.91	1.17	1.15	1.00	0.81	

LONG-RUN COST PER UNIT OF FARM PRODUCTION FOR CASH-CROP--DRY-LAND
FARMS WHEN CLASSIFIED BY GROSS INCOME FOR 1973, 1975, 1977, AND 1980

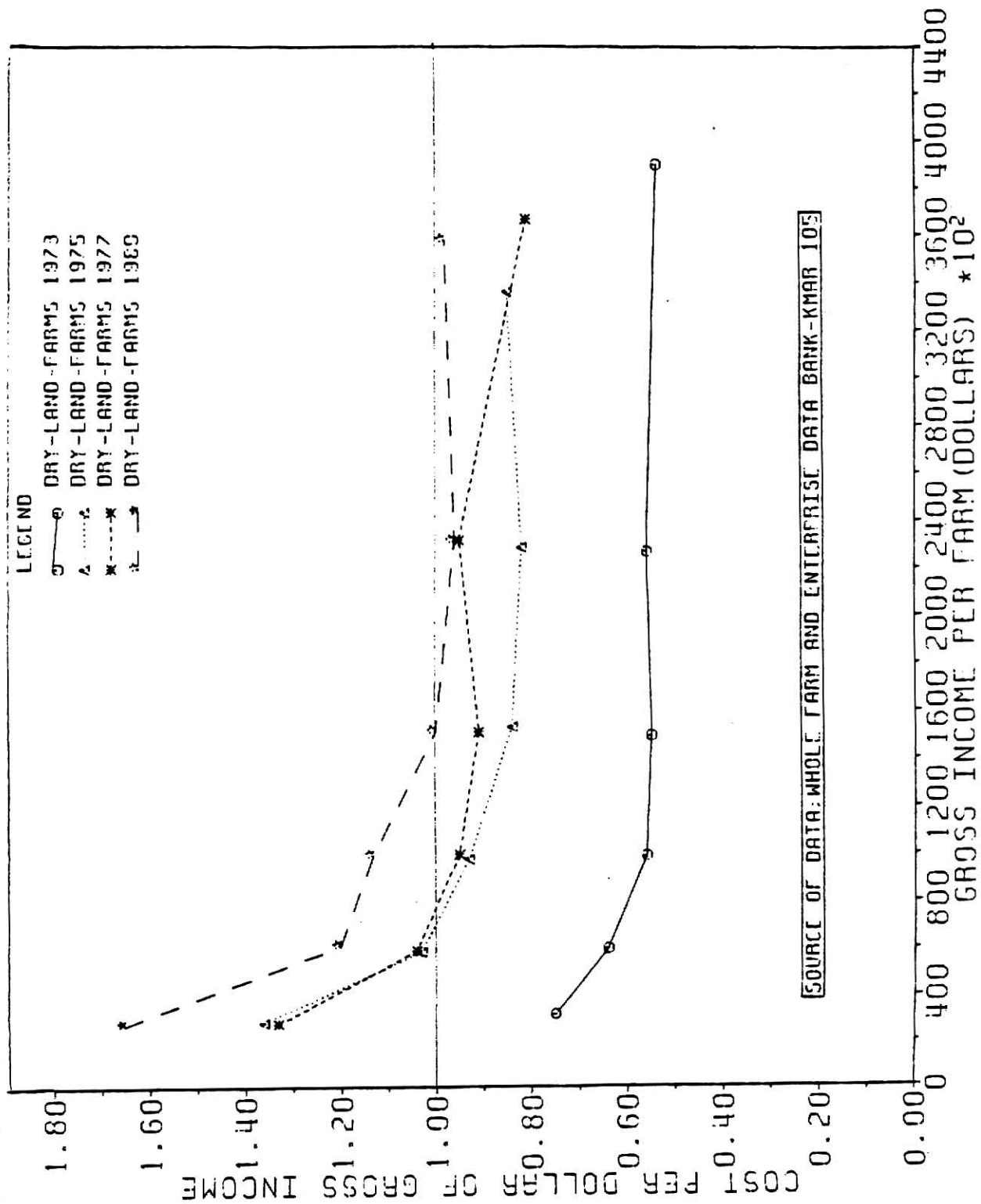


Figure 5.2.2

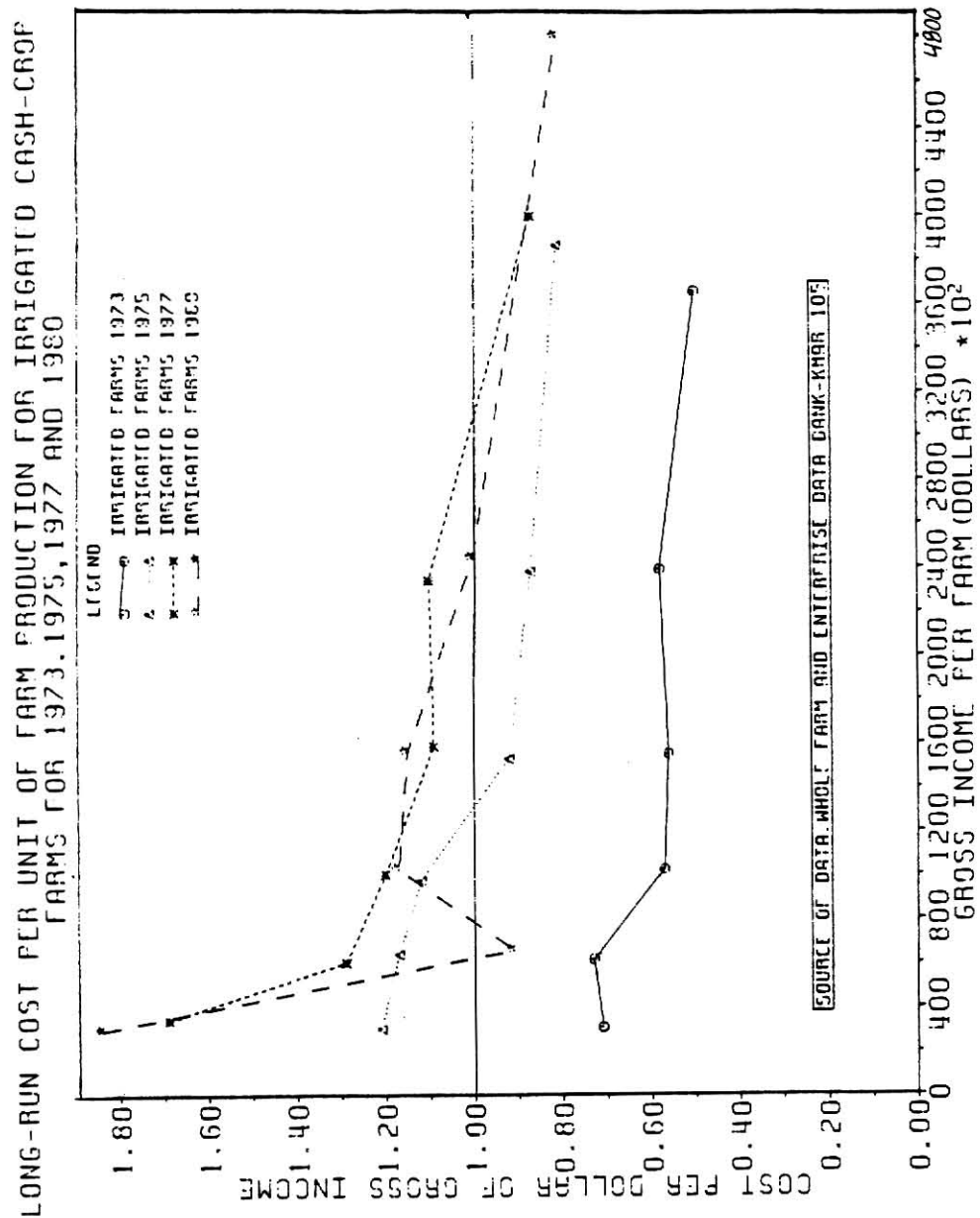


Figure 5.2.3

of less than \$40,000 and with cost-gross income ratio of 1.33. Similarly, the first class farms of the 1980 had cost-gross income ratio of 1.65, and the fifth class farms had the ratio 0.96.

Table 5.2 and figure 5.2.3 show the LRAC curves of cash-crop irrigated farms in 1973, 1975, 1977, and 1980. At the first glance at the figure 5.2.3, it can be seen that the possibilities of achieving economies of size exist, when farm size increases. As shown in figure 5.2.3, the LRAC curves fall very gently when they move to the right. The typical picture of small farms can be found in this type of farming. Small economic class farms suffered losses in the years 1975, 1977, and 1980. Even in 1973, small farms did not enjoy lower unit costs as medium and large farms did. Falling unit cost of class II farms in 1980 is probably due to the small number of farms belonging to that class of farms (7 farms only).

5.3 Economies of Size by State Area (N-West, N-Central, and N-East Kansas Farm Management Associations)

Kansas is divided into six Farm Management Associations for convenience in compiling and presenting statistical information on crop and livestock, and hence, making this information available for various agricultural studies. These associations are designated as follows: N-Central (Assn. 1), S-Central (Assn. 2), S-West (Assn. 3), N-East (Assn. 4), N-West (Assn. 5), and S-East (Assn. 6). The associations are outlined in figure 5.3.1.

To examine and to compare economies of size in different parts of Kansas, three Farm Management Associations were chosen:

N-Central, N-East, and N-West. Data were analyzed for the years 1973 and 1980.

Table 5.3.1 (more information in appendix table 2) and figure 5.3.2 summarize and diagrammatically illustrate six LRAC curves, by which each association is represented by two LRAC curves for the years 1973, and 1980.

As demonstrated in figure 5.3.2, in 1973 the LRAC curves for the three associations (Assn. 1, Assn. 4, and Assn. 5) are relatively flat with barely any variation. Small farms and big farms in that year achieved, almost, similar cost efficiencies. Moreover, the LRAC curves for these associations in 1973 are located far enough below the break-even point line, indicating that farms in that year gained sizable returns above the cost of production. However, the LRAC curve for the Assn. 1 lies below the LRAC curve of the Assn. 4 but above the LRAC curve of the Assn. 5. This depicts that in 1973 farms in Western Kansas reaped higher returns than did the farms in Central and in Eastern part of the state.

Unfortunately, farms could not resist the external effects to keep their efficiencies as high as they were in 1973. A completely different picture can be seen in 1980. Farms of all three regions chosen for analysis have, for the most part, not covered their costs. As shown in figure 5.3.2 all the LRAC curves of the 1980 are located above the \$1.0 line. Only the largest economic class farms (class VI) of the Assn. 5 could meet some economies advantages. The three LRAC curves in 1980 are similar. They slope very sharply within small

KSU Farm Management Associations

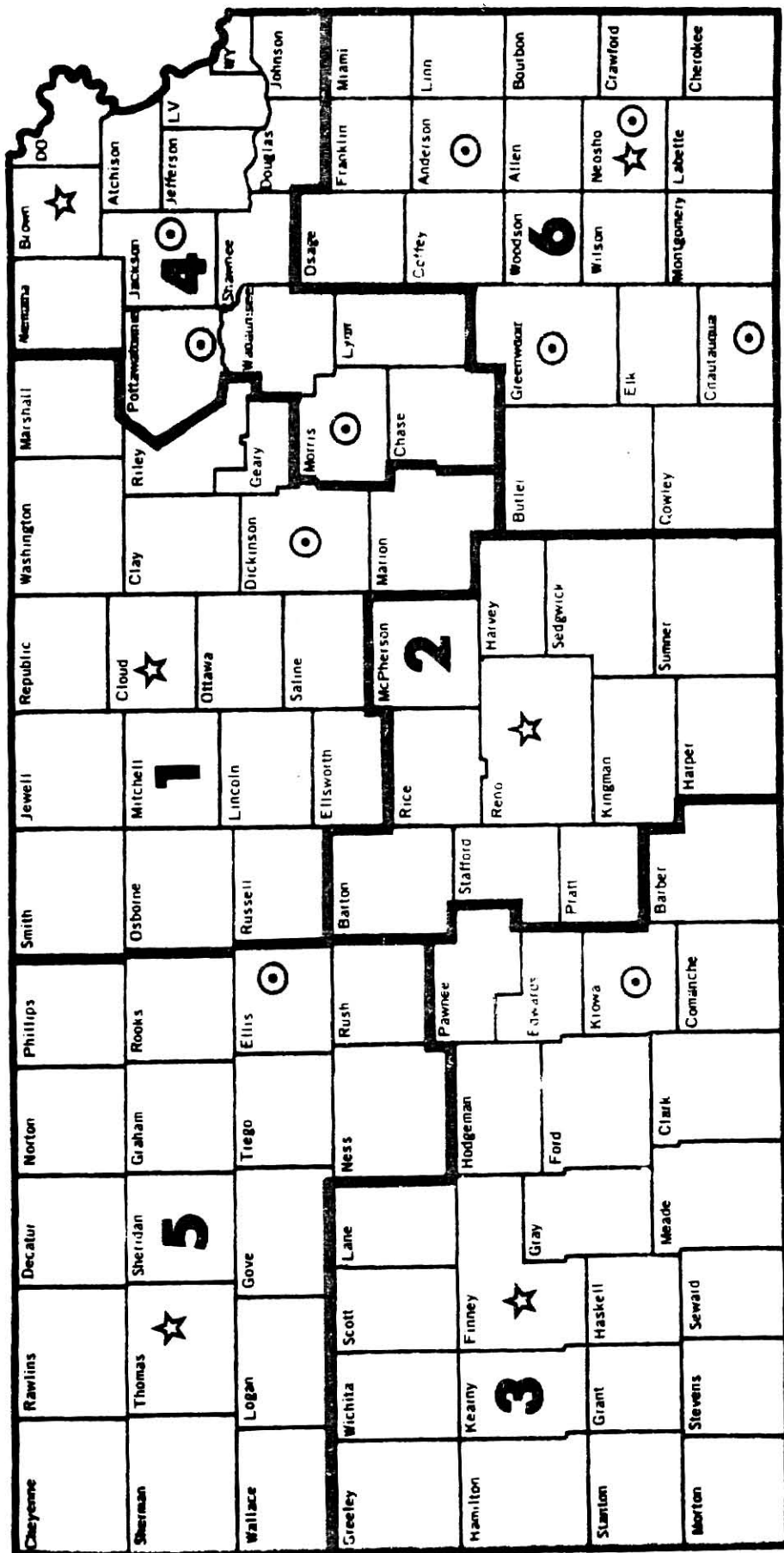


Figure 5.3.1

☆ Association Headquarters

⊙ Satellite Office

COMPARING COST PER UNIT OF FARM PRODUCTION FOR THREE DIFFERENT REGIONS IN THE STATE OF KANSAS. THE N.CENTRAL (1-ASSN.), THE N.WEST (5-ASSN.), AND THE N.EAST (4-ASSN.) FOR YEARS 1973 AND 1980

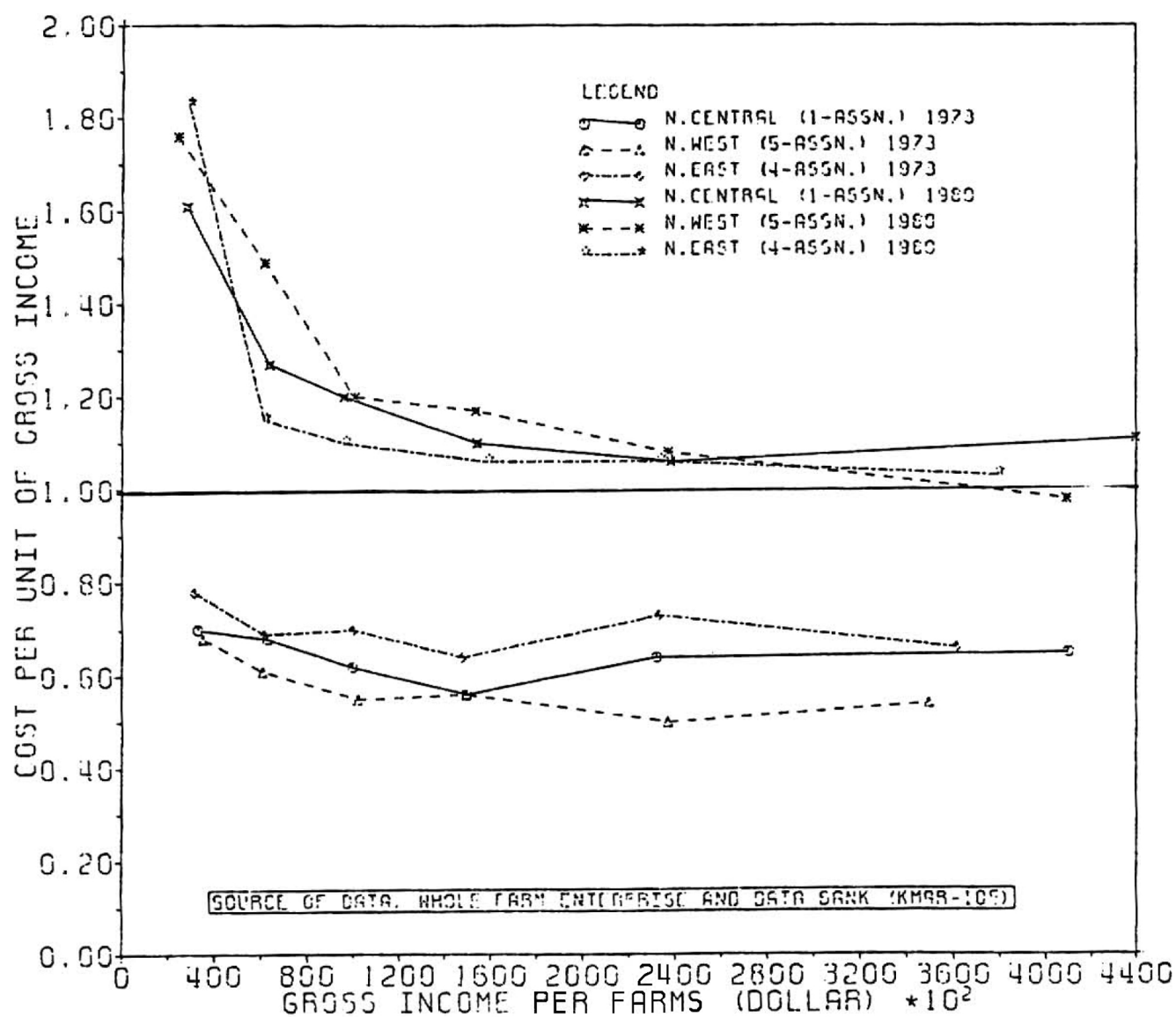


Figure 5.3.2

Table (5.3.1) Cost per unit of gross income by economic class of Kansas Farm Management Association Farms (N. Central, N. East, and N. West) for the years 1973 and 1980

Association	\$40,000 Class I	\$40,000 and <\$80,000 Class II	\$80,000 and <\$120,000 Class III	\$120,000 and <\$200,000 Class IV	\$200,000 and <\$280,000 Class V	\$280,000 and over Class VI	All Farms
Cost per dollar of gross income 1973							
N. Central (Assn. 1)	0.70	0.68	0.62	0.56	0.64	0.65	0.62
N. East (Assn. 4)	0.78	0.69	0.70	0.64	0.73	0.66	0.68
N. West (Assn. 5)	0.68	0.61	0.55	0.56	0.50	0.54	0.55
Cost per dollar of gross income 1980							
N. Central (Assn. 1)	1.61	1.27	1.20	1.10	1.06	1.11	1.14
N. East (Assn. 4)	1.83	1.15	1.10	1.06	1.06	1.03	1.07
N. West (Assn. 5)	1.76	1.49	1.20	1.17	1.08	0.98	1.12

economic class farms and then either slope very little (Assn. 5, Assn. 4), or rise again (Assn. 1). The gap between smaller and larger sized farms appeared to be the widest in 1980 all over the state. By increasing farm size fewer cost economies are being observed in Farm Management Assn. 5 and Assn. 4, but there are cost-diseconomies beyond class IV of Assn. 1 farms since the LRAC curve turns up.

In general, results of economies of size by different associations resemble the results of all Kansas Farm Management Associations, farms' reported in the previous section.

Outcome of analyzing economies of size for Kansas Farm Management Association Farms and by type of farming, and by state areas, are not surprising, especially for the years 1975, 1977, and 1980. The results are similar to those obtained by Tweeten (16), B. Hall, and P. Leveen (6) and other economists in California (5).

Significant conclusions can be drawn from the previous results. Over time, cost economies can be observed for all economic classes of farms, and for all types of farming in every part of Kansas. A persistence of diseconomies is associated with smaller size farms, while medium and large farms ordinarily experience some cost economies advantages. Therefore, economies of size play an important role in the consolidation and expansion of smaller farming units. As long as economies of size are present, farmers aspire to enlarge their farming operations in search of gaining more economies advantages. One can expect that Kansas farming in the future will be available largely to farmers, who are financially able and capable to organize

and operate a viable economic farm units. Economies of size is not the sole cause of farm concentrations. There are other factors affecting this trend. In California Carter and Dean noticed that "in the absence of diseconomies, the primary factors responsible for size differences will probably be managerial ability, capital supply, and risk and uncertainty" (2, p. 277).

5.4 Crop Production Cost per Acre for Kansas Farm Management Association Farms

Kansas Farm Management Association Farms were classified according to their size (crop acres) into eight classes. These classes are outlined in table 5.4.

Crop production cost (all direct production cost used in producing crops [2]) were calculated for each class of farms, and the sum was divided by crop acres belonging to each class of farms to obtain crop production cost per acre. Table 5.4 and figure 5.4 represent the outcomes of this analysis. The years 1973, 1975, 1977, and 1980 were considered.

Crop production cost per acre for each year of analysis is designated by a curve in figure 5.4. The four curves have similar shapes; they slope sharply within small sized farms, and then they slope more gently within the medium and larger sized farms. This indicates that crop production cost per acre declines as farm size increases. Crop production cost per acre in 1973 was, on the average, 75.25 dollars for smaller farms (class I) and 22.13 dollars for large farms (class VIII). In 1980 crop production cost per acre for smaller

PRODUCTION COST PER ACRE FOR 1973, 1975, 1977, AND 1980 FARM CLASSES BY CROP ACRES

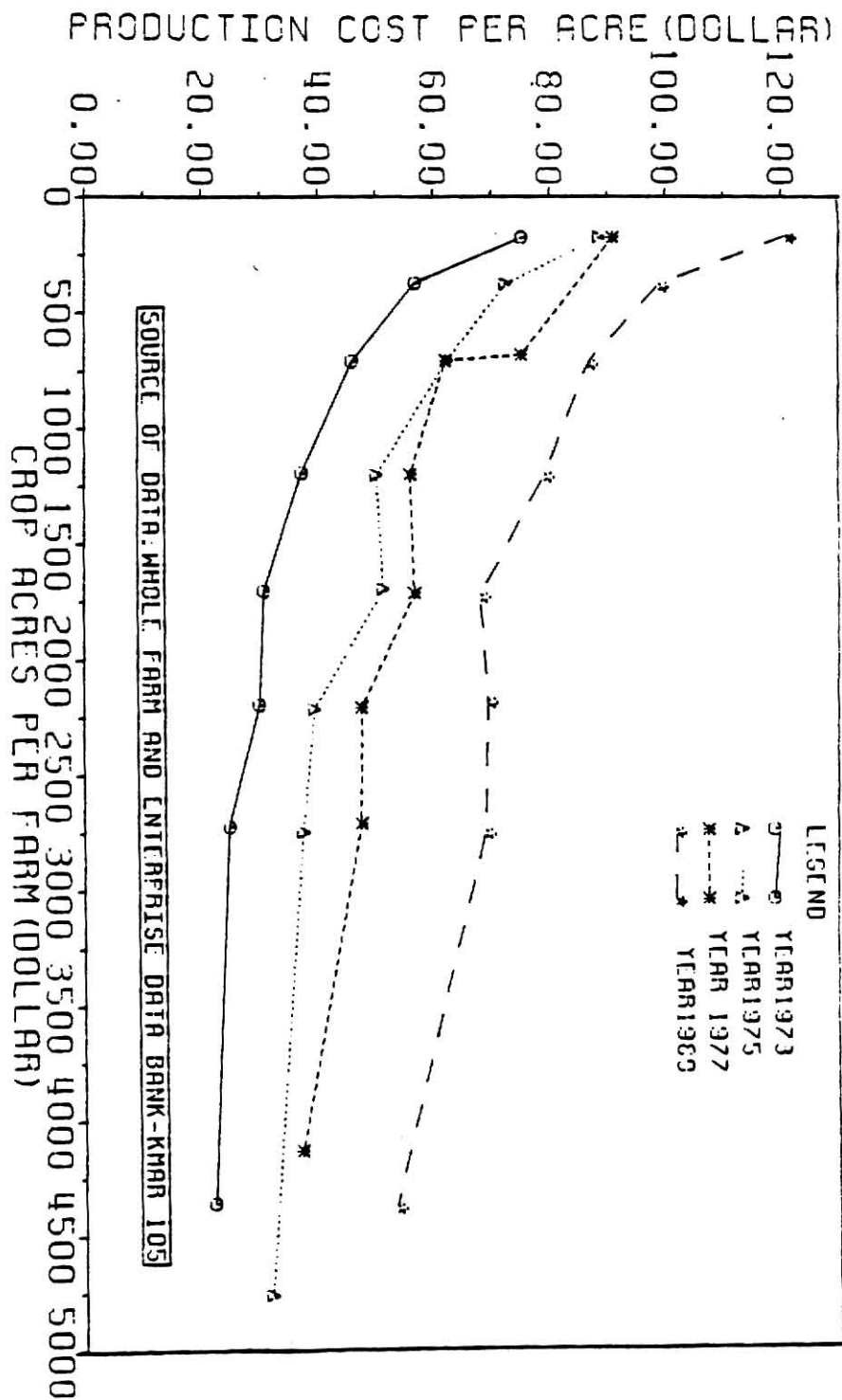


Figure 5.4

Table (5.4) Crop production cost per acre for Kansas Farm Management Association
Farms for the years 1973, 1975, 1977, and 1980

Year	Less than 250 acres Class I	<250 to 499 acres Class II	500 to <1000 acres Class III	1000 to <1500 acres Class IV	1500 to <2000 acres Class V	2000 to <2500 acres Class IV	2500 to <3000 acres Class VII	3000 acres and over Class VIII	All Farms
Cost of production per acre (\$/acre)									
1973	75.25	56.88	46.00	37.33	30.80	30.03	24.84	22.13	40.41
1975	88.63	72.47	62.40	50.23	51.42	39.47	37.52	31.88	54.11
1977	91.00	75.23	62.10	56.05	56.83	47.60	47.56	37.23	57.45
1980	120.93	99.08	86.83	79.20	68.18	69.43	68.97	53.26	77.63

farms averaged 120.93 dollars per acre, and 53.26 dollars for larger farms. This reveals that small farms are less efficient when compared with medium or larger farms. They are less competitive and thus less economically viable.

The shift of crop production cost per acre curve from one year to another, in figure 5.4, is related largely to the index of prices paid by farmers, which rose faster, during the period studied (1973-1980) than the index of prices received by farmers. In addition, farms of all sizes have become more dependent upon markets in buying of agricultural inputs.

5.5 Farm Classification by Level of Gross Income

Kansas Farm Management Association Farms were classified into six economic classes; according to level of income (gross income), for the years 1973, 1975, 1977, and 1980. These classes are presented in table 5.5, and they are designated as follows: Class I--farms with gross income of less than \$40,000; class II--farms with gross income of \$40,000 to \$79,000; class III--farms with gross income of \$80,000 to \$119,999; class IV--farms with gross income of \$120,000 to \$199,999; class V--farms with gross income of \$200,000 to \$279,999, and class VI--farms with gross income of \$280,000 and above. Due to the fact that Kansas Farm Management Association Farms are usually larger than the average Kansas farm, the census classification of farms is not used for this analysis.

Table (5.5) Selected structural characteristics of Kansas Farm Management Association Farms
by farm gross income for the years 1973, 1975, 1977, and 1980

Item	Unit	1973						All Farms
		Less Than \$40,000 Class I	\$40,000 to \$80,000 Class II	\$80,000 to \$120,000 Class III	\$120,000 to \$200,000 Class IV	\$200,000 to \$280,000 Class V	\$280,000 and over Class VI	
Number of Farms	Farms	102	469	400	355	120	52	1,498
	Percent	6.81	31.31	26.70	23.70	8.01	3.47	100
Size of Farms (Total)	Acres	37,460	245,378	310,907	370,009	163,553	91,006	1,218,423
Acres Per Farm	Acres/ Farm	367	523	777	1,042	1,363	1,750	813
	Percent	3.07	20.14	25.52	30.37	13.42	7.47	100
Farm Gross Income (Total)	Dollars	3,211,145	28,490,945	39,740,736	53,669,748	28,035,113	20,298,992	173,446,680
Gross Income Per Farm	Dollars/ Farm	31,482	60,748	99,351.84	151,182	233,626	390,365	115,786
	Percent	1.85	16.43	22.91	30.94	16.16	11.70	100
Farm Total Costs (Total)	Dollars	2,396,745	19,155,200	24,038,416	31,430,793	17,435,612	12,483,578	106,940,340
Total Costs Per Farms	Dollars/ Farm	23,498	40,843	60,096	88,537	145,297	240,069	71,388
	Percent	2.24	17.91	22.48	29.39	16.30	11.62	100

Table (5.5) (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Cost Per Dollar of G.I.		0.75	0.67	0.61	0.59	0.62	0.62	0.62
Ave. Age of Operators	Years	48.86	46.08	46.40	46.04	44.10	46.13	46.19

1975								
Number of Farms	Farms	235	515	316	255	89	60	1,470
	Percent	15.99	35.03	21.50	13.55	6.06	4.08	100
Size of Farms (Total)	Acres	121,232	381,171	284,942	275,016	121,765	110,285	1,294,212
Acres Per Farm	Acre/ Farm	516	740	902	1,078	1,368	1,838	881
	Percent	9.37	29.45	22.01	21.25	9.41	8.52	100
Farm Gross Income (Total)	Dollar	6,733,036	30,559,240	30,748,501	39,025,399	20,850,645	23,665,881	151,582,700
Gross Income Per Farm	Dollar/ Farm	28,651	59,338	97,305	153,041	234,277	394,431	103,117
	Percent	4.44	20.16	20.28	25.75	13.76	15.61	100

Table (5.5) (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Farm Total Costs (Total)	Dollars	9,191,846	31,990,346	29,249,747	43,364,689		19,480,908	141,969,900
Total Costs Per Farm	Dollars/ Farm	39,114	62,117	92,522	170,058	189,791	324,682	96,578
	Percent	6.47	22.53	20.60	30.54	12.46	13.72	100
Cost Per Dollar of G.I.		1.37	1.05	0.95	0.88	0.85	0.82	0.94
Ave. Age of Operators	Years	50.68	47.79	46.67	46.86	46.42	46.98	47.73

1977								
Number of Farms	Farms	194	490	338	297	108	66	1,493
	Percent	12.99	32.82	22.64	19.89	7.23	4.42	100
Size of Farms (Total)	Acres	87,062	348,606	316,817	342,015	164,751	113,395	1,372,460
Acres Per Farm	Acre/ Farm	449	711	937	1,152	1,525	1,718	919
	Percent	6.34	25.40	23.08	24.92	12.00	8.26	100
Farm Gross Income (Total)	Dollars	5,583,043	29,451,842	33,478,298	46,017,347	25,069,460	27,631,474	167,231,460
Gross Income Per Farm	Dollars/ Farm	28,779	60,106	99,048	154,941	232,125	418,659	112,010
	Percent	3.34	17.61	20.02	27.52	14.99	16.52	100

Table (5.5) (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Farm Total Costs (Total)	Dollars	7,629,008	31,317,164	33,025,299	43,774,878	24,219,090	25,057,463	165,073,490
Total Costs Per Farm	Dollars/ Farm	39,325	63,913	97,708	147,390	224,251	379,659	110,565
	Percent	4.62	18.97	20.00	26.52	14.67	15.18	100
Cost Per Dollar of G.I.		1.38	1.06	0.99	0.97	0.97	0.91	0.99
Ave. Age of Operators	Years	54.63	50.00	47.98	48.23	46.43	45.05	49.32

1980

Number of Farms	Farms	90	320	289	330	149	155	1333
	Percent	6.75	24.01	21.68	24.76	11.18	11.63	100
Size of Farms (Total)	Acres	32,133	175,063	233,728	335,065	214,858	277,115	1,267,961
Acres Per Farm	Acre/ Farm	357	547	809	1,015	1,442	1,788	951
	Percent	2.53	13.81	18.43	26.43	16.95	21.86	100
Farm Gross Income (Total)	Dollars	2,518,517	19,522,120	28,451,147	50,928,958	35,272,003	66,780,610	203,473,460
Gross Income Per Farm	Dollars/ Farm	27,985	61,007	98,447	154,330	236,725	430,843	152,643
	Percent	1.24	9.59	13.98	25.03	17.33	32.82	100

Table (5.5) (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Farm Total Costs (Total)	Dollars	4,375,925	25,168,837	33,372,874	54,337,810	36,672,779	36,672,779	220,141,420
Total Costs Per Farm	Dollars/ Farm	48,621	78,653	115,477	164,660	246,126	427,182	165,147
	Percent	1.99	11.43	15.16	24.68	16.66	30.08	100
Costs Per Dollar of G.I.		1.74	1.29	1.17	1.07	1.04	0.99	1.08
Ave. Age of Operators	Years	58.04	53.48	50.97	49.85	50.58	45.54	51.09

As indicated in chapter three, the land in farms in Kansas has fluctuated very slightly and the number of farms, however, decreased by 57 percent (table 3.1) between 1920 and 1980. The decline in the number of small farms perhaps contributed to the increase in the average size of farms from 272 acres in 1920 to 661 acres in 1980.

Kansas Farm Management Association Farms, although larger and mostly commercial, have undergone substantial changes. The number of larger farms has increased in terms of their size and output. Small farms, on the other hand, had experienced just the opposite changes; their number, their size, and their output are becoming smaller from one year to another. As presented in table 5.5 the modal class farms in 1973, 1975, and 1977 were in class II, with 31.31, 35.02, and 32.82 percent of all farms of those years, respectively. In 1980 the modal class farms were in class IV with 24.76 percent of all 1980's farms.

Farm concentration leads to concentration of farm production and control of the farming land. The concentration of farm production between 1973 and 1980 is illustrated graphically by the Lorenz curve in figure 5.5.1 (tabular data in table 5.5). In 1973 the largest 54 percent of farms produced 75 percent of total gross income. In 1980, only 48 percent of the farms were required to produce the same output. In other words, 75 percent of the output came from 809 farms in 1973 and from 640 farms in 1980. The shift of the Lorenz curve to the right indicates this concentration. The increasing

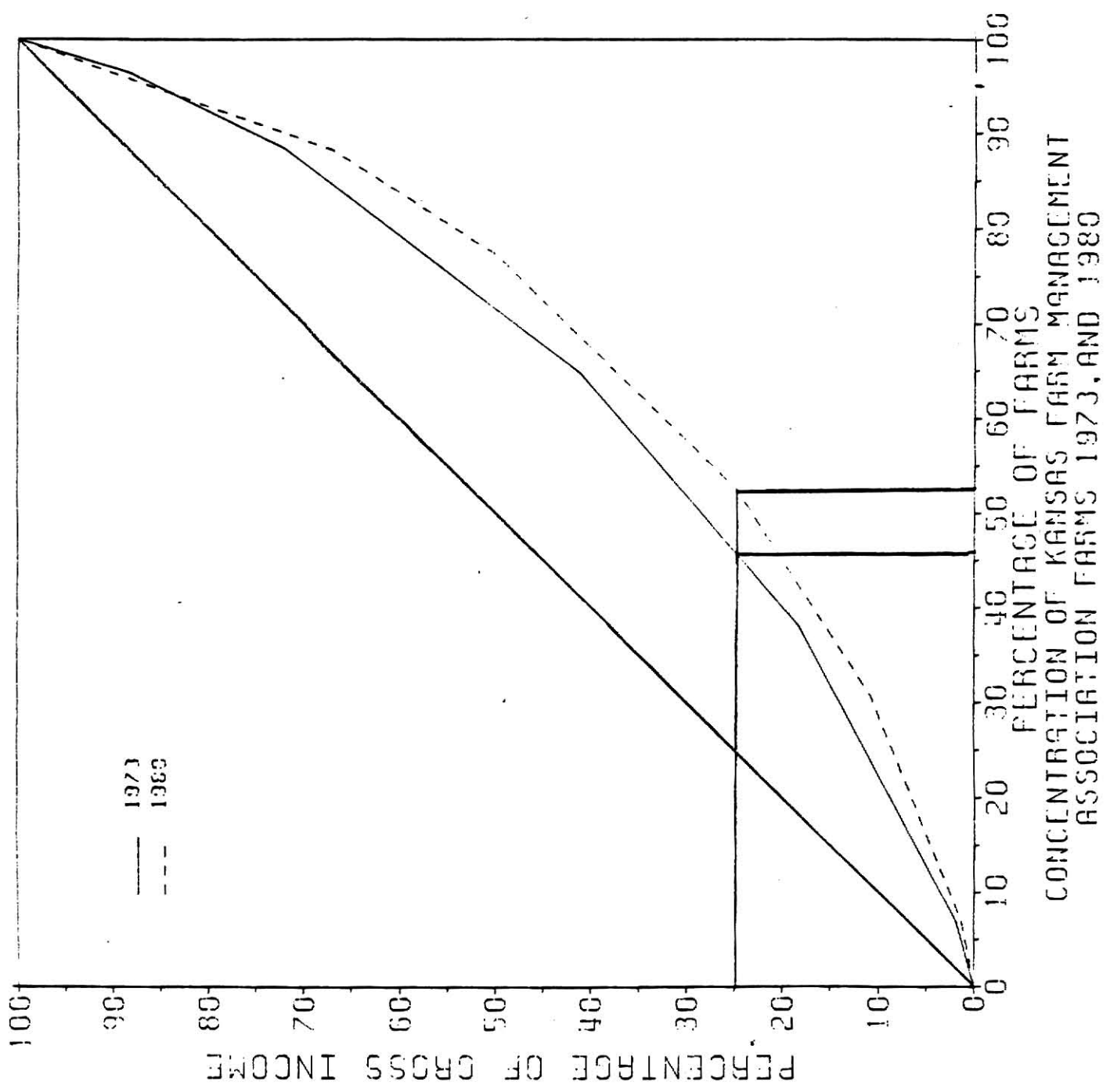


Figure 5.5.1

concentration of production on larger farms carries implications beyond the numbers. W. Lin, G. Coffman, and J. Penn emphasized that "larger farms are becoming more involved with vertical integration and contractual arrangements. Such arrangements suggest that farm management decisions may gradually become controlled by the nonfarm sector" (6, p. 4).

The average age of operators is increasing each successive year. It was 46, 48, 49, and 51 years for the years 1973, 1975, 1977, and 1980, respectively. Within each year, the oldest average age of operators can be seen in the smallest class of farms. In 1973, the average age of operators was 49 years for class I, while it was 46 years for class VI. In 1975, average age of operators for class I was 51 years, when it was 47 years for class VI. In 1977, average age of operators was 55, and 45 years for class I, and class VI, respectively. The largest difference of average age of operators can be noticed in 1980 when it was 58 years for class I and 46 years for class VI. This implies that farmer's replacement, or getting started in farming has become more and more difficult. In addition, the average age may also be a factor contributing to lower efficiency of small sized farms, because of the level of education and other farming practices of the older generation.

5.6 Farm Classification by Crop Acres (farm size)

Farms considered in this study were also classified into eight groups; according to farm size. This classification is shown in Table 5.6.

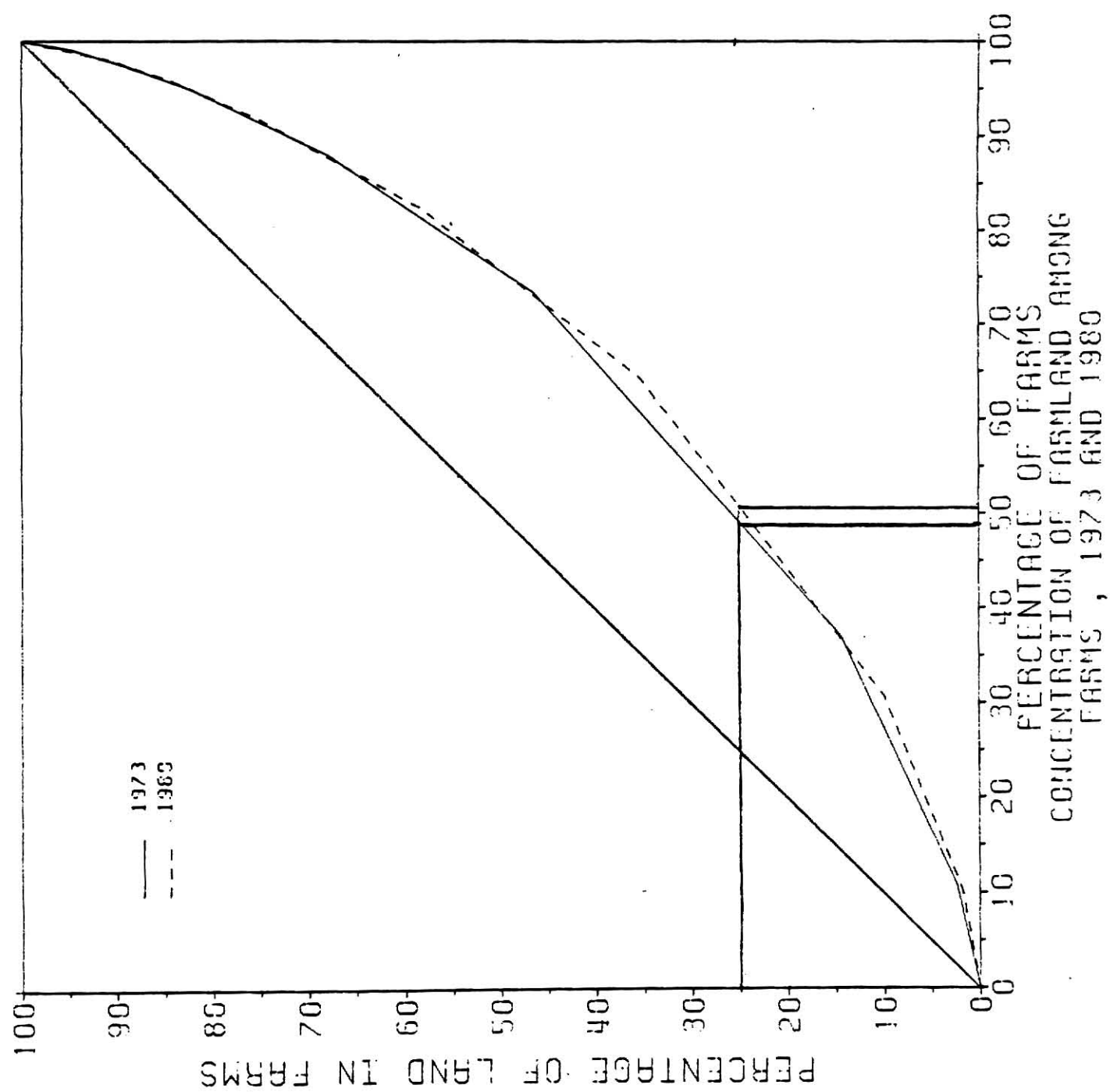


Figure 5.6

Table (5.6) Selected structural characteristics of Kansas Farm Management Association Farms, by farm size for 1973, 1975, 1977, and 1980

Item	Unit	Less than 250 acres Class I	250 acres to 500 acres Class II	500 acres to 1000 acres Class III	1000 acres to 1500 acres Class IV	1500 acres to 2000 acres Class V	2000 acres to 2500 acres Class VI	2500 acres to 3000 acres Class VII	3000 acres and over Class VIII	All Farms
1973										
Number of Farms	Farms	161	393	547	217	102	38	25	15	1,498
	Percent	10.75	26.23	36.52	14.49	6.81	2.54	1.67	1.00	1.00
Size of Farms (Total)	Acres	28,421	147,214	391,100	260,472	174,100	83,605	68,118	65,394	1,218,425
Acres Per Farms	Acre/ Farm	177	375	715	1,200	1,707	2,200	2,725	4,360	813
	Percent	2.33	12.08	32.10	21.38	14.29	6.86	5.59	5.37	100
Farm Gross Income (Total)	Dollar	11,527,814	31,981,647	62,949,288	31,564,306	16,943,933	8,208,343	5,569,490	4,701,858	173,446,680
Gross Income Per Farm	Dollars/ Farm	71,601	81,378	115,081	145,458	166,117	216,009	227,796	313,457	115,786
	Percent	6.65	18.44	36.29	18.20	9.77	4.73	3.21	2.71	100
Production Costs Per Acre	Dollar	75.25	56.85	46.00	37.33	30.80	30.03	24.84	22.13	40.41
Ave. Age of Operators	Years	48.04	45.78	45.60	46.81	45.58	46.45	47.08	44.07	46.19

Table (5.6) (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	Class VII	Class VIII	All Farms
Number of Farms	Farms	144	337	539	239	118	52	23	19	1,498
	Percent	9.80	22.93	36.67	16.26	8.03	3.54	1.56	1.29	100
Size of Farms (Total)	Acres	25,362	127,562	384,168	287,537	200,633	115,454	63,199	90,498	1,294,212
Acres Per Farm	Acre/ Farm	176	379	713	1,208	1,700	2,220	2,748	4,763	881
	Percent	1.96	9.85	29.68	22.31	15.50	8.92	4.88	6.99	100
Farm Gross Income (Total)	Dollar	9,409,773	25,734,306	51,856,472	28,813,908	18,425,164	8,054,609	3,896,791	5,391,679	151,582,700
Gross Income Per Farm	Dollars/ Farm	65,346	76,363	96,209	121,067	156,145	154,896	169,426	283,773	103,117
	Percent	6.21	16.98	34.21	19.09	12.16	5.31	2.57	3.56	200
Production Costs Per Acre	Dollar	88.63	72.47	62.40	50.23	51.42	39.47	37.52	31.88	54.11
Ave. Age of Operators	Years	49.26	47.41	48.09	47.02	46.25	48.38	48.61	47.16	47.74
1977										
Number of Farms	Farm	143	337	499	277	130	50	29	28	1,493
	Percent	9.58	22.57	33.42	18.55	8.71	3.35	1.94	1.88	100

Table (5.6) (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	Class VII	Class VIII	All Farms
Size of Farms (Total)	Acres	25,151	130,434	355,164	333,880	223,154	110,565	78,650	115,659	1,372,460
	Acre/Farm	176	387	712	1,205	1,717	2,211	2,712	4,130	919
	Percent	1.82	9.50	25.87	24.32	16.26	8.05	5.73	8.43	200
Farm Gross Income (Total)	Dollar	8,916,545	28,335,306	48,135,365	39,252,637	20,841,711	8,862,195	5,226,813	7,226,813	167,231,460
Gross Income Per Farm	Dollars/ Farm	62,353	84,081	96,464	141,706	160,321	177,243	1,802	2,736	112,010
	Percent	5.33	16.95	28.78	23.47	12.46	5.30	3.13	4.58	100
Production Cost Per Acre	Dollar	91.00	75.23	62.20	56.05	56.83	47.60	47.56	37.23	59.20
Ave. Age of Operators	Years	52.29	50.28	48.97	49.34	45.36	47.16	51.14	48.46	49.32
1980										
Number of Farms	Farm	136	274	448	240	127	52	29	27	1,333
	Percent	10.20	20.56	33.61	18.00	9.53	3.90	2.18	2.03	100
Size of Farms (Total)	Acres	22,738	104,003	321,419	289,494	219,104	113,451	79,671	118,082	1,267,961
Acres Per Farms	Acres/ Farm	167	380	717	1,206	1,725	2,182	2,747	4,373	951
	Percent	1.79	8.20	25.35	22.83	17.28	8.95	6.28	9.31	100

Table (5.6) (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	Class VII	Class VIII	All Farms
Farm Gross Income (Total)	Dollar	11,171,729	25,858,796	58,683,404	43,096,044	29,427,847	14,448,385	8,920,834	11,856,418	203,473,460
Gross Income Per Farm	Dollars/ Farm	82,145	94,412	130,990	179,567	231,715	277,854	307,615	439,127	152,643
	Percent	5.49	12.71	28.84	21.18	14.46	2.10	4.37	5.83	100
Production Costs Per Acre	Dollar	120.93	99.08	86.83	79.20	68.18	69.43	68.97	53.36	77.63
Ave. Age of Operator	Years	53.95	53.47	51.01	50.32	48.26	47.71	47.79	44.33	51.10

In general, the very large farms are small in numbers but they have the lion's share in crop acres, and in total farms' output. The modal class farm for 1973 and 1975 was class II, with 36.52 and 36.67 percent of total farms, respectively. In 1977, and 1980, class III was the dominant farm size with 33.42 and 33.61 percent of farms belonging to this group, respectively.

As the concentration of farm production has become significant, the Lorenz curve (figure 5.6 shifted to the right very slightly between 1973-1980. Seventy-five percent of the farmland was operated by the largest 51 percent of the farms in 1973, and the largest 49 percent in 1980. This means that 75 percent of the farmland was operated by 653 farms in 1980. Conversely, the other 680 farms controlled the remaining 25 percent of the farmland.

The average age of operators for each successive year is higher than the previous one. In other words, the average age of operators was 46, 48, 49, and 51 years in 1973, 1975, 1977, and 1980, respectively. From table 5.6 it can be observed that the average age of operators of the small sized farms is higher than that for the larger farms each year. For example in 1980 the average age of operators for the smallest class farms was 54 years, and 44 years for the largest size farms.

5.7 Farm Classification by Age of Operators

When farms were analyzed according to the average age of operators, it was found that the number of farms operated by younger

farmers (under 30 years) is shrinking, while the number of farms operated by older farmers (over 40 years) is expanding, table 5.7. In 1973, 5.34 percent, or 80 farms were operated by farmers with an average under 30 years. In 1980 only 2.33 percent, or 31 farms were operated by farmers under 30 years old. In 1973, 9.48 percent, or 142 farms were operating by farmers with an average age of over 60 years, in 1980, 22.73 percent, or 303 farms were operating by the same average age of operators.

The decline in the number of farms operated by younger farmers may be due to increased difficulty in obtaining the needed capital for farming, as well as the opportunities for employment in off farm work. This may cause grave consequences to the future of Kansas agricultural industry; when replacement for older and incapacitated farmers becomes more difficult, and when labor force for farming becomes scarce.

The dominant class of farms in 1973 was class II with an average age of operators between 40 and 50 years. This class contained 34.38 percent of all 1973 farms. In 1980 class IV with an average age of operators between 50 and 60 years was the modal class of farms having 36.16 percent of all 1980's farms.

As shown in table 5.7, the average size, and the average gross income did not vary very much from one class to another in 1973. However, in 1980, these variables (ave. size, ave. gross income) are decreased as average age of operators is getting higher. Younger farmers under 30 years could operate larger farms, and obtain higher

Table (5.7) Selected structural characteristics of Kansas Farm Management Farms, by age of operators for 1973 and 1980

Item	Unit	1973					All Farms
		Less than 30 years Class I*	30 years to <40 years Class II	40 years to <50 years Class III	50 years to <60 years Class IV	60 years and over Class V	
Number of Farms	Farm	80	303	515	458	142	1,498
	Percent	5.34	20.23	34.38	30.57	9.48	100
Size of Farms (Total)	Acres	62,859	251,293	426,871	364,180	113,220	1,218,422
Crop Acres Per Farms	Acre/ Farm	786	829	829	795	797	813
	Percent	5.16	20.62	35.03	29.89	9.29	100
Farm Gross Income (Total)	Dollar	8,205,573	35,955,711	62,647,198	51,037,285	15,600,912	173,446,680
Gross Income Per Farm	Dollars/ Farm	102,570	118,666	121,645	111,435	109,866	115,786
	Percent	4.73	20.73	36.12	29.43	8.99	100
Ave. Age of Operators	Years	21.89	35.17	44.68	53.87	64.03	46.19

Table (5.7) (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	All Farms
1980							
Number of Farms	Farm	31	153	364	482	303	1,333
Size of Farms (Total)	Percent	2.33	11.48	27.31	36.16	22.73	100
Acres Per Farm	Acres	43,523	161,208	389,441	443,074	230,716	1,267,960
	Acre/ Farm	1,404	1,054	1,070	919	761	951
	Percent	3.43	12.71	30.71	34.94	18.20	100
Farm Gross Income (Total)	Dollar	6,533,128	25,312,812	65,530,579	72,436,948	33,659,988	203,473,460
Gross Income Per Farm	Dollars/ Farm	210,746	165,443	180,029	150,282	111,089	152,643
	Percent	3.21	12.44	32.21	35.60	16.54	100
Ave. Age of Operators	Years	14.58	35.76	44.75	54.55	64.71	51.09

*Class I is overstated because of missing data about age of operators and which were considered zero.

gross income. In other words, in 1980 farms operated by farmers under 30 years (class I) had average size of 1404 acres, and average gross income of 210,746 dollars, and farms operated by farmers older than 60 (class V) years had average size of 761 acres, and average gross income of 111,089 dollars; nearly 50 percent of average size and average gross income less than the class I farms.

5.8 Farm Classification by State Area (Associations)

In this section, farms were classified with respect to associations (see figure 5.3.1). The size of associations in terms of the number of farms, acreage, gross income, operators age, etc. are represented in table 5.8.

From table 5.8, it can be seen that between 1973 and 1980 farms as a whole, as well as, farms of each association, separately, declined in number, but increased in size.

The relative magnitude of each association within the total farm management association farms, measured in terms of farmland, and farm output is held, almost, constant from 1973 to 1980. In other words, the percentage of farm numbers, farm size, and farm output of each association did not change significantly during the 1973-1980 period.

Association 6 (South-East) contains the largest number of farms with 21 and 22 percent of all 1973, and 1980 farms, respectively. However, farms in association 6 are the smallest with an average of 454 and 541 acres in 1973, and 1980, respectively.

The largest farms are found in association 3 (South-West).

Table (5.8) Selected structural characteristics of Kansas Farm Management Association Farms by state areas (associations) 1973 and 1980

Item	Unit	Assn. 1	Assn. 2	Assn. 3	Assn. 4	Assn. 5	Assn. 6	All Farms
1973								
Number of Farms	Farm	220	249	274	244	195	316	1,498
	Percent	14.69	16.62	18.29	16.29	13.02	21.09	100
Size of Farms (Total)	Acres	151,508	198,438	372,038	114,319	238,662	143,458	1,218,423
Acre Per Farm	Acre/Farm	689	797	1,358	469	1,224	454	813
	Percent	12.43	16.29	30.53	9.38	19.59	11.77	100
Farm Gross Income (Total)	Dollars	26,627,435	26,215,658	37,445,092	25,354,891	25,487,339	32,316,266	173,446,680
Gross Income Per Farm	Dollars/Farm	121,034	105,284	136,661	103,913	130,704	102,266	115,785
	Percent	15.35	15.11	21.59	14.62	14.69	18.63	100
Costs Per Dollar of G.I.	Dollar	0.62	0.60	0.56	0.68	0.55	0.70	0.62
Ave. Age of Operators	Years	44.83	47.53	46.43	45.83	46.52	45.93	46.19
1980								
Number of Farms	Farm	193	213	233	229	170	295	1,333
	Percent	14.48	15.98	17.48	17.18	12.75	22.13	100

Table (5.8) (Continued)

Item	Unit	Assn. 1	Assn. 2	Assn. 3	Assn. 4	Assn. 5	Assn. 6	All Farms
Size of Farms (Total)	Acres	163,165	194,058	374,293	138,539	238,435	159,472	1,267,960
Acres Per Farm	Acre/Farm	845	911	1,606	605	1,403	541	951
	Percent	12.87	15.30	29.52	10.93	18.80	12.58	100
Farm Gross Income (Total)	Dollar	27,330,933	29,332,364	45,662,331	35,846,259	28,491,684	36,809,902	203,473,460
Gross Income Per Farm	Dollars/Farm	141,611	137,710	195,976	156,534	167,598	124,779	152,643
	Percent	13.43	14.42	22.44	17.62	14.00	18.09	100
Cost Per Dollar of G.I.	Dollar	1.14	1.02	0.97	1.07	1.12	1.21	1.08
Ave. Age of Operators	Years	47.08	52.43	51.90	51.17	51.97	51.56	51.09

These farms averaged 1,358 and 1,606 acres for the years 1973, and 1980. Meanwhile, association 3 produced the highest output of 22 percent both in 1973 and 1980.

Average age of operators is distributed nearly equally over the whole range of associations. In 1973 average age of operators was ranging from 44.8 years (association 1) to 47.5 years (association 2), and in 1980 it was ranging from 47 years (association 1) to 53 years (association 2). Average age of operators rose by 5 years, on the average, from 1973 to 1980.

Chapter 6

CONCLUSIONS AND IMPLICATIONS OF THE FUTURE OF FARM SIZE DEVELOPMENT

Agriculture is one of the most rapidly changing industries in the state of Kansas. About 50% of Kansas farms have disappeared during the past four decades. The remaining farms are getting larger, highly capitalized, more specialized, and also more dependent upon other sectors of the economy.

Much of the shift from small self-sufficient farms to larger ones is due to labor-saving technology, as a suitable substitute for labor and land, and economies of size.

From analyzing Kansas Farm Management Association Farms for the years 1973, 1975, 1977, and 1980, the following conclusions can be reported:

-Returns and productivity of farming varies from year to year, while attainment of economies of size of farms contributes to the viability of farming enterprises. The relationship of prices received for farm products and prices paid for farm inputs by farmers is also a significant factor in determining the returns to inputs used in farming. The index of prices paid by farmers rose more rapidly than the index of prices received by farmers during the time period 1973-1980, and thus, farming appears to be less profitable in the later years than in the beginning years of the period studied.

-In 1973 small farms (as a whole, and of different regions of the state, as well as small farms of various types of farming) had, nearly all cost advantages obtained by larger farms.

-In 1975, 1977, and 1980, economies of size could be found for the medium and larger sized farms. In contrast, there were diseconomies of size for the smaller sized farm for the same years. Small farms could not recover their expenses, while medium and larger farms could even make some profit during that period.

-The gap, or the difference in dollars needed to generate a dollar of gross income, between small and large farms is widening each year. In 1980 this gap was wider than ever.

-Large cash-crop dry-land farms did not have significant cost advantages over the medium sized farms. Conversely, cash-crop irrigated farms became more efficient as their farm size increased.

-Only large farms in Farm Management Association 5 (North-West), could recover their costs in 1980. Small farms in Farm Management Association 5, as well as all farms in other associations had costs-gross income ratio above the break-even point.

-Production costs per acre decrease as farm size increases. Big farms, on the average, spent only one half the amount spent by small farms.

-There was a simultaneous movement between farm numbers, and farm size. Shrinking the number of small farms contributed, largely, to increasing farm size. In 1973 average Kansas Farm Management Association farms had 813 acres and in 1980 it measured

951 acres.

-The decline in farm numbers and the increase in farm size was accompanied by other changes in the structural characteristics of Kansas farm sector. The labor force for agriculture declined and the remaining farmers are getting older. Small farms were operated by older operators in relation to the medium and larger farms. Output per farm was increased but the increase in cost per farm was larger.

-The number of farms operated by younger farmers (under 30 years) is shrinking each year faster than whole farms.

-Farm output and farmland were concentrated on fewer but larger farms. The largest 48 percent of Kansas Farm Management Association farms accounted for 75 percent of farm production in 1980.

-The largest number of Kansas Farm Management Association farms are in the Southeastern part of the state. These farms, on the average, are also the smallest. In the Southwestern part of Kansas are the largest farms; in terms of farm size and farm output.

Agriculture plays a very important role in Kansas economy. If the current trend of changing characteristics and structure of Kansas farms continues, farmland, and farm output will be concentrated on even fewer farms. In addition, small farms will be forced to leave farming because they will not be able to compete for agricultural

resources with larger farms. Declining labor force for farming will have further impact on the composition of inputs used in farming on agriculture's structure and on rural communities. As long as economies of size are present, combined with other factors, farm consolidation will continue, and eventually it might reach a stage when farm production will be controlled by a small number of producers.

Results of this study should be of help to policy makers, to researchers, and to farmers, particularly those who plan entering into farming.

While the study considered all farms in Kansas Farm Management Association, it should be pointed out that these farms are commercial farms and represent only about 2 percent of total Kansas farms. Thus, the data used do not represent a random sample of Kansas farms. Farms in Farm Management Associations are generally commercial operations with more progressive, and innovative managers. The results may or may not apply to Kansas farms in general.

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APPENDIX

Appendix Table 1. Cash-crop dry land and cash-crop irrigated farms classified by gross income for the years 1973, 1975, 1977, and 1980.

Item	Unit	Less Than \$40,000 Class I	\$40,000 to \$80,000 Class II	\$80,000 to \$120,000 Class III	\$120,000 to \$200,000 Class IV	\$200,000 to \$280,000 Class V	\$280,000 and over Class VI	All Farms
Cash-crop dry-land farms, 1973								
Number of Farms	Farms	86	342	250	202	38	10	928
	Percent	9.27	36.85	26.94	21.77	4.09	1.08	100
Size of Farms (Total)	Acres	32,988	194,512	218,467	233,556	58,084	19,679	757,286
Acres Per Farm	Acre/ Farm	384	569	874	1,156	1,529	1,968	816
	Percent	4.36	25.69	28.85	30.84	7.67	2.60	100
Farm Gross Income (Total)	Dollars	2,718,370	20,456,557	24,704,452	30,179,688	8,623,106	3,897,693	90,577,828
Gross Income Per Farm	Dollars/ Farm	31,609	59,814	98,818	149,404	226,924	389,769	97,605
	Percent	3.00	22.58	27.27	33.32	9.52	4.30	100
Farm Total Costs (Total)	Dollars	2,043,041	13,111,623	13,961,995	16,473,800	4,844,850	211,619	52,551,495
Total Costs Per Farm	Dollars/ Farm	23,756	38,338	55,848	81,553	127,496	211,619	56,629
	Percent	3.89	24.95	26.57	31.35	9.22	4.03	100

Appendix Table 1. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Cost Per Dollar of G.I.		0.75	0.64	0.57	0.55	0.56	0.54	0.58
Ave. Age of Operators	Years	49.67	46.33	45.86	46.66	45.50	49.30	47.22

Cash-crop dry-land Farm 1975								
Number of Farms	Farms	187	345	174	87	24	8	825
	Percent	22.67	41.82	21.09	10.55	2.91	0.97	100
Size of Farms (Total)	Acres	102,803	296,793	188,959	128,295	37,196	24,785	778,831
Acres Per Farm	Acre/ Farm	550	860	1,086	1,475	1,550	3,098	944
	Percent	13.20	38.11	24.26	16.47	4.78	3.18	100
Farm Gross Income (Total)	Dollars	5,322,683	20,131,779	16,928,969	13,345,283	5,489,449	2,691,422	63,909,586
Gross Income Per Farm	Dollars/ Farm	28,464	58,353	97,293	153,394	228,727	336,428	77,466
	Percent	8.33	31.50	26.49	20.88	8.59	4.21	100

Appendix Table 1. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Farm Total Costs (Total)	Dollars	7,248,727	20,713,652	15,710,682	11,243,684	4,521,200	2,282,596	61,720,541
Total Costs Per Farm	Dollars/ Farm	38,763	60,040	90,291	129,238	188,283	285,324	24,813
Cost Per Dollar of G.I.	Percent	11.74	33.56	25.45	18.22	7.33	3.70	100
		1.36	1.03	0.93	0.84	0.82	0.85	0.97
Ave. Age of Operators	Years	51.25	48.24	46.17	46.23	47.38	46.13	47.57

Cash-crop dry-land farms 1977

Number of Farms	Farms	112	241	142	92	18	7	612
	Percent	18.30	39.38	23.20	15.03	2.94	1.14	100
Size of Farms (Total)	Acres	58,224	200,269	172,496	145,349	32,923	12,028	621,289
Acres Per Farm	Acre/ Farm	520	831	1,215	1,580	1,829	1,718	1,015
	Percent	9.37	32.23	27.76	23.39	5.30	1.94	100

Appendix Table 1. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Farm Gross Income (Total)	Dollars	3,126,145	14,185,862	14,113,940	13,902,207	2,568,538	2,568,538	52,067,703
Gross Income Per Farm	Dollars/ Farm	27,912	58,862	99,394	151,111	231,723	366,934	85,078
	Percent	6.00	27.25	27.11	26.70	8.01	4.93	1.00
Farm Total Costs (Total)	Dollars	4,153,065	14,783,301	13,413,798	12,692,027	3,964,164	2,075,501	51,081,855
Total Costs Per Farm	Dollars/ Farm	37,081	61,341	94,463	137,957	220,231	296,500	83,467
	Percent	8.13	28.94	26.26	24.85	7.76	4.06	100
Cost Per Dollar of G.I.		1.33	1.04	0.95	0.91	0.95	0.81	0.98
Ave. Age of Operators	Years	54.74	50.95	47.85	48.34	49.33	34.57	
Cash-crop dry-land farms 1980								
Number of Farms	Farms	54	160	129	126	47	26	542
	Percent	9.96	29.52	23.80	23.25	8.67	4.80	

Appendix Table 1. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Size of Farms (Total)	Acres	23,782	102,965	129,045	164,328	97,694	60,494	578,308
Acres Per Farm	Acres/ Farm	440	644	1,000	1,304	2,079	2,327	1,067
	Percent	4.11	17.80	22.31	28.42	16.89	10.46	100
Farm Gross Income (Total)	Dollars	1,480,784	9,744,373	12,741,733	19,046,413	10,867,601	9,306,343	63,187,247
Gross Income Per Farm	Dollars/ Farm	27,422	60,902	98,773	151,162	231,226	357,936	116,582
	Percent	2.34	15.42	20.17	30.14	17.20	14.73	100
Farm Total Costs (Total)	Dollars	2,435,213	11,728,690	14,433,979	19,109,970	10,375,739	9,099,605	67,183,197
Total Costs Per Farm	Dollars/ Farm	45,097	73,304	111,891	151,666	220,760	35,000	123,954
	Percent	3.62	17.46	21.48	28.44	15.44	13.54	100
Costs Per Dollar of G.I.		1.65	1.20	1.13	1.00	0.96	0.98	1.06
Ave. Age of Operators	Years	60.02	54.41	50.56	50.37	51.60	46.62	52.26

Appendix Table 1. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Cash-crop irrigated farms 1973								
Number of Farms	Farms	7	30	43	65	34	17	196
	Percent	3.57	15.31	21.94	33.16	17.35	8.67	100
Size of Farms (Total)	Acres	2,577	18,904	40,151	83,257	65,579	39,744	250,211
Acres Per Farm	Acre/ Farm	368	630	934	1,281	1,929	2,338	1,277
	Percent	1.03	7.55	16.05	33.27	26.21	15.88	100
Farm Gross Income (Total)	Dollars	216,179	1,850,212	4,397,287	10,076,942	8,126,719	6,213,508	30,880,848
Gross Income Per Farm	Dollars/ Farm	30,883	61,674	102,262	155,030	239,021	365,500	157,555
	Percent	0.70	5.99	14.24	32.63	26.32	20.12	100
Farm Total Costs (Total)	Dollars	154,167	1,350,862	2,490,833	5,617,605	4,683,807	3,123,702	17,420,975
Total Costs Per Farm	Dollars/ Farm	22,024	45,029	57,926	86,425	137,759	183,747	88,883
	Percent	0.88	7.75	14.30	32.25	26.89	17.93	100
Cost Per Dollar of G.I.		0.71	0.73	0.57	0.56	0.58	0.50	0.56

Appendix Table 1. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Cash-crop irrigated farms 1973								
Number of Farms	Farms	7	30	43	65	34	17	196
	Percent	3.57	15.31	21.94	33.16	17.35	8.67	100
Size of Farms (Total)	Acres	2,577	18,904	40,151	83,257	65,579	39,744	250,211
Acres Per Farm	Acre/ Farm	368	630	934	1,281	1,929	2,338	1,277
	Percent	1.03	7.55	16.05	33.27	26.21	15.88	100
Farm Gross Income (Total)	Dollars	216,179	1,850,212	4,397,287	10,076,942	8,126,719	6,213,508	30,880,848
Gross Income Per Farm	Dollars/ Farm	30,883	61,674	102,262	155,030	239,021	365,500	157,555
	Percent	0.70	5.99	14.24	32.63	26.32	20.12	100
Farm Total Costs (Total)	Dollars	154,167	1,350,862	2,490,833	5,617,605	4,683,807	3,123,702	17,420,975
Total Costs Per Farm	Dollars/ Farm	22,024	45,029	57,926	86,425	137,759	183,747	88,883
	Percent	0.88	7.75	14.30	32.25	26.89	17.93	100
Cost Per Dollar of G.I.		0.71	0.73	0.57	0.56	0.58	0.50	0.56

Appendix Table 1. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Costs Per Dollar of G.I.		1.21	1.17	1.12	0.92	0.87	0.81	0.92
Ave. Age of Operators	Years	43.71	51.18	48.96	47.19	44.94	51.62	48.60
Number of Farms	Farms	9	21	21	39	30	14	134
	Percent	6.72	15.67	15.67	29.10	22.39	10.45	100
Size of Farms (Total)	Acres	4,319	15,710	23,312	60,023	67,961	38,680	210,004
Acres Per Farm	Acre/ Farm	480	748	1,110	1,539	2,265	2,763	1,567
	Percent	2.06	7.48	11.10	28.58	32.36	18.42	100
Farm Gross Income (Total)	Dollars	307,905	1,266,279	2,101,858	6,185,005	7,017,724	5,597,356	22,476,128
Gross Income Per Farm	Dollars/ Farm	34,212	60,299	100,088	158,590	233,924	399,811	167,732
	Percent	1.37	5.63	9.35	27.52	31.22	24.90	100
Farm Total Costs (Total)	Dollars	519,652	1,627,947	2,514,681	6,749,206	7,724,275	4,844,841	23,980,601
Total Costs Per Farm	Dollars/ Farm	57,739	77,521	119,747	173,057	257,476	346,060	178,960
	Percent	2.17	6.79	10.49	28.14	32.21	20.20	100

Appendix Table 1. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Cost Per Dollar of G.I.		1.69	1.29	1.20	1.09	1.10	0.87	1.07
Ave. Age of Operators	Years	58.67	50.14	54.76	48.56	46.23	50.64	51.50

Cash-crop irrigated farms 1980

	Farm	2	7	19	27	29	32	116
Number of Farms	Percent	1.72	6.03	16.38	23.28	25.00	27.59	100
Size of Farms (Total)	Acres	500	3,205	14,221	30,691	50,357	82,949	181,922
Acres Per Farm	Acre/ Farm	250	458	748	1,137	1,736	2,592	1,568
	Percent	0.27	1.76	7.82	16.87	27.68	45.50	100
Farm Gross Income (Total)	Dollars	59,274	460,084	1,945,097	4,210,760	7,079,872	15,409,412	29,164,499
Gross Income Per Farm	Dollars/ Farm	29,637	65,726	102,374	155,954	244,134	481,544	251,418
	Percent	0.20	1.58	6.67	14.44	24.28	52.84	100

Appendix Table 1. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Farm Total Costs (Total)	Dollar	109,569	419,982	2,266,974	4,855,251	7,115,251	12,525,537	27,291,565
Total Costs Per Farm	Dollar/ Farm	54,785	59,855	119,314	179,824	245,353	391,423	235,272
	Percent	0.40	1.54	8.31	17.79	26.07	22.95	100
Cost Per Dollar of G.I.		1.84	0.911	1.17	1.15	1.00	0.81	0.94
Ave. Age of Operators	Years	59.00	53.14	58.00	53.77	51.90	44.66	53.41

Appendix Table 2. Kansas Farm Management Association 1, Association 4, and Association 5
Farms Classified by Gross Income 1973 and 1980

Item	Unit	Less than \$40,000 Class I	\$40,000 to \$80,000 Class II	\$80,000 to \$120,000 Class III	\$120,000 to \$200,000 Class IV	\$200,000 to \$280,000 Class V	\$280,000 and over Class VI	All Farms
Association 1 1973 and 1980								
Number of Farms								
1973	Farm	7	67	65	55	18	8	220
	Percent	3.18	30.45	29.55	25.00	8.18	3.64	100
1980	Farm	9	58	42	51	15	18	193
	Percent	4.66	30.05	21.76	26.42	7.77	9.33	100
Crop Acre								
1973 Total	Acre	2,255.00	27,613.00	40,722.10	50,251.00	17,769.60	12,897.00	151,507.70
Ave.	Acre	322.14	412.13	626.49	913.65	987.20	1,612.13	688.67
	Percent	1.49	18.23	26.88	33.17	11.73	8.51	100
1980 Total	Acre	2,848.00	30,032.00	28,600.00	47,249.00	24,637.00	28,809.00	162,165
Ave.	Acre	316.44	517.79	680.95	926.45	1,708.47	1,600.50	840
	Percent	1.76	18.52	17.64	29.14	15.19	17.77	100

Appendix Table 2. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Gross Income (\$)								
1973	Dollar	230,682.01	4,222,794.00	6,489,872.40	8,228,612.10	4,175,447.20	3,280,026.60	26,627,434.31
	Dollar	32,954.57	63,026.78	99,844.19	149,611.13	231,969.29	410,003.33	121,033.79
	Percent	0.87	15.86	24.37	30.90	15.68	12.32	100
1980 Total	Dollar	252,981.86	3,697,755.70	4,032,364.90	7,868,422.60	3,569,714.90	7,909,693.40	27,330,933.36
Ave.	Dollar	28,109.10	63,754.41	96,008.69	154,282.80	237,980.99	439,427.41	141,611.05
	Percent	0.93	13.53	14.75	28.79	13.06	28.94	100
Total Cost								
1973 Total	Dollar	161,550.29	2,862,924.70	4,008,291.90	4,648,323.30	2,676,023.60	2,121,588.85	16,478,702.64
Ave.	Dollar	23,078.61	42,730.22	61,660.30	84,514.97	148,667.98	265,198.61	74,903.19
	Percent	0.98	17.37	24.32	28.21	16.24	12.87	100
1980 Total	Dollar	406,052.95	4,692,167.10	4,820,961.2	8,636,957.40	3,775,760.90	8,801,354.40	31,133,283.95
Ave.	Dollar	45,116.99	80,899.43	114,784.97	169,352.11	251,717.40	488,964.13	161,312.35
	Percent	1.30	15.07	15.48	27.74	12.13	28.27	100
Cost Per Unit								
1973	C/R	0.70	0.68	0.62	0.56	0.64	0.65	0.62
1980		1.61	1.27	1.20	1.10	1.06	1.11	1.14

Appendix Table 2. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Productivity								
1973		1.43	1.47	1.61	1.79	1.56	1.54	1.61
1980		0.62	0.79	0.83	0.91	0.94	0.90	0.88
Association 4 1973 and 1980								
Number of Farms								
1973	Farm	26.00	101.00	51.00	39.00	18.00	9.00	244.00
	%	10.66	41.39	20.90	15.98	7.38	3.69	100.00
1980	Farm	18.00	56.00	42.00	52.00	24.00	37.00	229.00
	%	7.86	24.45	18.34	22.71	10.48	16.16	100.00
Crop Acre								
1973 Total	Acre	6,455.20	34,129.00	24,366.00	26,466.00	14,345.00	8,558.00	114,319.20
Ave.	Acre	248.28	337.91	477.76	678.62	796.94	950.89	468.52
	%	5.65	29.85	21.31	23.15	12.55	7.49	100.00
1980 Total	Acre	3,797.00	17,489.00	21,487.00	34,625.00	19,712.00	41,429.00	138,539.00
Ave.	Acre	210.94	312.30	511.60	665.87	821.33	1,119.70	604.97
	%	2.74	12.62	15.51	24.99	14.23	29.90	100.00

Appendix Table 2. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Gross Income								
1973 Total	Dollar	816,380.20	6,234,840.00	5,097,876.60	5,761,106.50	4,192,471.30	3,242,216.40	25,354,891.14
Ave.	Dollar	31,399.24	61,731.09	99,958.37	147,720.68	232,915.07	361,357.38	103,913.49
	%	3.22	24.59	20.11	22.72	16.54	12.83	100.00
1980 Total	Dollar	519,032.90	3,441,597.10	4,035,985.70	8,242,244.80	5,582,036.30	14,025,361.90	33,846,358.70
Ave.	Dollar	28,835.16	61,457.09	96,094.90	158,504.71	232,584.85	379,063.84	156,534.32
	%	1.45	9.60	11.26	22.99	15.57	39.13	100.00
Total Cost								
1973 Total	Dollar	635,393.40	4,284,287.10	3,557,509.80	3,662,085.70	3,050,567.40	2,162,623.50	17,352,466.90
Ave.	Dollar	24,438.20	42,418.69	69,755.10	93,899.33	169,475.97	240,291.50	71,116.67
	%	3.66	24.69	20.50	21.10	17.58	12.46	100
1980 Total	Dollar	947,843.96	3,972,045.70	4,444,895.40	8,709,484.40	5,891,098.10	14,483,348.70	38,448,716.26
Ave.	Dollar	52,658.00	70,929.39	105,830.84	167,490.08	245,462.42	391,441.86	167,898.32
	%	2.47	10.33	11.56	22.65	15.32	37.67	100.00
Cost Per Unit								
1973	\$/unit	0.78	0.69	0.70	0.64	0.73	0.66	0.68
1980	\$/unit	1.83	1.15	1.10	1.06	1.06	1.03	1.07

Appendix Table 2. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Productivity								
1973		1.28	1.45	1.43	1.56	1.37	1.52	1.47
1980		0.55	0.87	0.91	0.94	0.94	0.97	0.93

Association 5 1973 and 1980

Number of Farms								
1973	Farm	7.00	44.00	57.00	56.00	22.00	9.00	195.00
	%	3.59	22.56	29.23	28.72	11.28	4.62	100.00
1980	Farm	7.00	28.00	37.00	55.00	23.00	22.00	172.00
	%	4.07	16.28	21.51	31.98	13.37	12.79	100.00
Crop Acre								
1973 Total	Acre	3,162.00	34,583.00	62,198.80	76,826.50	39,943.00	21,949.00	238,662.30
Ave.	Acre/ Farm %	451.71	785.98	1,091.21	1,371.90	1,815.59	2,438.78	1,223.91
1980 Total	Acre	4,078.00	25,238.00	45,884.60	77,213.50	38,497.80	47,523.00	238,434.90
Ave.	Acre/ Farm %	582.57	901.36	1,240.12	1,403.88	1,673.82	2,160.14	1,386.25
	%	1.71	10.58	19.24	32.38	16.15	19.93	100.00

Appendix Table 2. (Continued)

Item	Unit	Class I	Class II	Class III	Class IV	Class V	Class VI	All Farms
Gross Income								
1973 Total	Dollar	247,112.47	2,686,763.50	5,830,263.70	8,367,495.50	5,210,983.20	3,144,722.00	25,487,340.37
Ave.	Dollar	35,301.78	61,062.81	102,285.33	149,419.56	236,862.87	349,413.56	130,704.31
	%	0.97	10.54	22.88	32.83	20.45	12.34	100.00
1980 Total	Dollar	168,183.14	1,721,084.30	3,718,927.90	8,436,745.70	5,447,530.10	8,999,213.00	28,486,684.14
Ave.	Dollar	24,026.16	61,467.30	100,511.56	153,395.38	236,849.14	409,055.14	165,520.26
	%	0.59	6.04	13.05	29.62	19.12	31.59	100.00
Total Costs								
1973 Total	Dollar	167,538.49	1,645,101.70	3,207,885.50	4,586,613.60	2,620,429.00	1,709,387.16	13,936,955.45
Ave.	Dollar/ Farm	23,934.07	37,388.68	56,278.69	81,903.81	119,110.41	189,931.91	71,471.57
	%	1.20	11.80	23.02	32.91	18.80	12.27	100.00
Cost Per Unit								
1973	Dollar	0.68	0.61	0.55	0.56	0.50	0.54	0.55
1980		1.76	1.49	1.20	1.17	1.08	0.98	1.12
Productivity								
1973		1.47	1.64	1.82	1.79	2.00	1.85	1.82
1980		0.57	0.67	0.83	0.85	0.93	1.02	0.89

CHANGING CHARACTERISTICS AND STRUCTURE
OF KANSAS FARMS

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AN ABSTRACT OF A MASTER'S THESIS

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ABSTRACT

This study was concerned with some recent changes in characteristics and structure of Kansas farms. These changes are related to the number and size of farms, economies of size, production cost per acre, distribution of farms by economic class (gross income), by farm size (crop acres), by age of operators, and by state area (associations).

Most of the data used for the study were obtained from the Farm Management Association farms for the years, 1973, 1975, 1977, and 1980. The results show that the number of farms is declining, while farmland remains almost constant; thus, the average farm grows in size. Farm returns and productivity vary from year to year, and farms seemed to be less profitable in latter years than in earlier years of analysis.

Economies of size were, generally, present for medium and large size farms (for all farms, for different types of farming, and for various locations of the state). Therefore, farmers of all size operations aspire to enlarge their farming units in search of obtaining some cost advantages. Attainment of economies of size of farms contributed to the viability of farming enterprises, and to farm concentration. Thus, farm consolidation will be continued as long as economics of size are present. Large farms maintained lower production cost than smaller farms, which indicates that large farms had a greater access to the market and small farms are having a greater difficulty in competing with larger farms in the

sale of their products as well as in buying of their inputs. Small farming units, also, were operated by older farmers. This implies that the future of small farms is not certain and most probably they will be forced to leave farming, unless they can find better chances to supplement their living needs by off-farm income.

Farm output and farmland are concentrated in large farms indicating that Kansas farmland and Kansas agricultural products will be controlled by fewer and fewer producers.

Replacement for older and/or deceased farmers is becoming more difficult since the number of farms operated by young farmers (less than 30 years) is decreasing faster than the number of Kansas farms each year. Returns and acres per farm are the highest in the western part of Kansas, while the smallest acreage per farm is located in the south-eastern section of the state. The results of this study are expected to help policy-makers, businessmen, and farmers, particularly those who intend to enter into farming, in their decision making about their future plans.