ANALYSIS OF FARM LAND TENURE IN WESTERN OKLAHOMA

By

MAHMOUD ABDELHAMID ELSHAHAT

Bachelor of Science
Cairo University
Giza, Egypt
1952

Master of Science
Oklahoma State University
Stillwater, Oklahoma
1961

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the Oklahoma State University
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ANALYSIS OF FARM LAND TENURE

IN WESTERN OKLAHOMA

Thesis Approved:

L. A. Sanders
Thesis Adviser

Richard W. Poole

Kenneth B Boggs

E. B. Bovet

Robert Hultquist

J. B. Boggs
Dean of the Graduate School

PREFACE

Major technological improvements in agriculture have created strong incentives for farmers in the United States to enlarge their operations. Changes in tenure forms as well as the distribution of ownership, size of ownership units, and the combination of several units into a single operating unit often are necessary if farm operators are to take full advantage of technological change.

Farm tenure and size adjustments have been striking in several respects. Farm size adjustments have been continuous and rapid, the adjustments being made in many instances through both renting and buying of additional land. The trend of increased size of operations has had added impetus from the need to adjust operations to variables such as climatic conditions and from the opportunity for large scale specialized production. The difficulty of achieving adequate income levels on small farms has been a major factor in making these adjustments necessary.

The U. S. Department of Agriculture made an enumerative survey of Great Plains farm operators in 1957. This survey provided data on the tenure and financial conditions of farm operators in the entire region. Survey data obtained in western Oklahoma are used here to study the relationship of the tenure structure to social and economic variables of farm operators. Additionally, an attempt was made to expand and refine the conventional census classification of farm tenure in terms of the tenure status of farm operator and the size of the unit he operates.

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CHAPTER I

INTRODUCTION

The Role of Land Tenure

Problems relating to land tenure are of major concern to many people over the world. They are seeking ideas and methods which would help to eliminate poverty and insecurity and satisfy human wants. Marshall Harris and Joseph Ackerman state:

> More than two-thirds of the people of the world derive their livelihood by working directly upon the land. The remainder are affected indirectly; they look to agriculture for food, fiber, and vegetable oils. The world's population should, thus, have a direct interest in farm tenure in the way that rights in agricultural land are distributed and controlled and in the relationship that exists between those who own the land and the rest of society, and between landowners and those who operate or work upon their land.[1]

The term, "land tenure," refers to all the relationships existing among individuals regarding their rights to use and to control land. These relationships may exist among two or more private parties, or they may involve public agencies. Land tenure is not concerned directly with land use, although the tenure system affects the efficiency with which land is used. Land use is a man-to-land relationship. But, land tenure is a man-to-man relationship.

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[1] Marshall Harris, Joseph Ackerman (editors) Family Farm Policy (Chicago, 1947), p. 39.

Property in land consists of a bundle of rights and land tenure refers to the rights in the bundle held by different persons. In the United States, society has reserved specific rights under which it may influence the tenure pattern, such as the right to tax, to condemn, to police, and to spend. Other rights may be gained by private parties, such as the right to use, to sell, to will, to subdivide, to consolidate, to exclude, to mortgage, and to lease.[2]

The system of land tenure may be of major importance in determining the distribution of income among the participants in the production process. In a free price system, the gross income of the individual depends upon: (1) the quantity of resources he possesses, and the degree of control of resources in which he has claims, and (2) the reward or the price received for the resource services used in production. The price received for the resource services depends upon the value of the factor contribution to the national product. With this respect, Heady asserts that:

> Under the institution of private resource ownership and market prices there can be, of course, only one definition of an "equitable" division of the product; the return to any one of the resource owners must be based on the marginal value productivity of the resources which the individual contributes.[3]

Hence, a function of a land tenure system is to distribute income among participants on the basis of their relative contribution in the

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[2]For more detailed discussion for private and public rights in land, see Harris and Ackerman, Chapter II.

[3]Earl O. Heady, Economics of Agricultural Production and Resource Use (New York, 1952), p. 589.

production process, for if a resource owner receives less than the full reward from the productivity of his resource he is inclined to supply a smaller quantity than it would otherwise be economical to use.

Maximum national output is usually identified with maximum efficiency of resource use. Farm production requires the combination of other factors of production with land plus ample time for the farm operator to carry on his operations. Therefore, the farmer should control and use the land for a period of time long enough to complete the productive process he undertakes. Hence a function of a land tenure system is to distribute the rights among individuals in their relation to land use so that resources can be organized in the most efficient manner.

Since all farming operations require time, security of tenure is necessary for an efficient use of farm resources. In addition, a lack of security leads to high mobility and the waste of economic resources that comes with frequent moving. A farm operator's tenure is said to be insecure if a high degree of uncertainty exists with regard to his future control and use of land. A farm operator is insecure if his occupancy is too short to carry out sound farm plans. This not only affects the relative shares of the participants in the farming process, but also has an impact upon society as well. In such cases, the total quantity of goods and services available to satisfy human wants is less than the maximum possible by the difference between what is produced and what could be produced under a greater degree of tenure security. Hence, it should be the function of a tenure system to provide security

for the farm operator so that he can use more effectively the resources at his disposal.

Historical Background

History explains some aspects of the tenure system in the United States. It is generally agreed that public policy in this country has favored the family farm as a social and economic unit.[4] The ideals of the founders of the country shed light upon the tenure system; an ideal which held that land should be divided into private holdings of a size corresponding to the needs of individual families for employing their labor.[5]

In general, the family farm ideology is associated with Jefferson. Jefferson believed strongly that the country should be established on an agricultural basis. Jefferson saw in agriculture a democratic independent and a self-sufficient society. He visualized a nation of farmers. In this respect, John Brewster states:

> I take the Jeffersonian dream to mean Jefferson's affection for and desire to establish and preserve an agriculture of free holders--full owner operators, debt free, unrestricted by any contractual obligations to anyone--all in all, pretty much the monarchs of all they survey.[6]

From the time of the American Revolution to the Homestead Act of 1862 the trend was to lower the price of land, to recognize squatters'

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[4]Harris and Ackerman, p. 4.

[5]W. B. Back, "The Economic and Institutional Forces," from Howard W. Ottoson (editor), Land Use Policy and Problems in the United States (Lincoln, 1963), p. 180.

[6]John M. Brewster, "The Relevance of the Jeffersonian Dream Today," from Howard W. Ottoson, p. 86.

(illegal settlers) rights, so as to encourage settlement. When the Homestead Act was passed in 1862, it more nearly exemplified the family farm ideology than any other piece of land legislation.[7] According to the Homestead Act, the settler, by meeting certain residency requirements and by paying the filing fees, could become the owner of a 160-acre unit, a unit reasonably adequate to employ the labor supply of a family. The size of the unit was later extended to more than 160 acres in ranching and dry land areas. It is likely that the residency requirements were imposed in an effort to promote land ownership by those who till the soil and encourage a wide distribution of such ownership.

The Impact of Technology

There were certain characteristics of farming in the era of settlement which favored the Jeffersonian dream: (1) agriculture was characterized by a low man-land ratio, (2) dependence was placed mainly on animal and man power, (3) farms were self-sufficient rather than commercial, and (4) the vast majority of people were farmers.

Then came the industrial revolution and agriculture entered a new era. The farm family which had produced much of its own food, tools, and power now began adopting innovations in production so as to better utilize the limited human and nonhuman resources to increase productivity and the standard of living. In this respect, the American farmer was fortunate because of the wide dissemination of scientific knowledge.

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[7]Back, p. 181.

The Land Grant colleges, Extension agencies, Federal Experimental Stations, as well as other public and private sources, developed and disseminated knowledge among farmers. The farmer was made aware of what scientific knowledge could accomplish in the field of agriculture. The farmer responded and agriculture began a rapid revolution.

Farm mechanization became a fundamental factor in making farming a business rather than a way of life. Mechanization allowed each operator to cultivate more land. As free land became scarce, land values started to rise. Not only were farm producers interested in acquiring more land, but nonfarmers became interested in land as an investment. The problem of finding sufficient funds for the purchase of land by the farm operator became increasingly difficult. Presently, it requires ownership or control of $100,000 to $200,000 in capital assets, including the value of land for a family to achieve a reasonable degree of efficiency in farming and to obtain labor and management income comparable to income standards of nonfarm families.[8] Because of the rising trend in the price of land, investment in land takes a major share of the total capital invested in farming.

With ever increasing investment requirements, it becomes more difficult for an operator to climb the agricultural ladder[9] to attain full ownership. Any surplus capital may be needed for operation rather

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[8]Back, p. 192.

[9]The "agricultural ladder" will be discussed in Chapter III; however, according to the idea of the agricultural ladder, a farm youth climbs to owner operatorship through a succession of hired farm worker, tenant, and owner operator rungs.

than land investment. But a large-sized farm is essential if modern technology is to be adopted, and there are only two ways of acquiring control of more land--rent or buy. Under conditions of increasing land values and the high capital requirements for machinery and equipment, the renting of additional land may be the only way in which the operator can take advantage of modern technology. This may explain the reason for the increase in farmland operated by part owners (Figure 1).

Part ownership in the United States grew slowly until 1939, and then it began a more rapid increase (Appendix A). One might argue that the increasing ratio of part ownership during the past 30 years and the decline in full tenancy since 1940 stems from the security offered by at least partial ownership coupled with the necessity to control more resources. Even so, part ownership, while it facilitates enlargement of the farm unit, may also involve certain undesirable features. A part owner may exploit the land he rents in favor of the land he owns. A renter ordinarily organizes his farming plan in accordance with the limited time he expects to occupy the rented land. The time often is too short for him to adopt land improvement and soil conservation measures. Even when provisions are made for the automatic renewal of the lease, the tenant has no assurance that his lease will continue from one year to the next. Thus, it is evident that operating a farm under such insecurity does not permit adequate planning and may result in inefficient use of farm resources.

As the size of farm increases (Table I) and the number of farms declines, the concentration of holdings is increasing. A question might arise in this respect,--is such concentration desirable in view of equal

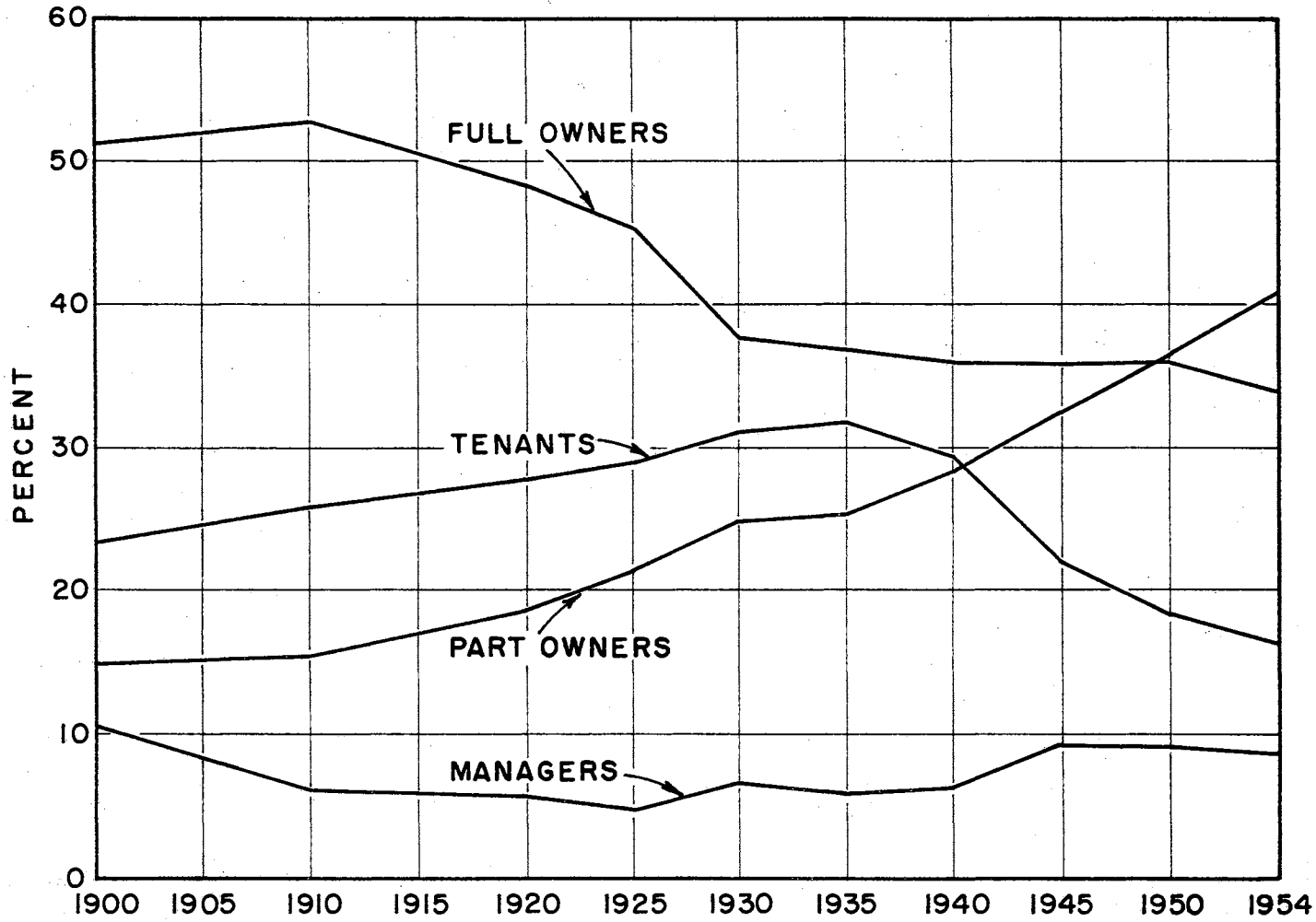

Fig. 1 - PERCENTAGE DISTRIBUTION OF LAND IN FARMS BY TENURE OF OPERATOR, UNITED STATES, 1900-1954. (SOURCE: APPENDIX A)

TABLE I

LAND IN FARMS; AVERAGE ACREAGE PER FARM BY TENURE OF OPERATOR, UNITED STATES, 1900-1954

Tenure of Operator	1900	1910	1920	1925	1930	1935	1940	1945	1950	1954
					- Acres -					
United States										
All operators	146.2	138.1	148.2	145.1	156.9	154.8	174.0	194.8	215.3	242.5
Full owners	134.7	138.6	137.0	126.6	127.9	121.8	123.9	124.9	135.6	144.7
Part owners	276.4	225.0	314.2	354.9	374.5	386.2	488.3	562.1	512.0	544.2
Managers	1,481.2	924.7	790.8	1,058.9	1,109.1	1,261.1	1,830.2	2,735.5	4,473.2	4,786.2
Tenants	96.3	96.2	107.9	107.6	115.0	117.6	132.1	135.4	146.8	165.6

Source: A Statistical Summary of Farm Tenure 1954, Agricultural Information Bulletin No. 200, Agricultural Research Service, USDA, November, 1958.

economic opportunity and other values traditionally held by the people? If not, what measures need to be taken to meet such a development in the tenure structure? What conflicts might arise between the equally important values of freedom and equality of opportunity?

It is often said that American agriculture has reached a state of technology which requires a major change in operations. One of the major shortcomings of the present tenure situation for both the owner operator and the tenant is an inadequate operational scale. Either the farm operator lacks enough capital to intensify his operations to the point where it yields satisfactory income for the farm family, or he operates too few acres. Advanced technology requires machinery and other equipment, fertilizer and high quality seed, all of which require capital. The effort to accumulate sufficient capital to take advantage of modern technology may reduce severely the amount of income available for family living. In addition, heavy annual fixed costs may create a precarious position for the family farm operator.

The Statement of the Problem

An owner-operated family farm long has been the expressed goal of land policy in the United States. But there are forces which have reversed the trend away from this "ideal" goal in recent years. The economic forces modifying the traditional or the "ideal" tenure include: (1) changes in technology, (2) higher income standards, and (3) pressure to increase farm size with resulting upward pressure on total capital requirements and land values.

A significant development in farm land tenure has been the increasing importance of part ownership. The farm operator may have to choose between outright ownership of less land, or gain control of more land through renting. Many operators apparently have taken the latter route. In spite of declining number of farms in recent years, the number of farms and the acreage of land farmed by part owners have increased steadily.

What is the process leading to the present operational status of farm operators? What is the relative amount of land operated by full owners, part owners, and full tenants? What is the relative amount of land owned and rented by part owners? How is rented land distributed between full tenants and part owners? How is owned land distributed between full owners and part owners? Is acreage, owned or operated, being concentrated? What is the degree of concentration? How is ownership acquired? What plans do farmers have to expand their farm operations such as buying, or renting of more land? These questions and others need to be answered in order to shed light on the tenure pattern prevalent in agriculture today.

Area of the Study

It helps in understanding the current farm land tenure situation if one knows the general outline of the origin and development of land tenure in the area of study (Figure 2).

The "family farm" ideal was basic in United States land distribution, and this policy was applied in Oklahoma.

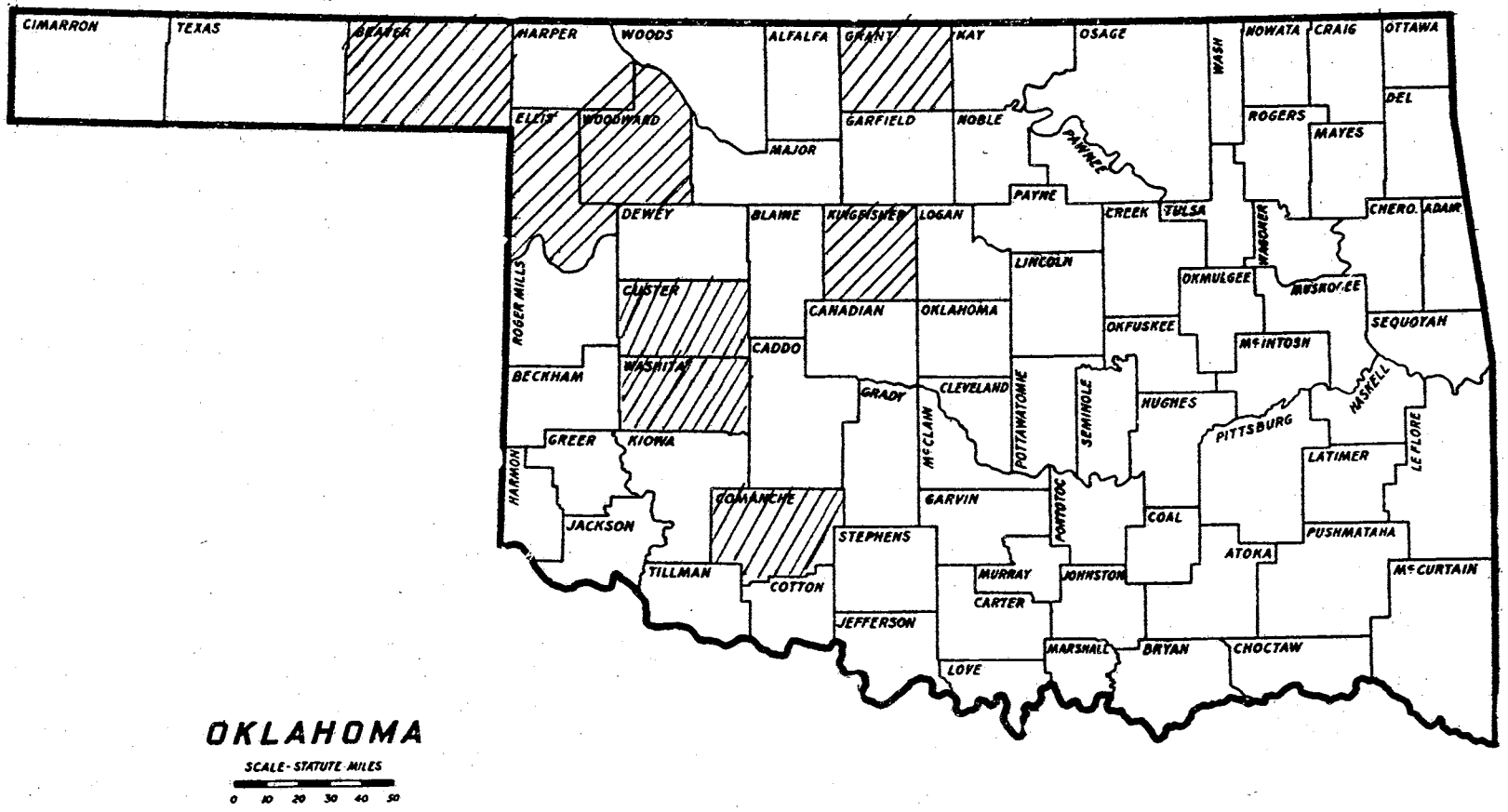

Figure 2. Map of Oklahoma with the shaded area showing the eight counties of western Oklahoma which were included in the area of study.

The law under which Oklahoma was opened provided that land should be disposed of in accordance with the homestead laws to eligible[10] persons, in areas not to exceed one hundred and sixty acres for each settler.[11]

Homesteading opportunities were the first incentives for the heavy migration into Oklahoma from 1890 to 1910.[12] The total population of Oklahoma increased 205.6 percent during the decade 1890 to 1900; 109.7 percent, 1900 to 1910; and 22.4 percent, 1910 to 1920.[13]

As the free land became homesteaded, other individuals seeking careers in farming were a major factor in an increase in land prices. Rising land values could logically be expected especially between 1900 and 1910 for several reasons: (1) bare land was being improved very rapidly by the erection of buildings, fences, and other improvements which increased its value, (2) the unprecedented growth of population due to immigration from other states increased the demand, (3) the exhaustion of free cultivable land caused land values to rise

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[10]Eligible persons included citizens 21 years of age and aliens who had declared their intention of becoming citizents,--for more detailed discussion, see Edwin C. McReyneide, Oklahoma, A History of the Sooner State (Norman, 1954), p. 288.

[11]Solon J. Buck, The Settlement of Oklahoma, Wisconsin Academy of Science, p. 29.

[12]Tom Moore, "Farm Tenancy in Oklahoma, 1923-1935 (Unpublished M.S. thesis, Department of History, Oklahoma Agricultural and Mechanical College, 1938), p. 2.

[13]Ibid.

throughout the country, and (4) after the beginning of the century prices of agricultural products rose greatly.[14]

The farmer had the alternatives either of borrowing money to purchase land or of renting a farm and using his small amount of capital for operating expenses. Most settlers coming into Oklahoma brought with them little wealth, and those who could not master the new conditions were unable to retain their farms, and thus they became tenants or drifted away to the other sectors of the country.[15] Therefore, in spite of the great opportunities for acquiring ownership of land in western Oklahoma, a large percentage of tenancy prevailed after settlement (Table II).

The need for farm credit became increasingly important during the early part of the 20th century. Free land was no longer to be had and a rapid rise in farm values made it difficult for farmers to buy land[16] without borrowing. Many did borrow and the depression which began in 1929 found many farmers trying to meet payments on mortgages contracted at higher prices. Farm product prices fell and operators had incomes scarcely sufficient to cover costs of production, taxes, and other similar charges. Little, if any, was left for payments on mortgages. Foreclosures took place at a rapid rate and since farm owners had few

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[14] Current Farm Economics, Oklahoma Agricultural Experiment Station (December, 1936), Vol. 9, No. 6, p. 137.

[15] Southwestern Bell Telephone Company, Economic Survey of Oklahoma, 1929, p. 148.

[16] The value of farm real estate per acre in Oklahoma, based upon an index of one hundred percent, rose from 98 in 1912 to 166 in 1920--Moore, p. 12.

TABLE II

PROPORTION OF TENANCY IN EIGHT WESTERN OKLAHOMA COUNTIES, 1910-1959

County	1910	1920	1925	1930	1935	1940	1950	1954	1959
					- Percent -				
Beaver	8.0	23.0	30.9	30.6	35.1	38.4	21.1	21.6	22.8
Comanche	55.8	55.5	62.2	61.4	61.7	52.4	37.8	32.8	24.4
Custer	35.2	37.0	47.4	50.1	50.4	43.9	25.9	25.3	23.0
Ellis	17.0	27.4	38.3	36.4	42.4	38.7	22.4	21.2	16.6
Grant	37.3	42.8	44.2	48.5	47.9	44.2	36.0	36.0	33.1
Kingfisher	38.4	38.5	46.0	48.6	50.9	45.9	31.3	29.7	26.0
Washita	44.3	38.5	53.5	58.5	52.2	48.8	37.6	35.1	27.6
Woodward	23.2	29.3	31.0	34.2	40.8	37.3	19.4	17.6	14.9

Source: U. S. Department of Commerce, Bureau of the Census, Agriculture Census Reports for the years 1910, 1920, 1925, 1930, 1935, 1940, 1950, 1954, and 1959.

alternatives to farming during this period, they became renters. As a consequence, tenancy sharply increased between 1920 and 1935 (Table II). To counter conditions prevailing during the depression period, the government took action to enlarge the farm credit system. The Farm Credit Administration was established in 1933. In 1935, the Farmers Home Administration was established to provide loans to tenants for farm purchase. Farm ownership again increased and by 1950 tenancy had fallen to its lowest point since the period of settlement. Full ownership reached its highest point since 1920.

At present, however, there appears a trend leading away from full-owner operatorship. The proportion of full-owner operators declined from 36.4 percent of all operators in 1950 to 34.9 percent in 1959 (Table III). Meanwhile, part ownership increased from 32.9 percent of all operators to 40.2 percent in the same period (Table III).

Farm operators have made remarkable progress in overcoming the handicaps of inadequate farm units resulting from the Homestead Act.[17] Such adjustments may be explained by three main factors: (1) the drought and the depression of the 1930's forced many farmers out and gave an opportunity for the remaining farmers to expand, (2) technological advances in agriculture particularly in farm power and machinery, and (3) the high level of production and the prosperity associated with World War II and the postwar period made it possible for the farmers to adopt

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[17]Ray E. Huffman, "Problems of the Plains," Proceedings of Great Plains Agricultural Council (Bozeman, Montana, July 29-31, 1958), p. 21.

TABLE III

NUMBER OF FARMS BY TENURE OF OPERATOR IN EIGHT WESTERN OKLAHOMA COUNTIES, 1910-1959

Tenure of Operator	1910	1920	1930	1940	1950	1954	1959
				- Number -			
All operators	26,695	19,403	21,124	16,941	14,004	12,342	10,518
Full owners	12,453	8,186	6,689	5,666	5,093	4,388	3,669
Part owners	4,965	3,917	4,052	3,658	4,612	4,368	4,225
Managers	122	123	81	49	26	19	27
All tenants	9,155	7,177	10,302	7,568	4,273	3,567	2,597

PERCENTAGE DISTRIBUTION OF NUMBER OF FARMS BY TENURE OF OPERATOR IN EIGHT WESTERN OKLAHOMA COUNTIES, 1910-1959

Tenure of Operator	1910	1920	1930	1940	1950	1954	1959
				- Percent -			
All operators	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Full owners	46.6	42.2	31.7	33.4	36.4	35.6	34.9
Part owners	18.6	20.2	19.2	21.6	32.9	35.4	40.2
Managers	.5	.6	.4	.3	.2	.2	.3
All tenants	34.3	37.0	48.8	44.7	30.5	28.9	24.7

Source: U. S. Department of Commerce, Bureau of the Census, Agriculture Census Reports for the years 1910, 1920, 1930, 1935, 1940, 1950, 1954, and 1959.

new technology and expand their farm size units.[18] As a result of such adjustments, farms have declined in number and increased in size (Tables III and IV).

In addition to the above factors, the climate of the Great Plains is such that the capacity of land to absorb capital inputs is low and the farm operator has to get control of more land in order to increase his scale of operation.

Organization of the Study

The objectives of the study are indicated in Chapter II. The tenure-size classification model upon which subsequent analyses were based, as well as the source of data used in the study, is developed in Chapter II. Chapter III contains an analysis which relates tenure-size classes to selected social and economic characteristics of the farms surveyed. In Chapter IV, farm tenure and size adjustments are discussed. Chapter V contains statistical analysis by which certain hypotheses are tested. The final chapter--Chaper VI-- presents a summary of findings and limitations of the study.

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[18] Ibid.

TABLE IV

LAND IN FARMS; AVERAGE ACREAGE PER FARM IN EIGHT WESTERN OKLAHOMA COUNTIES, 1910-1959

County	1910	1920	1930	1940	1950	1954	1959
				- Acres -			
Beaver	237.0	436.5	510.8	651.2	769.2	864.7	991.0
Comanche	177.3	208.4	195.1	255.1	311.1	326.6	393.1
Custer	202.3	246.2	205.2	259.8	337.0	397.6	467.2
Ellis	219.6	391.7	447.7	487.8	657.9	732.2	853.3
Grant	207.9	228.2	242.3	274.0	310.0	341.6	412.0
Kingfisher	189.3	203.7	217.0	235.5	283.5	331.4	375.4
Washita	164.1	183.7	135.7	178.1	219.8	251.5	311.9
Woodward	227.1	353.3	404.7	492.0	632.9	740.7	859.8
All Eight Counties	200.3	272.1	261.0	319.8	392.6	448.4	528.0

Source: U. S. Department of Commerce, Bureau of the Census, Agriculture Census Reports for the years, 1910, 1920, 1930, 1935, 1940, 1950, 1954, and 1959.

CHAPTER II

OBJECTIVES AND METHODOLOGY

Objectives of the Study

The general purpose of this study is to examine the present tenure situation in selected areas of Oklahoma. The specific objectives are:

1. To expand and refine the conventional census classification of farm tenure in terms of the tenure status of the farm operator and the size of the unit he operates;
2. To relate tenure-size classes to selected social and economic variables of the farm operators in a specific area; and
3. To study farm tenure and size adjustments to determine what changes occurred during a five-year period (1952-1957).

The Tenure-Size Classification Model

The tenure status of a farmer or rancher is prescribed by his legal interest in the land he operates. Tenure classes are defined in accordance with the census system as follows:

A full-owner operator owns all the land he operates.

A part-owner operator owns part of the land he operates and rents part from others.

A manager operates a farm for someone else on a salary basis.

A full-tenant operator owns none of the land he operates.

Such classification of land tenure involves shortcomings which may hamper research in the field of land tenure. For instance, some part owners own 95 percent while others rent 95 percent of the land they operate. Hence, the census classification of tenure may conceal important differences among farm operators who have varying degrees of control over the resources they use.

In order to establish a model which would permit a study of differences among the various tenure classes, an attempt was made to refine the census classification of tenure. This was done by a further breakdown of the tenure status of the farm operator in terms of degree of control over the land and in the size of the unit operated. To develop this new tenure-size classification, three major steps were taken:

First--In terms of tenure status, farm operators were grouped according to the proportion of the operated land owned by the operator. The tenure groups are:

Group 1--operators who own none of the land they operate. These are the full-tenant operators. Group 1 represents 25.3 percent of all operators in the study.

Group 2--operators who own 0.1-34 percent of the land they operate. The modal group owns 25 percent of the land they operate and represents about 23 percent of the operators in the group. Group 2, as a whole, includes about 12 percent of all operators in the study.

Group 3--operators who own 34.1-66 percent of the land they operate. The modal group owns 50 percent of their land and represents about 28

percent of the operators in Group 3. Group 3, as a whole, includes about 17 percent of all operators in the study.

Group 4--operators who own 66.1-99.9 percent of the land they operate. The modal group owns 66.7 percent of their land and represents about 30 percent of the operators in Group 4. Group 4, as a whole, includes about 14 percent of all operators in the study.

Group 5--operators who own all the land they operate. These are the full-owner operators. Group 5 represents 31.4 percent of all operators in the study.

Second--Operators were classified in terms of the acreage they operate. Five categories of size were selected:[1]

Size A--includes all operators who have farms of 80 to 239 acres in size. The modal size of this category is 160 acres which represents nearly 58 percent of all farms in Size A. The farms in Size A include about 28 percent of all farms in the study.

Size B--includes all operators who have farms of 240 to 400 acres in size. The modal size of this category is 320 acres which represents 44 percent of all farms in Size B. The farms in Size B include about 32 percent of all farms in the study.

Size C--includes all operators who have farms of 401 to 560 acres in size. The modal size of this category is 480 acres which represents nearly 48 percent of all farms in Size C. The farms in Size C include about 15 percent of all farms in the study.

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[1]Twelve farms of size less than 80 acres were ignored, but were distributed as follows: 7 were operated by full owners, 4 by full tenants, and 1 by a part owner.

Size D--includes all operators who have farms of 561 to 820 acres in size. The modal size of this category is 640 acres which represents nearly 37 percent of all farms in Size D. The farms in Size D include 13 percent of all farms in the study.

Size E--includes all operators who have farms of 821 acres and over. The modal size of this category is 1120 acres which represents about 11 percent of all farms in Size E. The farms in Size E include nearly 12 percent of all farms in the study. (For the classification model, see Figure 3).

Third--Farm operators were classified by tenure status and size of farm acreage into 25 classes. When the discussion pertains to a letter category, it is referring to size. When it pertains to a numerical group, it refers to tenure. And when the discussion is of a class, it refers to tenure and size. To illustrate: Class A_1 refers to all those operators who operate farms of size 80-239 acres and own none of the land; more often these are 160 acre units. Class B_2 refers to those operators who operate farms of size 240-400 acres, generally 320 acres, who own .1-34.0 percent of the land they operate. Class C_3 refers to those farm operators who operate farms of size 401-560 acres and own 34.1-66.0 percent of the land they operate. Generally, these are 480 acre units, etc. The distribution of tenure-size classes, for 1957, is shown in Table V.

The tenure-size classification model has two main advantages:

1. The model takes account of the degree of land ownership by part owners, therefore, it is a useful tool for analyzing the part-owner group.

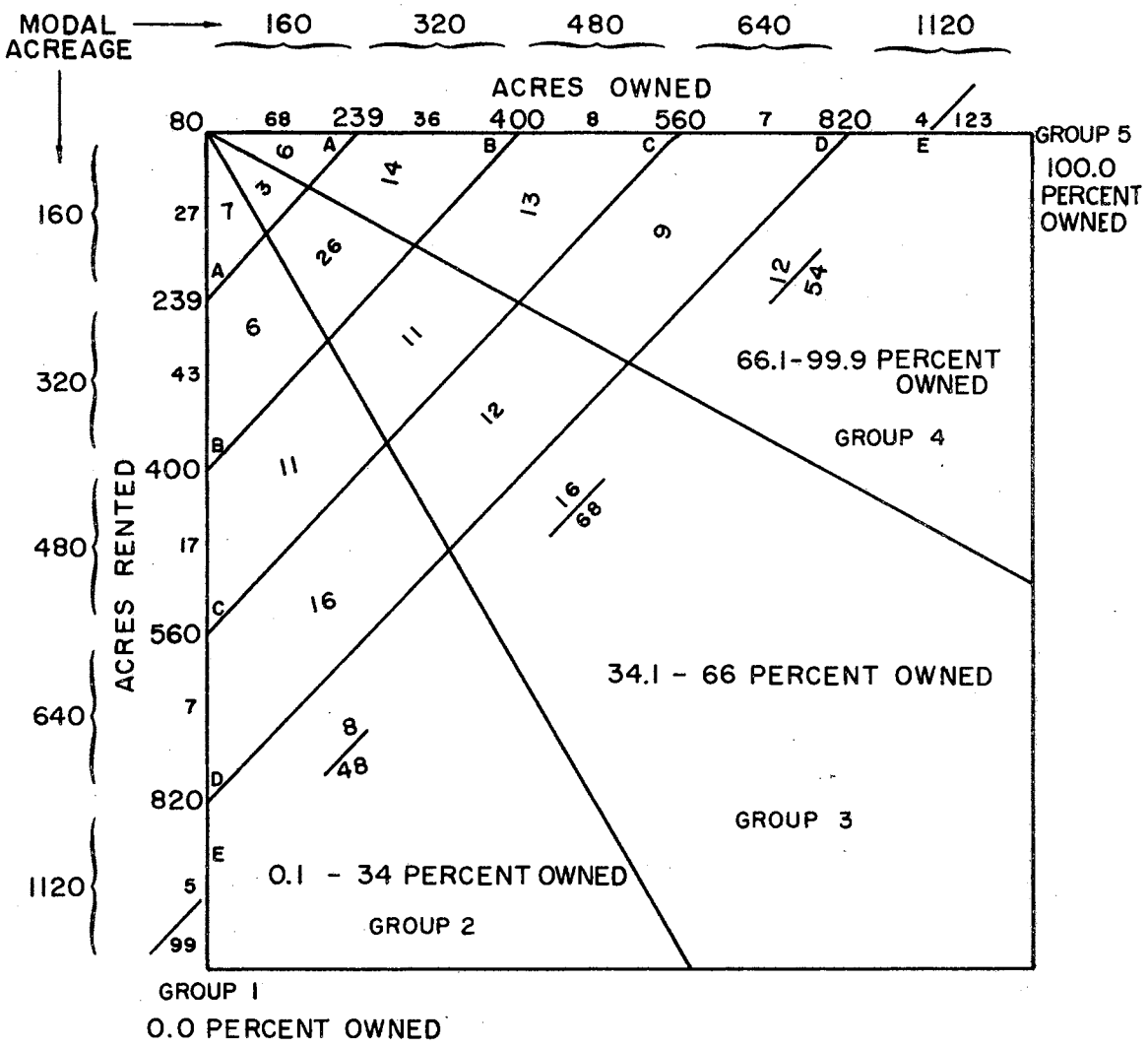

Figure 3 - THE TENURE-SIZE CLASSIFICATION MODEL SHOWING MODAL SIZE IN SIZE CATEGORIES AND NUMBER OF OPERATORS IN TENURE GROUPS.

TABLE V

DISTRIBUTION OF TENURE-SIZE CLASSES, AREA OF STUDY, 1957

Tenure Groups	Size Categories					Total
	A	B	C	D	E	
	- Number of Operators -					
1	27	43	17	7	5	99
2	7	6	11	16	8	48
3	3	26	11	12	16	68
4	6	14	13	9	12	54
5	68	36	8	7	4	123
Total	111	125	60	51	45	392

2. The model is one in which farm size (as measured in acres) is incorporated as a tenure characteristic.

Source of Data

The source of data for this study was an enumerative survey of farm operators in the Great Plains conducted by the United States Department of Agriculture in 1957. The purpose of the survey was to obtain information regarding:

1. Land and capital requirements, uses, and acquisition by farm operators in the Great Plains area.
2. Financial and tenure conditions of farm operators.

The population studied in the survey included all farms in 12 economic subregions, as designated by the Bureau of the Census, in the Great Plains area. Included were parts or all of the states of Texas, Oklahoma, Kansas, Nebraska, South Dakota, North Dakota, Montana, Wyoming, Colorado, and New Mexico. The 12 subregions were consolidated into five regions which represent five general types of farming--spring wheat, northern range, wheat-corn, cotton-wheat, and winter wheat. This study will examine the characteristics of farmers in Oklahoma found in the cotton-wheat, and winter wheat areas.

It was estimated by the United States Department of Agriculture that a sample of 720 farms per region would be required to obtain reliable data for each region. Thus, the sample size was 3600 (720 x 5 = 3600). Actually, 3604 farms were surveyed.

The sample was drawn in two stages. Counties were designated as the primary sampling units. The sample size for each economic area within

the region was in the same proportion to total sample size for the region as the number of census farms for the economic area is to the total number of census farms of the region. By dividing the number of farms allocated to each economic area by 25, the number of sample counties was determined.[2] Then counties were selected at random. For Oklahoma, Commanche, Grant, Kingfisher, and Washita Counties were selected to represent a cotton-wheat area. Beaver, Custer, Ellis, and Woodward counties represented the winter wheat area.

The sample for each economic area was distributed among counties in the same proportion as the county's share of the total census farms in the economic area. For the eight western Oklahoma counties, the sample size was 410. Actually, 404 farms were surveyed.

All sample names of farm operators were taken from an alphabetical list of farm operators in the sample county ASC office. The sampling interval was determined by dividing the number of operators on the list by the number of sample operators. By using the table of Random Numbers, a random number between one and the sample interval number was drawn. This was the number of the first operator name in the sample. The additional names were determined by successively adding the sampling interval to the random start number. Then the names and addresses of the sample farm operators were copied down on a list.

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[2]Twenty-five farms per county was arbitrarily chosen so that one enumerator would have a week's work in a county or two enumerators would have one-half week of work.

After the sampling units were selected, farm operators were interviewed by fieldworkers. Finally, questionnaires were reviewed and edited and data were put on punch cards.

Terminology

Size category - refers to operators who operate farms within a given range of size, e.g., 80 to 239 acres, etc.

Tenure group or tenure status - refers to those operators who own a specified proportion of the land they operate, e.g., 0.1-34 percent.

Tenure-size class - refers to the tenure status of operators and the size acreage they operate.[3]

Full-owner operator - operator who owns 100 percent of the land he operates.

Part-owner operator - operator who owns a proportion of the land he operates. Part-owner operators are included in 0.1-34.0, 34.1-66.0 and 66.1-99.9 percentage tenure groups.

Full-tenant operator - operator who owns none of the land he operates.

Manager - a percon who operates a farm for someone else on a salary basis.

The operator - refers to the person in charge of the farm and responsible for day-to-day operations.

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[3]During the thesis discussion when the word "class" is mentioned, it will refer to "tenure-size class."

A farm - total land acreage used for farm production, e.g., for crop and livestock production.

A tract - is any piece of land the operator owns or operates separately from another piece of land.

CHAPTER III

RELATION OF TENURE STRUCTURE TO SOCIAL AND ECONOMIC VARIABLES

In Chapter II a tenure-size classification was developed taking into account the tenure status of farm operators and farm sizes. This chapter aims to relate tenure-size classes thus delineated to selected social and economic variables.

Social Variables

A question has long existed as to the relationship of various social variables and tenure. For example, what was the age distribution of farm operators and at what age did owners acquire their land? What was the process leading to the operators' present occupational status? Where did operators live? These and other questions will be examined here.

Age of Operators

Farm operators in the study area generally were found among the older age groups (Table VI and Figure 4). Only two percent of farm operators were 24 years and under; 11.5 percent were 25 to 34 years old; 27 percent were 35 to 44, and 51.5 percent were 45 to 64 years old. Fewer than eight percent of the operators were 65 years old or more.

The relatively small percentage of operators in younger age groups (34 years or less) and the increasing percentage of farm operators in

TABLE VI

DISTRIBUTION OF TENURE GROUPS BY AGE FOR 392 FARM OPERATORS, AREA OF STUDY, 1957

Tenure Groups	Age of Operator (Years)									
	24 and Under		25-34		35-44		45-64		65 and Over	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	5	1.3 (62.5)	26	6.6 (57.8)	42	10.7 (39.6)	25	6.4 (12.4)	1	.3 (32.)
2	0	0	8	2.0 (17.7)	21	5.4 (19.8)	18	4.6 (8.9)	1	.3 (3.2)
3	1	.3 (12.5)	4	1.0 (8.9)	11	2.8 (10.4)	49	12.5 (24.3)	3	.8 (9.7)
4	1	.3 (12.5)	2	.5 (4.4)	7	1.8 (6.6)	39	9.9 (19.3)	5	1.3 (16.1)
5	1	.3 (12.5)	5	1.3 (11.1)	25	6.4 (23.6)	71	18.1 (35.1)	21	5.4 (67.7)
Total	8	2.0	45	11.5	106	27.0	202	51.5	31	7.9

Percentage numbers without parentheses show the percentage of all operators in a given tenure and age group. Percentages in parentheses are percentages of operators of varying tenure status within age groups.

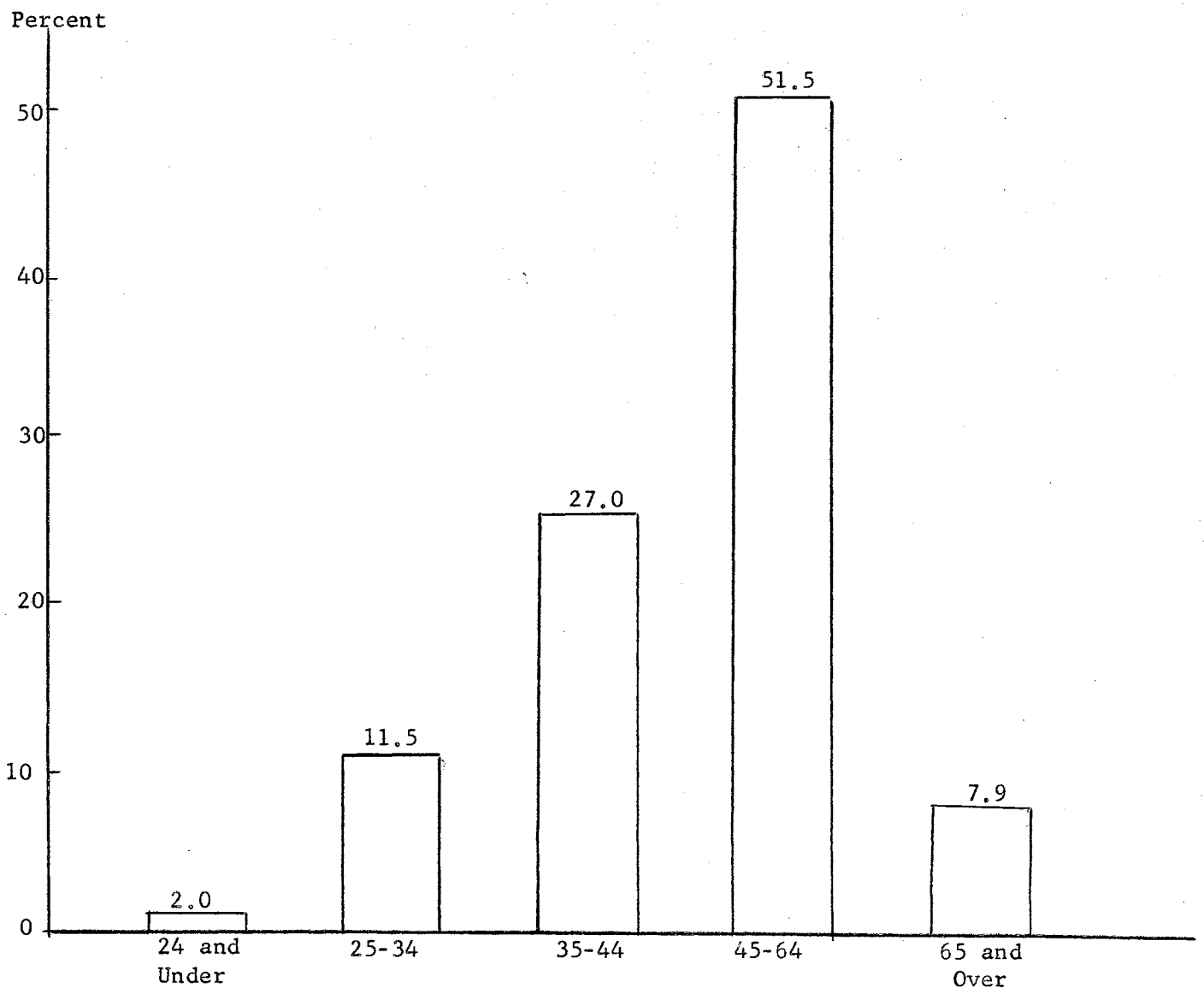

Figure 4. Percentage Distribution of Operators by Age Groups.
Source: Table VI.

the higher age groups may reflect a decline of farm opportunities as capital and land requirements become greater. Probably the longer life expectations of present farm operators further restrict the available number of new farming opportunities. With improved farm machinery and reduced need for manual labor, many farmers are able to operate at a high level of productivity up to retirement, and even then to take an active part in the management of their farms.

Age and Tenure Status[1]

Table VI also discloses that as the age of operator increased, up to 65 years old, the degree of control over land resources increased. For example, the number of full-owner operators and part-owner operators who owned more than 34 percent of the land they operated increased through the 45-64 years age group. The number of full tenants and those who owned less than about one-third of the land they operated decreased as age increased. Continuing comparison of the age groups reveals important tendencies. While full owners were to be found on farms even when over 65 years of age, full tenants disappeared and only one out of 99 full-tenant operators was 65 years old or more. The reduction in the percentage of operators who were tenants in the upper age groups is, of course, not because all operators finally become owners. Some tenants will give up farming for other occupations (perhaps they are unable to rent another good farm because of their age or lack of equipment), some may slip back into the farm laborer class.

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[1]Since there is no relationship between age of the operator and farm size in acres, only age and tenure status of operator is discussed. However, the distribution of age groups by tenure-size class is shown in Appendix C.

While the proportion of farms operated by full tenants beyond the age of 44 years declined (Table VI), the proportion of land rented continued to rise through the 45-64 age interval (Table VII). This, in fact, reflects the increase in part ownership. A high percentage[2] of part owners (tenure groups 2, 3, and 4), who were 45-64 years old seems to substantiate the hypothesis that part ownership is being used as a means of expanding the operating unit and as a means of progressing from the status of renter to owner operator. A Chi-square test shows a positive relationship between tenure status of the operator and his age.[3] Hence, while the younger operator may start as a tenant, as he accumulates capital and experience he may decide to buy land which puts him into the part-ownership group. Finally, he may (though not necessarily) become a full-owner operator as indicated by the segment FO (Figure 5).

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[2]Table VI shows that this percentage, 27.0 of all operators, is in the 45-64 years age group.

[3]The Chi-square test, using the contingency table method, was used to test the hypothesis that the tenure status and the age of farm operator are independent. The test used was to calculate:

$$X^2 = \sum_{i=1}^{r} \sum_{j=1}^{c} \frac{\left(n_{ij} - \frac{n_{i.} n_{.j}}{n} \right)^2}{\frac{n_{i.} n_{.j}}{n}}$$

where n_{ij} is the number of individuals in the cell in the i^{th} row and j^{th} column, $n_{i.}$ is the sum of frequencies in the i^{th} row, $n_{.j}$ is the sum of frequencies in the j^{th} column, and $n = \Sigma_{n_{i.}} = \Sigma_{n_{.j}}$. See Paul G. Hoel, Introduction to Mathematical Statistics, p. 175.

TABLE VII

ACRES RENTED AND OPERATED BY AGE GROUPS, AREA OF STUDY, 1957

Age in Years	Acres	Percentage of Rented Land to Total Operated Land
24 and under	1,848	.9
25-34	17,452	8.5
35-44	28,872	14.1
45-64	46,457	22.6
65 and over	2,525	1.2
Total	97,154	47.4[a]

[a]Percentage of total land rented.

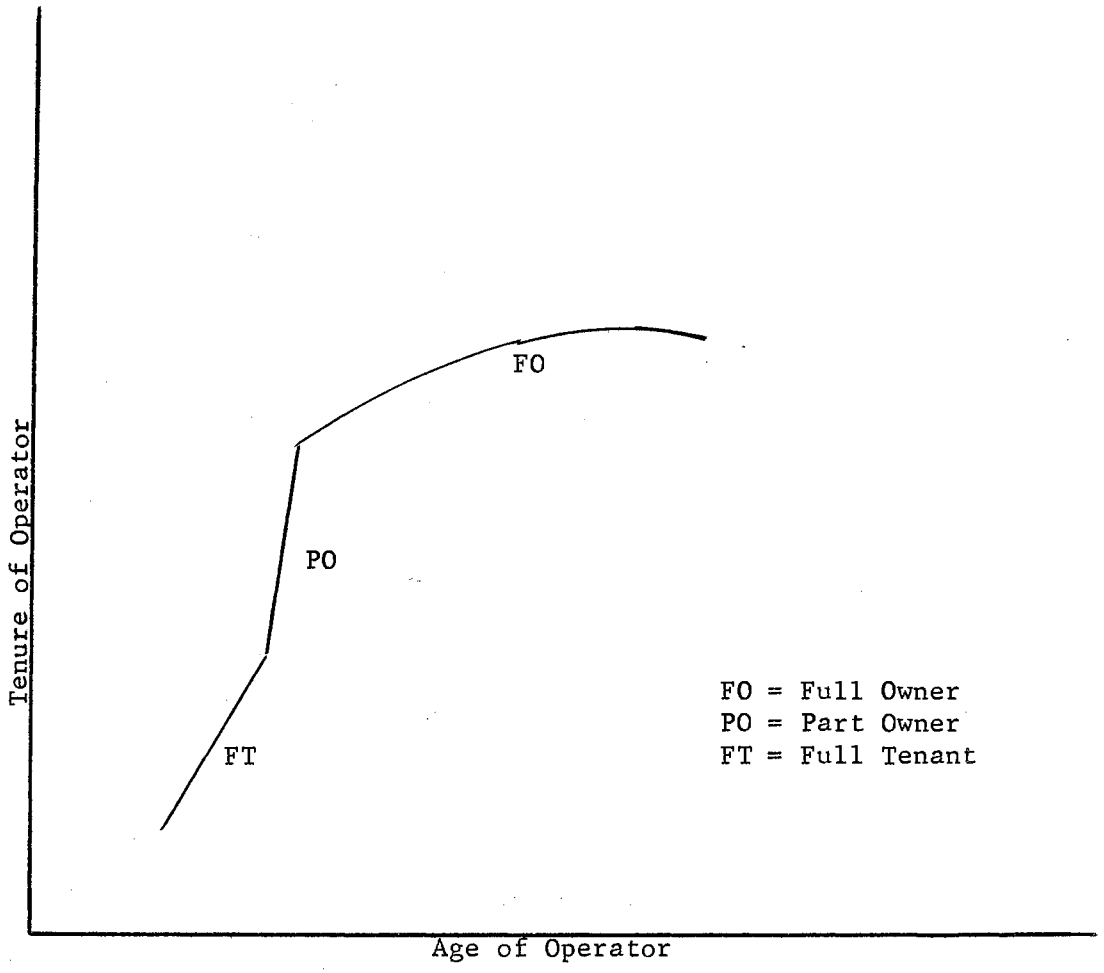

Figure 5. Illustration of Relation Between Age and Tenure of Farm Operator.

Table VI shows that the age of operator increased with increase in tenure status. While the majority of full owners were found in older age groups, full tenants generally were found in younger age brackets. It will be noted that the age of attaining part-owner status generally was higher than the age of full tenants and lower than the age of full owners. Thus, placed in a time or operator-age context, part ownership can be viewed as an intermediate step between tenancy and ownership (Figure 5).

Is there a permanent tenant class developing? There is no evidence of it in the study area. If it were true, operators in the tenant class would be made up of more older men. Those who appear least likely to become owner operators and spend their lifetime as tenants are referred to as a permanent tenant class. Table VI shows that the proportion of tenants is highest in the youngest age group and declines in each age group thereafter. Although slightly more than six percent of all operators in the 45-64 age group were full tenants, these may have been the more prosperous tenants and may even have been able to buy land if they could have found it or had they not preferred to keep their investment in working capital.

At what age do owners acquire ownershio of land? Table VI suggests that land owners start this process during the 25-34 year interval (average age 29.5 years), since about 17.7 percent of this age group of operators had acquired .1-34.0 percent of the land they operated during these years. Consequently, it takes about 20 to 25 years to acquire full ownership.[4]

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[4]The majority of full-owner operators fell in the 45-64 year age interval with an average age of 54.5 years.

Occupational Histories of Farm Operators

The agriculture ladder concept which explains the route to ownership was suggested in 1919 by W. J. Spillman as an explanation of farm tenure experience.[5] According to this concept, the individual operator gains experience and accumulates the necessary capital to own and operate a farm by advancing through the laborer, tenant and owner rungs. Each rung of the ladder suggests a higher tenure status than the preceding one attained with passing of time.

To examine the occupational histories of farm operators, the tenure experience of 123 full owners and 99 full tenant operators was arranged in order of importance in Tables VIII and IX. Data were not collected in the study relative to the exact order in which farm operators had experience. The questions pertaining to tenure experience were asked to indicate the occupations for one or more years since the age of 14.

Table VIII shows that the major tenure experience of full owners was from tenant operator directly to owner operator, and 70.6 percent of full owners were tenants sometime in their careers. However, tenancy was the sole intermediate step in the career of 25.1 percent of the full owners. Certainly, tenancy was an important step in the progress toward ownership of the operators in the study area.

Table VIII shows also that the basic agricultural ladder experience (experience as a farm worker, tenant, and full-owner operator) was reported by only 8.1 percent of full-owner operators. The ladder theory

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[5]W. J. Spillman, "The Agriculture Ladder," American Economic Review, IX, 29-38, 1919.

TABLE VIII

DISTRIBUTION OF TENURE EXPERIENCE FOR 123 FULL-OWNER OPERATORS SINCE AGE 14 BY AGE GROUPS, AREA OF STUDY, 1957

Tenure Experience	All Ages		24 and Under	25-34	35-44	45-64	65 and Over
	-Number-	-Percent-			- Number -		
Tenant Farmer; Owner Operator	31	25.2	0	1	4	22	4
Tenant Farmer; Owner Operator, Part Farming--Part Off-farm Job	12	9.7	0	0	4	5	3
Hired Farm Worker; Tenant Farmer; Owner Operator	10	8.1	0	0	3	4	3
Owner Operator	8	6.5	1	0	-	5	2
Tenant Farmer; Owner Operator; Nonagricultural Employment, Full-time, Part Farming--Part Off-farm Job	8	6.5	0	0	2	4	2
Owner Operator; Nonagricultural Employment, Full-time; Part Farming--Part Off-farm Job	7	5.7	0	0	3	4	-
Tenant Farmer; Owner Operator; Nonagricultural Employment Full-time	7	5.7	0	0	-	6	1
Owner Operator; Part Farming--Part Off-farm Job	7	5.7	0	1	3	3	-

TABLE VIII (Continued)

Tenure Experience	All Ages		24 and Under	25-34	35-44	45-64	65 and Over
	- Number -	Percent			- Number -		
Hired Farm Worker; Tenant Farmer; Owner Operator Part Farming, Part Off-farm Job	7	5.7	0	1	2	3	1
Owner Operator; Nonagricultural Employment, Full-time	5	4.1	0	1	-	3	1
Hired Farm Worker; Owner Operator	4	3.3	0	0	1	1	2
Hired Farm Worker; Tenant Farmer; Owner Operator; Nonagricultural Employment Full-time; Part Farming--Part Off-farm Job	4	3.3	0	0	-	3	1
All Other	11	8.8	0	1	3	6	1
Total	123	100.0	1	5	25	71	21

TABLE IX

DISTRIBUTION OF TENURE EXPERIENCE OF 99 FULL-TENANT OPERATORS SINCE AGE 14 BY AGE GROUPS, AREA OF STUDY, 1957

Tenure Experience Groups	All Ages		Age in Years				
			24 and Under	25-34	35-44	45-64	65 and Over
	-Number-	-Percent-	- Number -				
Full Tenants	23	23.2	2	8	7	5	1
Part Farming--Part Off-farm Job, Tenant Farmer	16	16.2	2	3	9	2	-
Nonagricultural Full-time; Part Farming, Part Off-farm Job, Tenant Farmer	11	11.1	-	4	5	2	-
Hired Farm Worker; Tenant Farmer; Nonagricultural Employment, Full-time	10	10.1	-	1	5	4	-
Hired Farm Worker; Tenant; Part Farming, Part Off-farm Job	9	9.1	-	1	4	4	-
Hired Farm Worker; Tenant; Nonagricultural Employment, Full-time; Part Farming--Part Off-farm Job	9	9.1	-	4	4	1	-

TABLE IX (Continued)

Tenure Experience Groups	All Ages		Age in Years				
			24 and Under	25-34	35-44	45-64	65 and Over
	-Number-	-Percent-	- Number -				
Nonagricultural Employment, Full-time; Tenant	6	6.1	1	1	2	2	-
Hired Farm Worker; Tenant	3	3.0	-	1	2	-	-
Hired Farm Worker; Hired Worker--Farm and Nonfarm at Same Time; Tenant	2	2.0	-	-	-	2	-
All Other	10	10.0	-	3	4	3	-
Total	99	100.0	5	26	42	25	1

appears to be undergoing fundamental changes. This study shows a decrease in the proportion of full owners who have had experience as a hired hand and an increase in the proportion of full owners reporting nonfarm experience. To determine empirically that there has been a shift from hired farm hand to nonfarm experience, new experience groupings have been made. Tables X and XI seem to indicate that the hired hand rung of the agricultural ladder is being replaced by nonfarm employment. The substitution of capital for labor on the farm results in a decreasing demand for hired hands. Individuals wanting to farm may be forced to take nonfarm employment as a means of acquiring enough capital to become a farm operator.

Tables X and XI reveal two important points: (1) more farm operators whose only experience was nonfarm work were in younger age brackets than were operators who had experience as a hired hand in their careers; (2) a high proportion of the young operators (34 years or less) had more nonfarm experience in their careers than hired farm hand experience. Apparently, young farmers are engaging in nonagricultural employment to accumulate capital to begin farming and as a means of decreasing the period of time necessary for the accumulation of capital required to operate or purchase a farm.

Place of Residence

Operators were classified into two major groups--those who lived on the farm and those who lived in town (Table XII). A vast majority lived on the farm. Table XII shows that 83.8 percent of farm operators lived on the farm and 16.2 percent lived in town. Moreover, 62.5 percent of

TABLE X

DISTRIBUTION OF TENURE EXPERIENCE OF 123 FULL-OWNERS BY AGE GROUPS, AREA OF STUDY, 1957

Tenure Experience Groups	All Ages		Age of Full Owners in Years				
			24 and Under	25-34	35-44	45-64	65 and Over
	-Number-	-Percent-	- Number -				
Nonfarm Experience[a]	47	38.2	0	2	18	21	6
Hired Hand Experience[b]	15	12.2	0	0	4	6	5
Nonfarm and Hired Hand Experience	22	17.9	0	2	5	12	3
Neither Nonfarm Nor Hired Hand Experience	39	31.7	1	1	4	27	6
Total	123	100.0	1	5	31	66	20

[a]Includes groups reporting nonagricultural employment full-time; part-time off-farm job.

[b]Includes groups reporting hired farm worker and hired worker farm and nonfarm at same time.

TABLE XI

DISTRIBUTION OF TENURE EXPERIENCE OF 99 FULL-TENANT OPERATORS BY AGE GROUPS, AREA OF STUDY, 1957

Tenure Experience Groups	All Ages		Age in Years				
			24 and Under	25-34	35-44	45-64	65 and Over
	-Number-	-Percent-	- Number -				
Nonfarm Experience[a]	35	35.4	3	8	17	7	0
Hired Hand Experience[b]	7	7.1	0	3	2	2	0
Nonfarm and Hired Hand Experience	33	33.3	0	7	16	10	0
Neither Nonfarm Nor Hired Hand Experience	24	24.2	2	8	7	6	1
Total	99	100.0	5	26	42	25	1

[a]Includes groups reporting nonagricultural employment full-time; part-time off-farm job.

[b]Includes groups reporting hired farm worker and hired worker farm and nonfarm at same time.

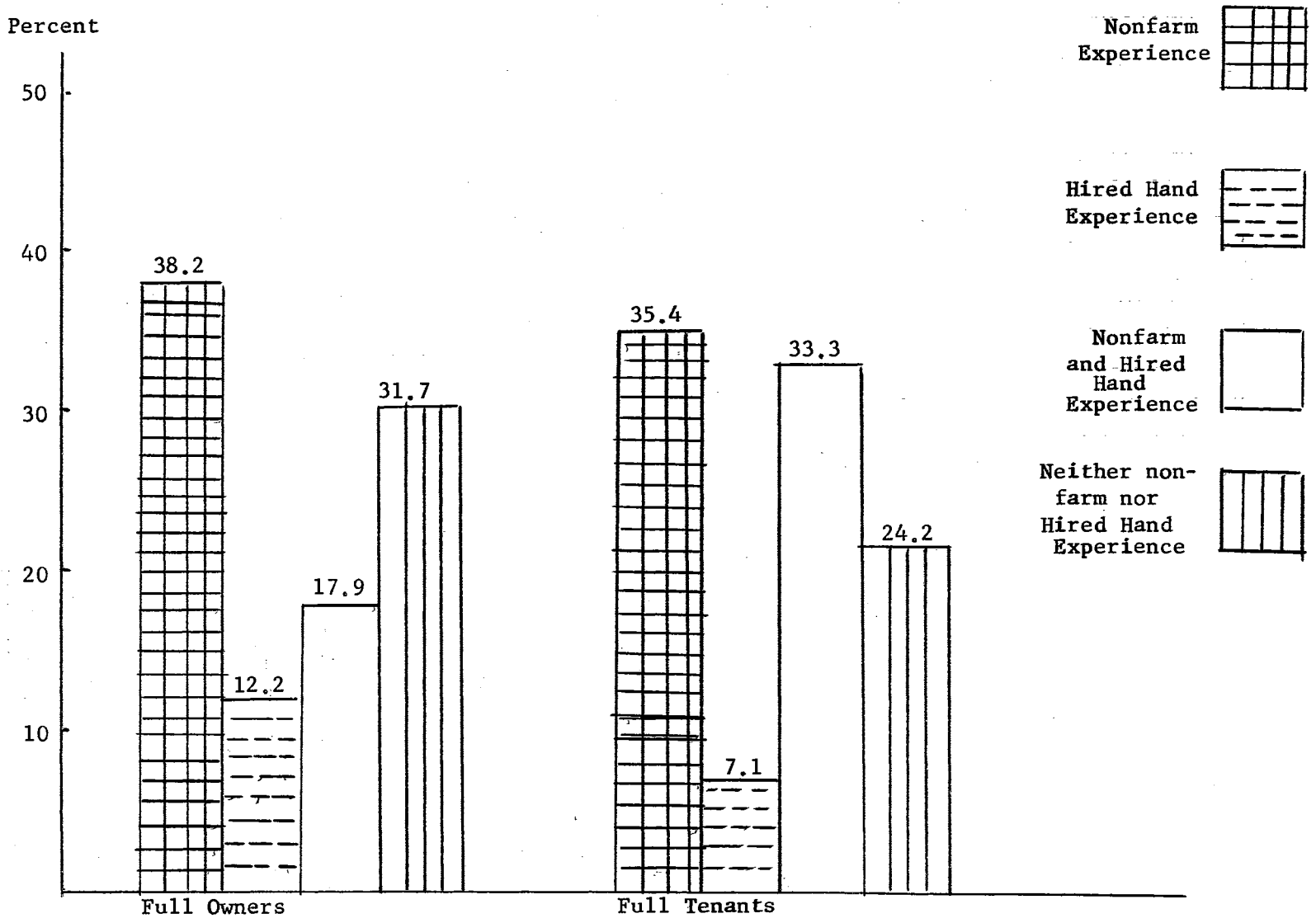

Figure 6. Distribution of Tenure Experience for Full-Owner and Full-Tenant Operators.

Source: Tables X and XI.

TABLE XII

PLACE OF RESIDENCE OF FARM OPERATORS BY PRINCIPAL OCCUPATION, AREA OF STUDY, 1957

Principal Occupation	Lived on Farm		Lived in Town		Total	
	Number	Percent	Number	Percent	Number	Percent
Farming or Ranching[a]	312	89.1	38	10.9	350	100.0
Professional[b]	1	33.1	2	66.6	3	100.0
Laborer, Clerical Services	10	62.5	6	37.5	16	100.0
Business	1	7.2	13	92.8	14	100.0
Retired from Nonfarm Occupation	-	-	1	100.0	1	100.0
Retired from Farming	-	-	1	100.0	1	100.0
Other	2	50.0	2	50.0	4	100.0
Total	326	83.8	63	16.2	389	100.0

[a]One farming or ranching operator did not report the place of residence, another reported that he worked season only and lived part time on, part time off the farm.

[b]One professional reported that he visited farm periodically.

operators who had nonfarm jobs as laborers or clerks lived on the farm. Improvements in transportation have contributed to the ease with which people may reside on the farm and commute to their work.

The evidence summarized in this section indicates that the agricultural ladder is no longer important as a means of attaining ownership. Hired hand experience is replaced by off-farm work. It was shown that a high proportion of full tenants and full owners had off-farm work in their careers. Also, off-farm work was more prevalent among younger farm operators. This may partially explain why most farmers are to be found in older age groups, and it may indicate the importance of off-farm work as a source of capital to begin farming.

Economic Variables

A man who cannot command enough capital assets may find difficulty in achieving the standard of living attained by nonfarm families. A farm unit of adequate size is necessary for the efficient use of resources and to provide the operator and his family with a satisfactory income. In order to acquire control of more resources, farm operators may buy and/or rent additional land. If they cannot acquire adjoining land, it will be necessary that they operate scattered tracts.

It is of importance to examine the financial, resource, income, and operational and geographical mobility of farmers to see whether certain characteristics are prevalent for operators in different tenure-size classes.

Financial Variables

This section deals with the financial structure of agriculture in the area of study. It examines the assets used in farming operations, showing how these assets varied among farm operators with different tenure status and in different size categories. Examined also are the nonfarm as well as farm assets owned by operators and family, their equity position, the indebtedness of operators in 1957, and the importance of various sources of credit for farmers.

Farm Assets Controlled

Total available assets averaged $65,180 per farm for all farms in this study (Appendix E). Real estate comprised about 86 percent of total assets. Livestock comprised about five percent of the assets and motor vehicles and machinery about eight percent. Other assets made up the remainder of the total--less than one percent (Table XIII).

Full-owner operators used fewer assets than did full tenants in all size categories. Most of the difference was in value of land and buildings used by these two tenure groups. Average value of assets controlled by full-owner operators varied from $22,111 for operators of less than 240 acres to $98,819 for those operating 561 to 820 acres. This may be compared with $23,653 and $107,197 for full-tenant operators in similar size categories.

The average value of assets used for all farms varied from $21,080 for operators in Class A_4 to $216,724 for operators in Class E_2. There was a considerable increase in each asset item in each successive size

TABLE XIII

CONTROLLED FARM ASSETS; AVERAGE PER FARM AND PERCENTAGE OF VALUE BY TYPE OF ASSETS, AREA OF STUDY, 1957[a]

Class		Real Estate		Livestock and Poultry		Motor Vehicles and Machinery		Other Farm Assets		All-Farm Assets
Size	Tenure Groups	Average	Percent	Average	Percent	Average	Percent	Average	Percent	Average
		(Dollars)		(Dollars)		(Dollars)		(Dollars)		(Dollars)
A	1	19,478	82.3	1,486	4.7	2,971	12.6	103	.4	23,653
	2	26,457	89.0	1,198	4.0	1,804	6.1	280	.9	29,739
	3	25,500	85.8	975	3.3	3,132	10.5	115	.4	29,722
	4	15,817	75.0	1,851	7.3	3,311	15.7	410	1.9	21,080
	5	18,311	82.8	1,288	4.4	2,634	11.7	226	1.0	22,111
B	1	42,831	86.0	2,487	4.5	4,530	9.1	181	.4	49,797
	2	52,650	85.3	1,383	1.9	7,797	12.6	120	.2	61,719
	3	42,377	87.3	2,140	4.2	4,098	8.1	154	.3	48,528
	4	41,718	86.1	2,359	4.5	4,393	9.1	175	.4	48,476
	5	39,411	82.8	2,957	5.5	4,873	10.2	683	1.4	47,595
C	1	62,741	89.5	2,797	2.8	5,056	7.2	357	.5	70,128
	2	59,064	89.7	2,387	3.6	4,331	6.6	82	.1	65,863
	3	63,785	86.0	3,741	4.6	6,740	9.1	209	.3	74,134
	4	42,905	80.6	5,700	9.9	4,869	9.1	187	.4	53,223
	5	52,229	82.2	4,373	6.9	6,295	9.9	649	1.0	63,546
D	1	99,357	92.7	1,183	.9	6,328	5.9	498	.5	107,197
	2	85,747	86.9	4,229	4.3	7,287	7.4	1,405	1.4	98,669
	3	103,972	86.1	6,460	5.3	9,918	8.2	398	.3	120,748
	4	76,567	83.9	5,130	4.4	10,444	11.4	299	.3	91,300
	5	83,286	84.3	5,344	5.4	8,799	8.9	1,391	1.4	98,819
E	1	80,920	85.3	4,344	4.6	8,285	8.7	1,287	1.4	94,836
	2	204,150	94.2	5,254	2.4	6,997	3.2	324	.1	216,724
	3	174,066	85.3	17,669	8.7	10,999	5.4	1,371	.7	204,105
	4	132,171	88.0	4,542	3.0	12,425	8.3	1,006	.7	150,145
	5	70,900	82.4	7,926	9.2	6,838	7.9	384	.4	86,048

[a]Total real estate value comprised 86.3 percent of all assets for the sample farms; livestock and pountry, 4.9 percent; motor vehicles and machinery, 8.2 percent; and other farm assets comprised .6 percent of total value of assets used in farming operation.

category. As a general rule, part-owner operators controlled the highest value of assets in each size category (Table XIII).

While full tenants controlled land assets greater than those controlled by full owners, full owners generally held greater value of livestock assets. That owner operators, in general, had more livestock assets than full tenants is to be expected since an owner operator is certain of long-term tenure. His organization can include enterprises of a long-run nature such as livestock. He is able to intensify operations and more fully utilize feeds and labor. Also, security of tenure makes feasible the erection of buildings and purchase of equipment for a livestock enterprise.

The average investment in motor vehicles and machinery was, in general, modest for farms selected in this study--$5,296 per farm. This mainly can be explained by the fact that about 60 percent of the selected farms were 400 acres or less. Investment in equipment by full owners was somewhat greater than that by full tenants in size B, C, and D categories (Table XIII).

The size of the farm in acres and the dollar value of machinery per farm (which reflects the quantity and the quality of machinery) were directly related. However, the coefficient of correlation was small in magnitude (Appendix F). This probably is due to the fact that on larger farms, a greater percentage of the land was devoted to permanent hay and pasture than on smaller farms.

The analysis of variance was used to test the hypothesis that the value of operating capital (non-real estate assets) used on farms operated by full owners, part owners, and full tenants does not vary

significantly. The test shows that the F value in variance analysis is statistically significant at 95 percent level, which means that significant differences in the value of operating capital exist for farms operated by these three tenure groups.[6] However, in order to compare the average value of operating capital for these tenure forms so that we know which differences in the means are statistically significant, the least significant difference test was applied[7] (Appendix G). This test shows that (1) part-owner operators, on the average, use more operating capital per farm than full-owner or full-tenant operators, and (2) the difference in the value of operating capital is not significant for full-owner and full-tenant operators.

Owned Assets

When a large proportion of total farm assets is real estate, operators who own all or part of the real estate would be expected to show a high value of owned assets. For this reason, full-owner operators owned a greater proportion of their total assets than part owners and the latter owned more than full tenants for all size categories (Tables XIV and XV). While the average value of total assets

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[6] The following method was used to test the hypothesis that variation in operating capital used on farms by full owners, part owners, and full-tenant operators is not significant. The test was to calculate:

$$F = \frac{\text{class mean square}}{\text{error mean square}}$$ (See Appendix G).

[7] The test was to calculate: $LSD = t_{.025}\sqrt{EMS\left(\frac{1}{n_i} + \frac{1}{n_j}\right)}$ where LSD = least significant difference; $t_{.025}$ = the tabular value of t for error degree of freedom at 95 percent level (for two tailed test); EMS = error mean square, and n_i, n_j, the number of observations per mean where $i \neq j$.

TABLE XIV

FARM-OWNED ASSETS; TOTAL, AVERAGE VALUE AND PERCENTAGE OF FARM-OWNED ASSETS TO TOTAL FARM ASSETS, AREA OF STUDY, 1957

Class					Percentages of Farm-owned Assets to Total Farm Assets Used On Farm
Size	Tenure Groups	Number Reporting	Farm Owned Assets Total	Farm Owned Assets Average	
			- Dollars -		-Percent-
A	1	27	110,497	4,092	17.3
	2	7	72,797	10,400	35.0
	3	3	70,667	23,556	79.3
	4	6	96,325	16,054	76.2
	5	67	1,448,498	21,619	97.8
B	1	43	281,753	6,552	13.2
	2	6	97,530	16,255	26.3
	3	26	773,925	29,766	61.3
	4	14	556,890	39,778	82.1
	5	36	1,666,454	46,290	97.3
C	1	17	120,201	7,071	10.1
	2	11	259,797	23,618	35.9
	3	11	508,898	46,263	62.4
	4	13	560,489	43,115	81.0
	5	7	428,771	61,253	99.8
D	1	7	49,459	7,066	6.6
	2	15	503,694	33,580	34.0
	3	12	808,242	67,354	55.8
	4	9	670,557	74,506	81.6
	5	7	654,044	93,435	94.6
E	1	5	65,703	13,141	13.9
	2	8	305,623	38,203	17.6
	3	16	1,978,092	123,631	60.6
	4	12	1,168,694	97,391	64.9
	5	3	228,326	76,109	99.9

TABLE XV

ASSETS OF OPERATOR AND FAMILY; TOTAI AND AVERAGE VALUE OF ALL ASSETS OWNED BY OPERATOR AND FAMILY, AREA OF STUDY, 1957

Class				
Size	Tenure Groups	Number Reporting	Total	Average
			-Dollars-	-Dollars-
A	1	26	242,743	9,336
	2	7	88,635	12,662
	3	3	95,585	31,862
	4	6	134,391	22,399
	5	67	2,200,315	32,841
B	1	43	710,320	16,519
	2	6	132,122	22,020
	3	24	777,765	32,407
	4	14	618,739	44,196
	5	36	2,086,068	57,946
C	1	16	204,514	12,782
	2	9	253,232	28,137
	3	10	551,485	55,149
	4	13	686,019	52,771
	5	7	494,205	70,601
D	1	7	78,641	11,234
	2	15	613,138	40,876
	3	11	876,649	79,695
	4	9	846,524	94,058
	5	7	714,935	102,134
E	1	5	81,276	16,255
	2	7	358,374	51,196
	3	15	2,279,321	151,955
	4	12	1,321,708	110,142
	5	3	340,493	113,498

used in farming operation was $65,180, the average value of owned assets per farm was $34,402 (Appendix E), which means that on the average, farm operators owned slightly more than 50 percent of the total assets used on the farm.

The average value of nonfarm assets which included checking accounts, saving accounts, and U. S. Bonds, was $4,430 for all operators (Appendix E). Full-owner operators and their families had more of these types of assets than full tenants in all size categories except in size B (Table XVI). Operators who owned only a part of the land they operated had, on the average, fewer nonfarm assets than full owners in size A, B, and C categories. In larger size categories, however, part owners were about as well off as full-owner operators in this respect. The correlation analysis (Appendix F) showed that the amount of nonfarm assets owned has a relatively high positive correlation coefficient with the total assets owned by the operator and family.

Economic Status

One of the important measures of success and the progress of farm families is their economic status. In this study the economic status of the farm family is defined in terms of (1) total value of accumulated assets (net worth), and (2) ratio of debt to owned assets by operator and family.

To analyze the economic status, operators in different tenure-size classes were classified in terms of net worth (owned assets of operator and family minus total liabilities). This, then, also was related to the number of years in farming (Table XVII).

TABLE XVI

NONFARM ASSETS; TOTAL AND AVERAGE VALUE OF NONFARM ASSETS OWNED BY OPERATOR AND FAMILY, AREA OF STUDY, 1957

Class		Number		
Size	Tenure Groups	Reporting	Total	Average
			-Dollars-	-Dollars-
A	1	24	45,408	1,892
	2	7	6,838	977
	3	3	5,618	1,873
	4	6	14,416	2,403
	5	66	262,548	3,978
B	1	43	213,567	4,967
	2	6	20,492	3,415
	3	23	54,415	2,366
	4	13	20,249	1,558
	5	36	149,446	4,151
C	1	17	51,495	3,029
	2	7	22,109	3,158
	3	10	23,930	2,393
	4	13	34,080	2,622
	5	8	25,463	3,183
D	1	7	13,882	1,983
	2	16	40,662	2,541
	3	11	75,898	6,900
	4	9	62,071	6,897
	5	7	43,791	6,256
E	1	5	8,273	1,655
	2	7	54,833	7,833
	3	15	302,717	20,181
	4	12	115,964	9,664
	5	3	55,667	18,556

TABLE XVII

WEALTH ACCUMULATION; TOTAL AND AVERAGE VALUE OF NET WORTH OF FARM OPERATOR AND FAMILY BY NUMBER OF YEARS IN FARMING, AREA OF STUDY, 1957

Class			2-14 Years In Farming		15-24 Years In Farming		25 Years and Over In Farming		Total for All Years in Farming	
Size	Tenure Groups	Number Reporting	Total	Average	Total	Average	Total	Average	Total	Average
			- Dollars -							
A	1	26	118,283	8,449	42,927	7,155	33,537	5,590	194,747	7,490
	2	7	0	0	22,597	11,299	61,323	12,265	83,920	11,989
	3	3	0	0	0	0	82,885	27,628	82,885	27,628
	4	6	20,823	10,412	70,772	23,591	24,896	24,896	116,491	19,415
	5	67	382,219	29,401	386,766	32,231	1,218,499	29,012	1,987,484	29,664
B	1	43	477,162	16,454	40,752	5,822	88,903	12,700	606,817	14,112
	2	6	58,092	19,364	39,169	19,585	28,971	28,971	126,232	21,039
	3	24	83,542	41,771	185,311	26,473	368,112	26,294	678,825[a]	28,284
	4	14	0	0	42,219	42,219	530,096	40,777	572,315	40,880
	5	36	78,158	26,053	468,519	58,565	1,369,007	54,760	1,915,684	53,213
C	1	16	54,522	9,087	58,471	9,745	38,887	9,722	151,880	9,493
	2	9	13,297	13,297	42,707	21,354	146,238	24,373	202,242	22,471
	3	10	29,297	29,297	246,875	41,146	164,222	54,741	440,394	44,039
	4	13	63,034	31,517	118,521	39,507	336,353	56,059	580,569[b]	44,659
	5	7	11,803	11,803	251,763	62,941	190,539	95,270	454,105	64,872
D	1	7	31,369	10,456	19,658	6,553	6,414	6,414	57,441	8,206
	2	15	78,236	19,559	291,447	36,431	123,573	41,191	493,256	32,884
	3	11	22,739	22,739	312,103	62,421	332,860	66,572	667,702	60,700
	4	9	0	0	166,677	166,677	618,022	77,253	784,699	87,189
	5	7	0	0	186,569	93,285	477,866	95,573	664,435	94,919

TABLE XVII (Continued)

Class Size	Tenure Groups	Number Reporting	2-14 Years In In Farming Total	2-14 Years In In Farming Average	15-24 Years In In Farming Total	15-24 Years In In Farming Average	25 Years and Over In Farming Total	25 Years and Over In Farming Average	Total for All Years in Farming Total	Total for All Years in Farming Average
					- Dollars -					
E	1	5	46,471	11,618	6,705	6,705	0	0	53,176	10,635
	2	7	84,049	42,025	47,247	23,624	149,578	49,859	280,874	40,125
	3	15	39,324	39,324	46,057	46,057	2,020,045	155,388	2,105,426	140,362
	4	12	58,945	58,945	509,609	169,870	652,704	81,588	1,221,258	101,772
	5	3	0	0	0	0	302,593	100,864	302,593	100,864
For All Operators			1,751,365	18,832	3,603,441	37,931	9,366,123	50,086	14,825,450	39,221

[a]Includes $41,860 for one not reporting years in farming.

[b]Includes $62,661 for two not reporting years in farming.

In general, operators having the greatest net worth were those who owned land. This may have been because they were more frugal or were better managers, or it may be the wealthier operators had inherited their land. In any case, full-owner operators had greater net worth than part owners or full tenants.

Table XVII shows that net worth increases with successive size categories. For full-owner operators, the average amount of accumulated assets was $29,664 on farms of less than 240 acres (size A). This figure increased to $100,864 on 821 or more acre farms (size E). In all size categories except E, full owners had a greater net worth than any other tenure groups. Net worth of full tenants apparently had little relationship to their size of operation.

The Chi-square test (Appendix H) shows that there is a direct relationship between wealth accumulation and the number of years in farming.[8] Table XVII shows that operators, especially those who fully owned the land they operated, accumulated more assets as they spent more years in farming. For example, full-owner operators in class C_5 had, on the average, a net worth of $11,803 after 2-14 years in farming and $95,270 after 25 years or more.

In terms of ratio of debt to owned assets, full tenants were more heavily indebted than owners operating similar size farms (Table XVIII). A partial explanation of this is that those operators who owned none or only a portion of the land they operated were of younger age groups who had not yet had time to accumulate much in the way of assets.

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[8]The Chi-square test, using the contingency table method, was used to test the hypothesis that there is no relationship between wealth accumulation (net worth) and the number of years in farming.

TABLE XVIII

DEBT OF OPERATOR AND FAMILY; TOTAL AND AVERAGE VALUE OF DEBT OF OPERATOR AND FAMILY, AREA OF STUDY, 1957

Class			Total Value Of	Average Value Of	Percentage of Debt To Total Assets Of Operator
Size	Tenure Groups	Number Reporting	Debt	Debt	And Family
			- Dollars -		-Percent-
A	1	26	47,996	1,846	19.8
	2	7	4,715	674	5.3
	3	3	12,700	4,233	13.3
	4	6	17,900	2,983	13.3
	5	67	212,831	3,177	9.7
B	1	43	103,503	2,407	14.6
	2	6	5,890	982	4.5
	3	24	98,940	4,123	12.7
	4	14	46,424	3,316	7.5
	5	36	170,384	4,733	8.2
C	1	16	52,634	3,290	25.7
	2	9	50,990	5,666	20.1
	3	10	111,091	11,109	20.1
	4	13	105,450	8,112	15.4
	5	7	40,100	5,729	8.1
D	1	7	21,200	3,029	27.0
	2	15	119,882	7,992	19.6
	3	11	208,947	18,995	23.8
	4	9	61,825	6,869	7.3
	5	7	50,500	7,214	7.1
E	1	5	28,100	5,620	34.6
	2	7	77,500	11,071	21.6
	3	15	173,895	11,593	7.6
	4	12	100,450	8,371	7.6
	5	3	37,900	12,633	11.1

In terms of value of debt per farm, full tenants in general had a lower value of debt relative to other operators. It seems likely that the average amount of debt per farm reflects the size of operation and the amount of assets owned by the operator. Since scale of operation was related to size of debt--that is to say, operators with larger farm product sales tended to have larger debt--part owners in general would have been expected to have owed a greater debt.

Source of Credit

Advancing technology in agriculture has caused an increase in investments in recent years. Capital resources have been partly substituted for labor and land resources. As this occurs, farm operators use credit more extensively and the use of capital in agriculture financed through credit has risen.

Table XIX and Figure 7 show agricultural lenders in the area of study and their loans to farmers in 1957. Banks, businesses, and individuals were the most frequent sources of credit used by farmers in the 1957 study. Other creditors were insurance companies, Farmers' Home Administration, and Production Credit Associations.

Since banks can provide almost all types of credit, they were the major source for operators in all size categories. The Production Credit Association and insurance companies were important sources of financing for the larger size farms, but were not important as a source of credit for small farms. Businesses, individuals, and the Farmers' Home Administration were relatively important as a source of credit for the smaller farms (Table XX).

TABLE XIX

CREDIT SOURCES USED BY FARM OPERATORS, AREA OF STUDY, 1957

Source	Proportion Of Total		Number Of Loans		Average Size Of Loan
	Amount	Percent	Number	Percent	
	-Dollars-				-Dollars-
Insurance Companies	567,835	28.7	52	10.5	10,920
Banks and Trust Companies	544,456	27.5	195	39.3	2,793
Individuals	279,710	14.1	65	13.1	4,303
Federal Land Bank	253,727	12.8	51	10.3	4,975
Farmers Home Administration	166,000	8.4	32	6.5	5,188
Merchants and Dealers	90,719	4.5	82	16.5	1,106
Production Credit Association	76,150	3.8	19	3.8	4,008
Total	1,978,687	100.0	496	100.0	

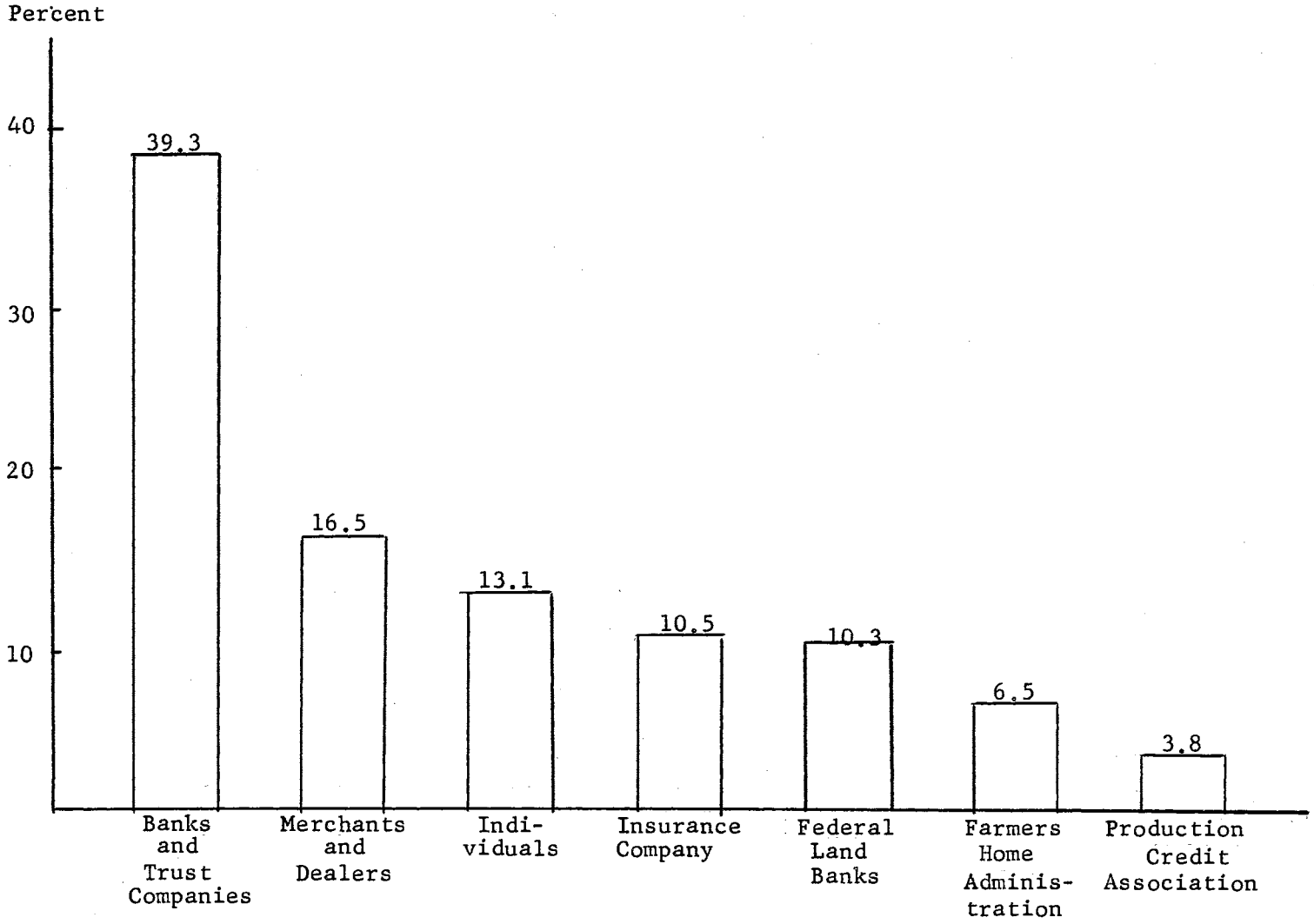

Figure 7. Percentage Distribution of Number of Loans by Source of Credit.
Source: Table XIX.

TABLE XX

SOURCE OF CREDIT BY TENURE-SIZE CLASS, AREA OF STUDY, 1957

Class Size	Tenure Groups	Total Number Of Loans[a]	Banks and Trust Companies	Production Credit Association	Federal Land Bank	Insurance Companies	Farmers' Home Administration	Merchants and Dealers	Individuals
					- Number of Loans -				
A	1	35	15	1	0	1	2	10	6
	2	6	4	0	0	1	0	0	1
	3	2	1	0	0	1	0	0	0
	4	7	2	0	2	0	0	0	3
	5	60	21	1	16	4	5	6	7
B	1	57	24	4	0	2	4	15	8
	2	5	2	1	0	0	0	2	0
	3	36	15	1	6	2	3	7	2
	4	17	7	1	1	3	1	3	1
	5	45	14	1	7	6	4	6	7
C	1	29	12	1	0	1	3	5	7
	2	18	7	0	2	4	1	2	2
	3	16	7	0	2	3	1	1	2
	4	21	6	3	2	2	3	3	2
	5	10	2	0	1	3	1	3	0
D	1	9	6	0	0	0	0	2	1
	2	20	5	1	0	1	2	4	7
	3	24	9	1	3	5	0	5	1
	4	11	6	0	2	1	0	1	1
	5	8	4	0	1	2	0	0	1

TABLE XX (Continued)

Class Size	Tenure Groups	Total Number Of Loans[a]	Banks and Trust Companies	Production Credit Association	Federal Land Bank	Insurance Companies	Farmers' Home Administration	Merchants and Dealers	Individuals
E	1	8	4	0	0	0	1	2	1
	2	12	6	1	2	1	0	0	2
	3	21	7	1	3	6	0	4	0
	4	14	8	0	0	2	1	1	2
	5	5	1	1	1	1	0	0	1

[a]The distribution of total number of loans obtained by farm operators were: 46.4 percent for part owners, 27.8 percent for full tenants, and 25.8 percent for full owners.

Loans to farmers were not uniformly distributed among the tenure groups. Full owners comprised about 31 percent of farm operators and obtained about 26 percent of total number of loans. Part owners accounted for 43 percent of the operators and obtained about 46 percent of loans. Full tenants comprised about 25 percent of the operators and obtained about 28 percent of loans.

Forty-four percent of loans made to full tenants were obtained from banks, while part owners obtained 40 percent, and full owners obtained about 33 percent from this source (Appendix I). The reason for the higher proportion of loans to tenants by banks is due to the fact that full tenants usually borrow for the purchase of chattels or for operating capital. Since banks specialize more in this type of credit, it is to be expected that they might be more important as a source of credit for full tenants than for part owners, and more important for part owners than for full owners who more frequently borrow for real estate purchases. One might expect that land mortgage institutions such as the Federal Land Bank would be an important source of credit for full owners and perhaps somewhat less important for part owners.

When part owners who borrowed from the Federal Land Bank were examined in terms of the percentage of the land owned, it was found that about 35 percent of part-owner borrowers from Federal Land Banks were in the group which owned more than 66 percent of their land, and 50 percent were in the group who owned about half their land. Only 15 percent of the operators in the group which owned about 25 percent of the land they operated borrowed from the Federal Land Bank.

Businesses and individuals were more important as a source of financing for full tenants than for full owners. However, the Farmers Home Administration was equally important as a source of credit for full tenants and full owners.

Resource Variables

In the preceding sections, the financial position of farm operators was discussed. Yet it is of equal importance to examine the land and labor resources available to these operators. However, since data on the labor resource variable were not available, the discussion in this section necessarily will pertain only to the land resource variable.

Land Operated

There were 205,140 acres operated by the 392 farmers included in the sample. The average size, therefore, was about 523 acres (Table XXI). This table discloses two significant points: (1) although the difference is not statistically significant (Appendix J), farms operated by full tenants tend to be somewhat larger than those operated by full owners. This can be seen by comparing average size of units of classes B_1 and B_5, C_1 and C_5, D_1 and D_5, and E_1 and E_5, and (2) farmers who owned part and rented part of the land they operated had farms of larger size than either full-tenant or full-owner operators.

Table XXII shows the relationship between the age of the operator and the size of the unit he operated. It would appear from the table that younger men are more likely to be tenant operators and operate larger size farms than they are in being full-owner operators. It may

TABLE XXI

TOTAL AND AVERAGE FARM SIZE ACREAGE FOR FARM OPERATORS, AREA OF STUDY, 1957

Class Size	Tenure Groups	Total Farms	Total Acres	Average
A	1	27	3,973	147.1
	2	7	1,238	176.9
	3	3	545	181.7
	4	6	982	163.7
	5	68	10,247	150.7
B	1	43	13,636	317.1
	2	6	2,017	336.2
	3	26	8,533	328.2
	4	14	4,050	289.3
	5	36	11,027	306.3
C	1	17	8,413	494.9
	2	11	5,498	499.8
	3	11	5,708	518.9
	4	13	6,367	489.8
	5	8	3,804	475.5
D	1	7	4,624	660.6
	2	16	10,489	655.6
	3	12	8,664	722.0
	4	9	6,364	707.1
	5	7	4,565	652.1
E	1	5	6,460	1,292.0
	2	8	21,965	2,745.6
	3	16	35,090	2,193.1
	4	12	16,061	1,338.4
	5	4	4,820	1,205.0
Total		392	205,140	523.1

Note: The operated land for 1957 was distributed as follows: 16.8 percent of land was operated by full owners, 58.7 percent by part owners, 18.1 percent by full tenants, and 6.4 percent of land was managed for others.

TABLE XXII

AVERAGE SIZE OF FARMS WITHIN TENURE-SIZE CLASSES BY AGE GROUPS, AREA OF STUDY, 1957

Class			Age in Years				
Size	Tenure Groups	All Ages	24 and Under	25-34	35-44	46-64	65 and Over
			- Acres -				
A	1	147.1	98	161	155	126	0
	2	176.9	0	0	161	183	0
	3	181.7	0	0	0	182	0
	4	163.7	0	165	222	143	0
	5	150.7	0	173	141	156	140
B	1	317.1	320	304	332	306	0
	2	336.2	0	0	348	240	385
	3	328.2	350	360	320	326	320
	4	289.3	0	0	320	283	310
	5	306.3	320	280	311	303	320
C	1	494.9	0	491	496	498	0
	2	499.8	0	480	489	507	0
	3	518.9	0	440	541	521	0
	4	489.8	0	0	520	474	485
	5	475.5	0	0	457	507	0
D	1	660.6	0	640	653	0	720
	2	655.6	0	674	649	638	0
	3	722.0	0	800	723	712	0
	4	707.1	0	0	0	707	0
	5	652.1	0	0	600	665	640
E	1	1,292.0	0	1,275	1,360	0	0
	2	2,745.6	0	7,413	1,127	1,253	0
	3	2,193.1	0	0	1,000	2,344	1,280
	4	1,338.4	840	0	1,440	1,407	1,120
	5	1,205.0	0	0	0	1,067	1,620

well be that young farm operators might choose to become tenants on larger farms rather than to use their limited resources to purchase small farms.

Distribution of Land Operated

Table XXIII shows that land operated was not uniformly distributed among operators. The first octile, the one-eighth of operators who farmed the smallest units, controlled only about three percent of the total acreage. Contrasted with this is the largest octile of operators who operated nearly 43 percent of the land. This suggests a measure of the degree of inequality of land distribution among farm operators in the area.

If the land operated were equally distributed, each 12.5 percent of land operators would operate exactly 12.5 percent of the total land. With equal distribution, of course, each operator would have his proportional share of the land. The unequal distribution is shown graphically by the Lorenz Curve (Figure 8). This curve plots the accumulated percentage of operators, starting with those operating the smallest farms, on the horizontal axis and the accumulated percentage of land they operated on the vertical axis. The area between the line of perfect equality (the straight line drawn from $\overline{/0,0/}$ to $\overline{/100,100/}$) and the Lorenz Curve indicates the deviation from perfect equality, and hence gives a measure of the degree of inequality (concentration) of land distribution. The more the curve bows downward away from the line of perfect equality, the more concentrated is the land operated. This is, in fact, the basis for the concentration ratio. The concentration ratio is simply the ratio

TABLE XXIII

PERCENTAGE OF ACREAGE OF FARM LAND OPERATED, BY OCTILES[a] OF OPERATORS ARRAYED BY SIZE OF HOLDINGS, AREA OF STUDY, 1957

Operators	Total Acres Operated	Percentage of Acres Operated	Accumulated Percentage of Operators	Accumulated Percentage of Acres Operated
1st Octile	6,233	3.03	12.5	3.03
2nd Octile	8,010	3.91	25.0	6.94
3rd Octile	11,691	5.70	37.5	12.64
4th Octile	15,603	7.61	50.0	20.25
5th Octile	18,682	9.10	62.5	29.35
6th Octile	24,699	12.04	75.0	41.39
7th Octile	32,592	15.89	87.5	57.28
8th Octile	87,630	42.72	100.0	100.00

[a]Octile means one-eighth or 12.5 percent.

Concentration ratio = .45. The concentration ratio ranges from 0 to 1. The larger the ratio, the greater the amount of land held by the largest operators. The concentration ratio was computed as follows:

$$C = 1/2 \; \Sigma \; (P_{K-1} \; Q_K - P_K \; Q_{K-1}) \cdot \frac{1}{5,000} = (P_{K-1} \; Q_K - P_K \; Q_{K-1}) \cdot \frac{1}{10,000}$$

where: C = Concentration ratio; P_K = percent of farm operators
Q_K = Percent of acres operated
$K-1$ = Percentage of interval (Octile here) preceding K.

Source: G. Wunderlich. Concentration of Land Ownership, Journal of Farm Economics, Canadian Journal of Agricultural Economics, 40: 1889 (December, 1958).

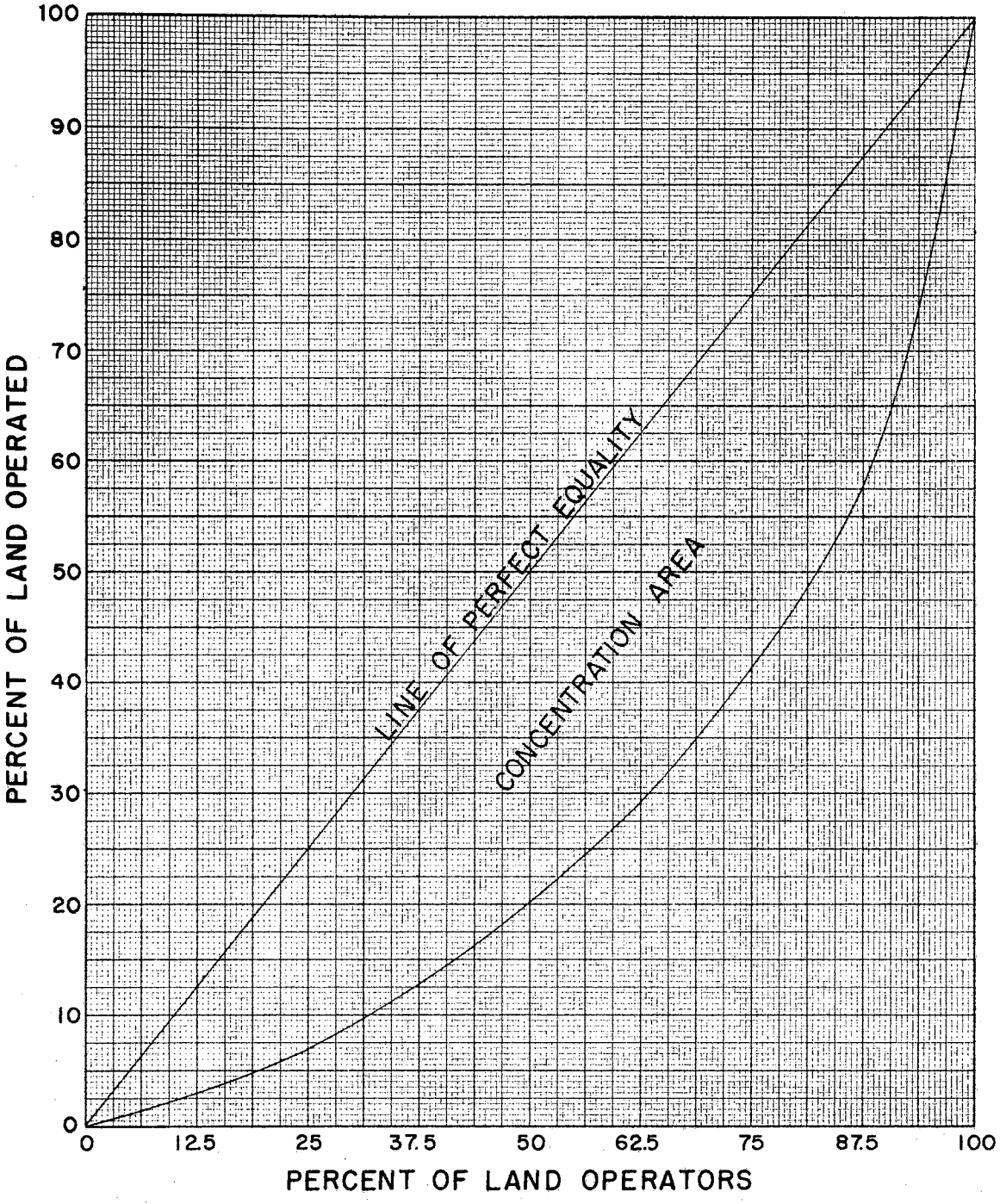

Fig. 8

CONCENTRATION OF LAND OPERATED

1957

SOURCE: TABLE XXIII

of the area between the Lorenz Curve and the line of perfect equality to the total area of the triangle formed by the two axis and the line of perfect equality. The concentration ratio for land operated was .45 (Table XXIII).

When the distribution of land operated among tenure groups was examined, it was found that a major portion of the land was held by part owners. While part-owner operators operated more than their proportional share of land in 1957, full-owner and full-tenant operators operated less than their proportional shares. Part-owner operators represented about 43 percent of total operators in 1957, and held nearly 59 percent of total operated land. Full-owner operators comprised about 31 percent of all operators and operated about 17 percent of land, while full tenants represented about 25 percent of all operators and operated about 18 percent of the land in 1957.

Land Use

Of 205,140 acres in farms in the study, about 53 percent was in cropland and 44 percent in permanent hay and pasture. The percentage distribution of land use by tenure-size class is shown in Table XXIV.

A comparison of use of land on farms of different sizes indicates that the greatest variation in land use among operators was in the largest size category (Category E). Within each size category, full-tenant operators had a higher percentage of cropland than full-owner operators and more cropland acres.

An analysis of variance was undertaken to test the hypothesis that variation in cropland among full-owner, part-owner, and full-tenant

TABLE XXIV

PERCENTAGE OF CROPLAND AND PERMANENT HAY AND PASTURE, AREA OF STUDY, 1957

Class Size	Tenure Groups	Percentage of Cropland	Percentage of Permanent Hay and Pasture
A	1	72.0	23.7
	2	69.0	27.4
	3	63.3	35.6
	4	74.9	19.8
	5	61.5	34.4
B	1	66.7	28.6
	2	68.9	22.5
	3	67.5	27.1
	4	68.5	25.1
	5	58.6	38.2
C	1	71.9	25.4
	2	65.7	30.2
	3	62.3	34.0
	4	51.6	46.7
	5	63.0	33.5
D	1	67.3	27.7
	2	61.6	36.3
	3	63.2	32.5
	4	62.8	34.6
	5	65.4	29.7
E	1	39.8	54.3
	2	25.7	72.1
	3	33.3	65.6
	4	61.8	35.6
	5	32.8	65.8
For All Operators		53.1	43.8

TABLE XXV

AVERAGE ACREAGE IN CROPLAND AND PERMANENT HAY AND PASTURE BY TENURE-SIZE CLASS, AREA OF STUDY, 1957

Class		Cropland			Permanent Hay and Pasture		
Size	Tenure Groups	Number Reporting	Total Acres	Average Acres	Number Reporting	Total Acres	Average Acres
A	1	27	2,859	106	22	940	43
	2	7	854	122	6	339	57
	3	2	345	173	3	194	65
	4	6	736	123	4	194	49
	5	67	6,307	94	65	3,529	54
B	1	43	9,098	212	40	3,896	97
	2	6	1,390	232	6	454	76
	3	26	5,764	222	25	2,435	97
	4	14	2,775	198	14	1,017	73
	5	36	6,464	180	36	4,208	117
C	1	17	6,050	356	17	2,138	126
	2	11	3,612	328	11	1,661	151
	3	11	3,558	323	11	1,940	176
	4	13	3,283	253	13	2,976	229
	5	8	2,395	299	8	1,276	160
D	1	7	3,111	444	7	1,279	183
	2	16	6,457	404	16	3,806	238
	3	12	5,479	457	12	2,812	234
	4	9	3,999	444	9	2,200	244
	5	7	2,985	426	6	1,356	226
E	1	5	2,574	515	5	3,505	701
	2	8	5,649	706	8	15,842	1,980
	3	16	11,675	730	16	23,014	1,438
	4	12	9,931	828	12	5,714	476
	5	4	1,580	395	4	3,170	793
Total		390	108,930	279	376	89,895	239

operators is not significant,[9] (Appendix K). The test showed the F value is significant at 95 percent level. This means that there is a significant difference in cropland per farm, on farms operated by full-owner, part-owner, and full-tenant operators.

Cropland in Acreage Reserve and Conservation Reserve

Forty-seven percent of all operators reported acreage reserve and they had 6.8 percent of the land in farms entered in the program (Table XXVI). The average number of acres in acreage reserve ranged from 24 acres for operators in Class A, and Class B_4 to 221 acres for operators in Class E_4. Within a size category, part owners generally participated more than full owners or full tenants in the acreage reserve program.

Participation in the conservation reserve program was insignificant. Only seven percent of all operators in the sample participated in the program. The acreage entered in the program was one percent for all land in farms and ranged from 10 acres per farm for operators in Class A_1 to 179 acres for operators in Class E_3 (Table XXVI).

How Ownership was Acquired

Purchase was the primary method of attaining ownership in the area (Table XXVII). About 72 percent of all owners became owners through purchase. Very few attained ownership through gifts, homesteading, or foreclosure.

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[9] The hypothesis being tested was H_0: variation in cropland among full owners, part-owners, and full tenants is not significant. The test used was to calculate:

$$F = \frac{\text{class mean square}}{\text{error mean square}}$$

TABLE XXVI

CROPLAND IN ACREAGE RESERVE AND IN CONSERVATION RESERVE BY TENURE-SIZE CLASS, AREA OF STUDY, 1957

Class		Cropland: Acreage Reserve			Cropland: Conservation Reserve		
Size	Tenure Groups	Number Reporting	Total Acres	Average Acres	Number Reporting	Total Acres	Average Acres
A	1	5	118	24	1	10	10
	2	2	50	25	0	0	0
	3	1	82	82	0	0	0
	4	1	44	44	0	0	0
	5	24	666	28	4	151	38
B	1	15	516	34	1	150	150
	2	5	186	37	0	0	0
	3	10	420	42	4	96	24
	4	5	121	24	0	0	0
	5	20	629	31	0	0	0
C	1	12	965	80	0	0	0
	2	5	525	105	0	0	0
	3	3	233	78	3	91	30
	4	7	342	49	1	33	33
	5	5	396	79	1	44	44
D	1	7	929	133	1	43	43
	2	5	349	70	0	0	0
	3	8	482	60	1	19	19
	4	7	908	130	0	0	0
	5	5	781	156	0	0	0
E	1	3	630	210	0	0	0
	2	4	224	56	2	305	153
	3	11	2,073	188	3	536	179
	4	10	2,212	221	3	389	130
	5	2	73	37	2	206	103
Total		182[a]	13,954[b]	77	27[c]	2,073[d]	77

[a]The percentage of operators reported acreage reserve was 47 percent of all operators.

[b]The percentage of cropland entered in acreage reserve was 6.8 percent of all land in farms.

[c]The percentage of operators reported conservation reserve was 7 percent of all operators.

[d]The percentage of cropland in conservation reserve was one percent of all land in farms.

TABLE XXVII

DISTRIBUTION OF LAND OWNERS BY METHOD OF ACQUISITION AND BY AGE GROUPS, AREA OF STUDY, 1957

Method of Acquisition	34 Years Or Less	35-44 Years	45-64 Years	65 Years And Over	For All Ages
			- Percent -		
Purchase	5.5	16.5	44.2	6.3	72.5
Inheritance	1.2	1.4	10.0	2.0	14.6
Part Purchase and Part Inheritance	0.6	2.0	6.3	1.7	10.6
Gift	0	1.7	0	0	1.7
Homestead	0	0	0	0.3	0.3
Foreclosure	0	0	0.3	0	0.3
Other	0	0	0.3	0	0
Total	7.2	21.6	61.0	10.3	100.0

PERCENTAGE OF OWNED LAND BY METHOD OF ACQUISITION, AREA OF STUDY, 1957

Method of Acquisition	Acres Owned
	-Percent-
Purchase	81.50
Inheritance	9.90
Part Purchase and Part Inheritance	7.40
Gift	0.20
Homestead	0.06
Foreclosure	0.06
Other	0.06

The second most important method by which present owners became owners was through inheritance. Nearly 15 percent of the owners reported they reached ownership by this method. An additional 10.6 percent became owners through part inheritance and part purchase. Therefore, the process of inheritance or passing land from one generation to another by such means has not yet become an important influence on the tenure pattern in western Oklahoma. This may be significant because a high proportion of ownership attained by inheritance could mean that land is being kept in a family, making it even more difficult for a beginning farmer to buy land.

Equally important as the method of acquisition are plans for land disposal. Farm operators were asked: (1) when oldest son is 18 or over, are one or more sons going to take over? (2) if more than one will take over, how will they operate the farm?

Only 58 percent of the 148 operators who answered, and who had sons, indicated that one or more sons were going to take over. The other 42 percent (or 62 operators) indicated that their sons would not take over the farm. However, when those operators were examined, it was found that: (1) the majority of those operators were under retirement age, and (2) fifty-three out of 62 operators planned to continue farming or ranching for the next two or three years (Table XXVIII).

Of the 18 operators who answered and who had more than one son, 11 indicated that the land would be operated in partnership, six operators reported that the farm would be divided, and one operator indicated that a corporation would be formed.

TABLE XXVIII

FARM TRANSFER PLANS, AREA OF STUDY, 1957

One or More Sons Will Take Over					If More Than One Will Take Over						
Number Reporting	Yes		No		Number Reporting	Partnership		Farm Will Be Divided		Form Corporation	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent	Number	Percent
148	86	58.1	62	41.9	18	11	61.1	6	33.3	1	5.6

AGE OF OPERATOR IN YEARS[a]

25-34	35-44	45-64	65 and Over
	- Number -		
1	5	44	12

EMPLOYMENT PLANS FOR NEXT TWO OR THREE YEARS[a]

Farm or Ranch	Retire	Part Time Employment	Full Time Employment	No Report
		- Number -		
53	3	3	2	1

[a]Age of operator and employment plans are for the 62 operators who reported that their sons would not take over the farm when reaching 18 years or over.

Distribution of Land Owned

The acreage owned is unevenly distributed among owners, apparently because of the extensive acreage of grazing land owned by large operators.

The method used here to measure the degree of concentration of land ownership is illustrated with the survey data for 1957 (Table XXIX and Figure 9).

While the concentration ratio for land ownership for the area of study was .43, it was .62 for Oklahoma and .67 for the Great Plains region.[10]

When land owned (and operated) was examined, it was found that a major portion of land was held by part owners. While part owners held nearly 64 percent of the land owned and operated, full owners held only about 36 percent of land. This indicates that most land ownership was concentrated in the part-owner group.

However, one of the main characteristics of the concentration curves and ratios for land operated and land owned for the area of study is the closeness of the two curves and ratios (Tables XXIII, XXIX, and Figure 10). While the concentration ratio for land operated was .45, it was .43 for land owned.

Income Variables

The value of farm receipts is one of the main measures of the performance of farm operators, as well as a measure of the relative well

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[10]Wunderlich, p. 1889.

TABLE XXIX

PERCENTAGE OF ACREAGE OF LAND OWNED, BY OCTILES OF OWNERS ARRAYED BY SIZE OF HOLDINGS, AREA OF STUDY, 1957

Owners	Total Acres Owned	Percentage Of Acres Owned	Accumulated Percentage Of Owners	Accumulated Percentage Of Acres Owned
1st Octile	2,582	2.5	12.5	2.5
2nd Octile	5,884	5.8	25.0	8.3
3rd Octile	5,940	5.9	37.5	14.2
4th Octile	6,404	6.3	50.0	20.5
5th Octile	10,025	9.9	62.5	30.4
6th Octile	12,150	11.9	75.0	42.3
7th Octile	19,137	18.9	87.5	61.2
8th Octile	39,385	38.8	100.0	100.0

Concentration ratio = .43

The concentration ratio was computed as follows:

$$C = 1/2 \Sigma (P_{K-1} Q_K - P_K Q_{K-1}) \cdot \frac{1}{5,000} = \Sigma (P_{K-1} Q_K - P_K Q_{K-1}) \cdot \frac{1}{10,000}$$

where: C = Concentration ratio; P_K = Percent of owners
Q_K = Percent of land acres
$K-1$ = Percentage at interval (octile here) preceding K.

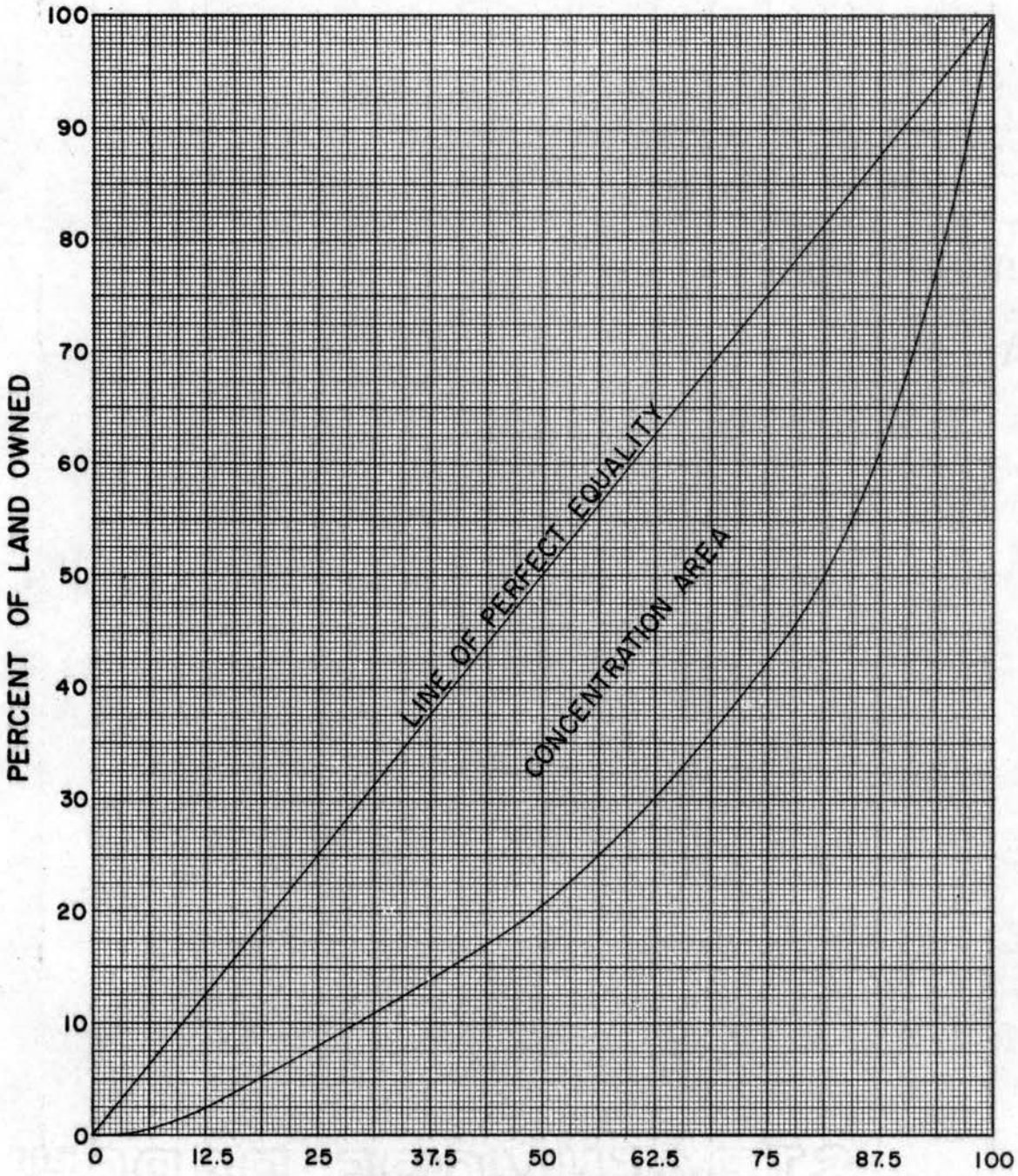

Fig. 9

OWNERSHIP CONCENTRATION
1957

SOURCE: TABLE XXIX

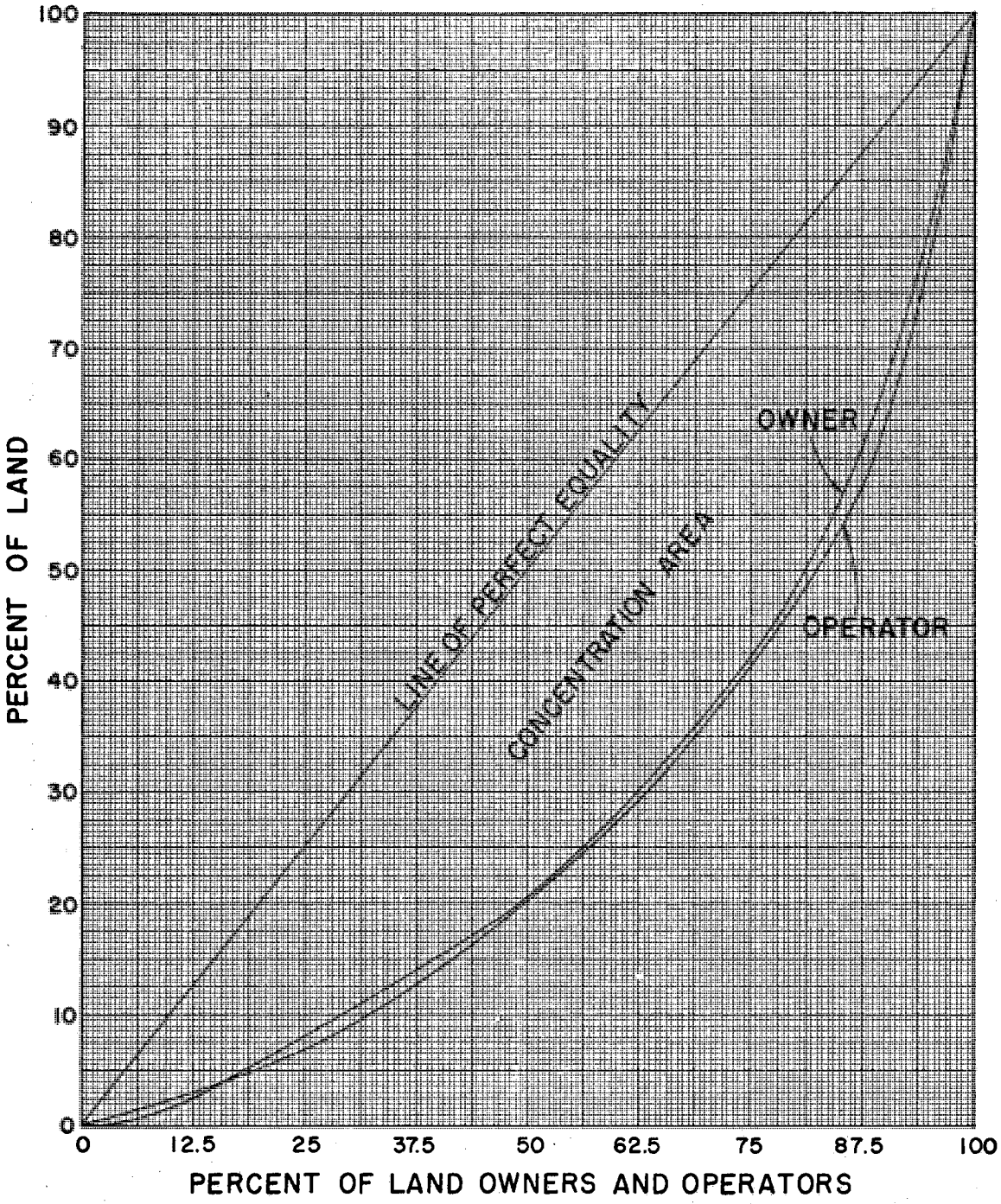

Fig. 10

CONCENTRATION OF LAND OWNED AND LAND OPERATED 1957

SOURCE: TABLES XXIII AND XXIX

being of the various classes of operators. Therefore, farm receipts and net income will be analyzed in this section.

Farm Receipts

Farm receipts are for the year 1956, and represent the gross cash income before deduction of expenses or costs. Farm receipts included crop, livestock, and livestock product sales, government payments, hail and crop insurance, and other farm incomes which arise from operations of the farm or use of farm assets.

Table XXX shows the distribution of farm receipts by source. By far the largest proportion of farm receipts was reported from sales of farm products. Less than three percent of farm receipts came from government payments, crop insurance, and other sources. Receipts per farm averaged $6,721 (Table XXXI).

Farm receipts ranged from $2,338 received by full owners on the smallest size category of farms to $17,426 received by part owners on the largest size category of farms. These part owners owned about half the land they operated. In the two smaller size categories A and B, full tenants and part owners received more farm income than did full owners. It was only after farms began to exceed 400 acres in size that farm income of full owners began to exceed that of full tenants. This can be at least partially explained by the fact that on the smaller farms, full tenants had a greater proportion of their land in cropland than did full owners. However, in all size categories, except Category B, part owners who owned about 50 percent of the land they operated had higher average value of farm receipts than other operators in the same

TABLE XXX

TOTAL FARM RECEIPTS FOR FARM OPERATORS, AREA OF STUDY, 1956

Item	Dollar Value	Percent
Farm Product Sales	2,501,919	97.19
Government Payments	26,883	1.04
Crop and Hail Insurance	3,069	.18
Other Farm Income	42,395	1.65
Total	2,574,266	100.06

TABLE XXXI

TOTAL AND AVERAGE VALUE OF FARM RECEIPTS OF FARM OPERATORS, AREA OF STUDY, 1956

Class Size	Tenure Groups	Number Reporting	Total Farm Receipts	Average Value Of Farm Receipts
			- Dollars -	
A	1	26	86,248	3,317
	2	7	23,358	3,337
	3	3	11,060	3,687
	4	5	14,328	2,866
	5	67	159,005	2,338
B	1	42	279,425	6,653
	2	6	36,890	6,148
	3	26	143,397	5,515
	4	14	81,437	5,817
	5	35	191,620	5,475
C	1	17	129,972	7,645
	2	11	80,354	7,305
	3	10	82,968	8,297
	4	13	76,060	5,851
	5	8	79,021	9,878
D	1	7	46,264	6,609
	2	15	168,546	11,236
	3	12	179,350	14,946
	4	9	82,119	9,124
	5	7	86,136	12,305
E	1	5	42,855	8,571
	2	8	114,664	14,333
	3	16	278,812	17,426
	4	10	64,690	6,469
	5	4	35,687	8,922
All Operators		383	2,574,266	6,721

size categories. An analysis of variance for farm sales among the tenure types (full owners, part owners, and full tenants) showed differences to be significant (Appendix L).

The difference in farm sales between part owners and full owners or full tenants was statistically significant at 95 percent level, but the difference was not significant between full-owners and full-tenant operators at the same level of significance (Appendix L). This substantiates the hypothesis that the scale of operation, in terms of value of sales of farm products, is larger under part ownership than under tenancy or full ownership.

Crops, in general, provided the largest proportion of farm receipts for all size categories (Table XXXII). For full tenants, the proportion of crop sales per farm increased with successive size categories up to farms about 640 acres and decreased on larger size farms (Size E). This can be partially explained by the fact that on farms in Size E (more than 820 acres) less land was devoted to crops than on farms of smaller size. Moreover, in all size categories except the largest, full tenants obtained a higher proportion of their farm receipts from crop sales than did full owners and in a majority of cases, regardless of size, full tenants show the highest proportion of farm receipts from crop sales than any of the other tenure groups.

The average value of crop sales for all operators was $4,511 per farm. Average value of crop sales varied from $1,467 for Class A_5 operators to 11,473 for E_2 operators. In the two smaller size categories dollar income from crop sales to full tenants exceeded that received by full owners and in the size C category crop income was essentially

TABLE XXXII

AVERAGE PER FARM AND PERCENTAGE OF CROPS AND LIVESTOCK SALES BY TENURE-SIZE CLASS, AREA OF STUDY, 1956

Class		Crop Sales		Livestock Sales	
Size	Tenure Groups	Average Per Farm	Percent of Total Farm Receipts	Average Per Farm	Percent of Total Farm Receipts
		-Dollars-	-Percent-	-Dollars-	-Percent-
A	1	2,640	73.5	985	24.0
	2	2,378	61.1	1,697	36.3
	3	5,155	93.2	375	6.8
	4	1,915	66.8	1,189	33.2
	5	1,467	53.5	1,164	37.2
B	1	5,579	79.9	1,654	20.7
	2	5,004	81.4	1,491	16.2
	3	3,580	62.4	2,157	36.1
	4	4,399	70.2	1,824	29.1
	5	3,855	66.4	1,820	29.4
C	1	5,979	73.6	2,046	23.6
	2	5,233	58.6	1,935	24.1
	3	6,444	77.7	2,922	21.7
	4	3,473	41.1	3,810	55.1
	5	6,022	45.7	5,529	49.0
D	1	5,031	76.1	1,663	21.6
	2	6,474	57.6	4,753	39.5
	3	8,009	53.7	6,392	42.8
	4	5,765	49.1	4,522	49.6
	5	8,162	66.3	3,717	30.2
E	1	4,710	55.0	3,351	39.1
	2	11,473	70.0	3,998	27.9
	3	8,081	37.7	10,514	60.3
	4	3,085	42.9	4,294	46.5
	5	5,715	64.1	2,963	33.2
All Operators		4,511	61.0	2,805	36.0

the same for the two tenure groups. Crop income generally being related to acreage devoted to crops would be higher on tenant operated farms since we have seen that tenants usually devote larger proportions of their land to crops than do full owners.

The relative importance of livestock production is further shown by the value of livestock sales. Livestock sales accounted for slightly more than one-third of total receipts (36 percent) while crop sales accounted for about two-thirds of all receipts (61 percent). The proportion of total receipts represented by livestock sales increased with farm acreage. This, of course, is to be expected since the proportion of operated land devoted to crops generally is higher on small size farms and lower on larger size farms.

Livestock sales, as a source of farm income was of more significance on owner operated farms than on full-tenant operated farms. This is explained by the fact that the tenure arrangements and the length of occupancy differ on tenant than on owner operated farms. Livestock enterprises ordinarily are long term relative to crop enterprises.

Government Payments

Government payments included those received from acreage and conservation reserve programs, but it did not include the other payments such as payments from price support loans and purchases. In fact, government payments, as a source of farm receipts, were of little importance. Such payments were reported by 30 percent of all operators (128 out of 392); 29 percent of full tenants; 23 percent of full owners; and about 42 percent of part owners.

The average value of government payments received by all operators was $210; $174 by full tenants, $171 by full owners, and $229 by part owners. However, government payments varied from $34 received by D_3 operators per farm to $523 by operators in Class E_4 (Table XXXIII).

Net Cash Income of Operator and Family

Net cash income, being a better measure of relative well-being of a farm family, was used to see which class of operators was best able to meet the income needs of the family.

Net cash income included net income of the farmer from the farm and other cash income received in 1956 by the farmer, or members of the family. Data by source of income were not available. However, a study in 1960 of farm and nonfarm income of farm families in western Oklahoma using data from the same 1957 survey, revealed that: (1) about 90 percent of the farm families in the survey reported some off-farm income, (2) off-farm work by the farm operator was the leading source of off-farm income, (3) forty percent of the farm operators in the survey had income from off-farm work, (4) approximately 23 percent of the operators worked off their farms over 100 days per year, and (5) off-farm work was more prevalent among the younger farm operators and those with low equities in assets managed low net worth or small farms.[11]

Net incomes of operators and family ranged from $2,500 for full owners on the largest farms to $7,813 for full tenants on farms of the same size category (Table XXXIV). It was found that full tenants within

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[11] Farm and Nonfarm Income of Farm Families in Western Oklahoma, 1956, U. S. Department of Agriculture, Bulletin No. B-552 (March, 1960), pp. 16, 17.

TABLE XXXIII

GOVERNMENT PAYMENTS AND CROP AND HAIL INSURANCE DOLLARS RECEIVED BY FARM OPERATORS, AREA OF STUDY, 1956

Class		Government Payments			Crop and Hail Insurance		
Size	Tenure Groups	Number Reporting	Total	Average	Number Reporting	Total	Average
			- Dollars -			- Dollars -	
A	1	6	629	105	-	-	-
	2	3	455	152	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	8	609	76	3	282	94
B	1	10	902	90	5	1,403	281
	2	3	250	82	-	-	-
	3	11	1,365	124	1	50	50
	4	2	185	93	-	-	-
	5	9	1,477	164	2	640	320
C	1	10	1,896	190	-	-	-
	2	4	865	216	-	-	-
	3	4	635	159	-	-	-
	4	5	1,181	236	-	-	-
	5	5	1,092	218	-	-	-
D	1	1	170	170	-	-	-
	2	6	1,086	181	-	-	-
	3	5	169	34	-	-	-
	4	5	821	164	-	-	-
	5	5	1,301	260	-	-	-

TABLE XXXIII (Continued)

Class		Government Payments			Crop and Hail Insurance		
Size	Tenure Groups	Number Reporting	Total	Average	Number Reporting	Total	Average
			- Dollars -			- Dollars -	
E	1	2	1,458	729	-	-	-
	2	3	1,005	335	-	-	-
	3	10	3,804	380	1	400	400
	4	10	5,228	523	-	-	-
	5	1	300	300	1	294	294
All Operators		128	26,883	210	13	3,069	236

TABLE XXXIV

NET INCOME OF OPERATOR AND FAMILY, AREA OF STUDY, 1956

Class Size	Tenure Groups	Average Net Income Per Family -Dollars-
A	1	4,327
	2	4,821
	3	5,833
	4	3,333
	5	3,790
B	1	4,673
	2	6,875
	3	4,904
	4	3,571
	5	3,438
C	1	3,015
	2	4,861
	3	3,864
	4	3,636
	5	2,813
D	1	3,250
	2	4,453
	3	3,958
	4	1,964
	5	4,583
E	1	7,813
	2	5,156
	3	4,917
	4	4,688
	5	2,500

a given size category generally had incomes higher than those of full owners. This probably can be explained by the fact that full tenants generally were in the younger age groups and, as mentioned earlier, this is the group which most often has off-farm income.

Operational and Geographical Mobility

It has been said that secure tenure is essential in planning and developing a good farm operation. Security of tenure is usually related to the type of tenure. Ordinarily the owner operator is assured greater security of tenure than the tenant operator.

Nearly 47 percent of all farm operators in 1957 had occupied their present farms 14 years or less which means, of course, about 53 percent of operators had been on their farms more than 14 years. However, Table XXXV shows that the tenure of full tenants is relatively brief. The data show that 38.5 percent of full tenants had less than 10 years tenure and only 10 percent had 20 years or more of tenure. Owner operators, on the other hand, occupied their farms for a longer period. Of the operators who owned part or all of their land, 48.5 percent had 20 years or more of tenure.

While the time spent on the present farms varied as a result of differences in the tenure of operator, it will be remembered that a high proportion of tenant operators were younger men.

The farm operator tends to expand his farm or ranch whenever it is possible to do so. If the operator wishes to expand the size of his operations through the purchase or renting of land, one of the more attractive possibilities ordinarily lies in acquiring adjoining or nearby

TABLE XXXV

DISTRIBUTION OF FARM OPERATORS BY THE NUMBER OF YEARS ON THE PRESENT FARM, AREA OF STUDY, 1957

Class Tenure Size Groups		Number of Operators	4 Years or Less		5-9 Years		10-14 Years		15-19 Years		20-24 Years		25 Years and Over	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
A	1	27	5	18.5	8	29.6	9	33.3	1	3.7	0	0	4	14.8
	2	7	0	0	2	28.6	1	14.3	2	28.6	2	28.6	0	0
	3	3	0	0	0	0	0	0	1	33.3	0	0	2	66.7
	4	6	0	0	3	50.0	1	16.6	0	0	1	0	1	16.6
	5	68	3	4.5	13	19.1	13	19.1	6	8.8	9	13.2	24	35.3
B	1	43	9	20.9	11	25.6	18	41.7	2	4.6	3	6.9	0	0
	2	6	0	0	0	0	3	50.0	2	33.3	0	0	1	16.7
	3	26	1	3.8	2	7.6	5	19.0	4	15.2	4	15.2	10	38.0
	4	14	0	0	0	0	3	21.4	2	14.3	2	14.3	7	50.0
	5	36	3	7.8	5	13.9	3	8.3	9	25.0	3	8.3	13	36.1
C	1	17	4	23.5	5	29.4	4	23.5	2	11.7	1	5.9	1	5.9
	2	11	0	0	1	9.1	4	36.4	4	36.4	0	0	2	18.2
	3	11	0	0	0	0	4	36.4	3	27.3	2	18.2	2	18.2
	4	13	1	7.7	0	0	3	23.1	3	23.1	1	7.7	5	38.5
	5	8	1	12.5	0	0	3	37.5	1	12.5	1	12.5	2	25.0
D	1	7	0	0	2	28.4	3	42.6	1	14.3	1	14.3	0	0
	2	16	1	6.3	3	18.9	6	37.8	4	25.2	0	0	2	12.6
	3	12	0	0	0	0	4	33.3	4	33.3	2	16.7	2	16.7
	4	9	0	0	0	0	1	11.1	2	22.2	3	33.3	3	33.3
	5	7	0	0	0	0	0	0	1	14.3	0	0	6	85.7

TABLE XXXV (Continued)

Class Tenure Size Groups		Number of Operators	4 Years or Less		5-9 Years		10-14 Years		15-19 Years		20-24 Years		25 Years and Over	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
E	1	5	0	0	4	80.0	1	20.0	0	0	0	0	0	0
	2	8	0	0	1	12.5	2	25.0	1	12.5	1	12.5	3	37.5
	3	16	0	0	0	0	2	12.5	2	12.5	1	6.3	11	68.7
	4	12	0	0	1	8.3	0	0	0	0	4	33.3	7	58.3
	5	4	0	0	0	0	1	25.0	0	0	0	0	3	75.0
All Operators		392	28	7.1	61	15.6	94	24.0	57	14.5	41	10.5	111	28.3
All Full-Tenant Operators		99	18	8.2	30	30.3	35	35.4	6	6.1	5	5.0	5	5.0
All Owner Operators		293	10	3.4	31	10.6	59	20.1	51	17.4	36	12.3	106	36.2

properties. If expansion is to take place by renting or buying, the operator seeking to expand must be able to locate the additional land within a reasonable distance.

Although most farm machines are highly mobile, diseconomies, including losses in the timeliness of operations are likely whenever the farm tracts are too widely dispersed.

Table XXXVI shows that: (1) for all operators, the average number of nonadjoining tracts was 2.3; 1.5 tracts for full owners, 2.9 for part owners, and 2.1 tracts for full tenants. (2) in sizes A and C, the average number of nonadjoining tracts was the same for full tenants and full owners. The differences in the number of nonadjoining tracts in the farm seems to be attributed to the farm size in terms of acres, since the number of nonadjoining tracts was related to size (Appendix H).

Practically all land was in the same county where the farm operator lived. However, Table XXXVI shows that: (1) the majority of the farmers did not travel more than 10 miles to the most distant tract, (2) full tenants tend to travel a greater distance than full owners within a size category, and (3) the distance traveled by the operator seems to be related to the size of operating unit since as size increases the farmer tends to operate more dispersed tracts.

TABLE XXXVI

MODE; AVERAGE NUMBER OF NONADJOINING TRACTS IN THE FARM, AND AVERAGE MAXIMUM DISTANCE TO FARTHEST POINT OF FARM, AREA OF STUDY, 1957

Class Size	Class Tenure Groups	Mode	Average	Average Maximum Distance To Farthest Point Of Farm
		-Number-	-Number-	-Miles-
A	1	1	1.2	9.4
	2	2	1.7	9.8
	3	2	1.7	1.6
	4	2	2.3	4.7
	5	1	1.2	4.4
B	1	2	2.1	7.1
	2	1;3	2.0	7.0
	3	2	2.0	4.1
	4	2	2.2	2.5
	5	2	1.8	3.1
C	1	1	2.4	7.7
	2	2	2.7	4.8
	3	4	3.1	5.5
	4	1;2	1.8	5.0
	5	3	2.4	4.4
D	1	-	3.0	4.1
	2	2	2.8	10.0
	3	3	3.1	11.0
	4	3;5	3.1	4.6
	5	2	2.3	61.8
E	1	5	5.4	27.0
	2	-	5.6	18.1
	3	2	4.2	24.1
	4	4	4.9	12.5
	5	2	3.0	14.3

For all operators: The average number of nonadjoining tracts was 2.3 tracts.

For all full owners: The average number of nonadjoining tracts was 1.5 tracts.

For all part owners: The average number of nonadjoining tracts was 2.9 tracts.

For all full tenants: The average number of nonadjoining tracts was 2.1 tracts.

CHAPTER IV

FARM TENURE AND RESOURCE ADJUSTMENTS

Farm tenure and size adjustments have been striking in several respects in recent years. Size adjustments have been continuous and rapid, being made in many instances through both renting and buying of additional land. The trend toward increased size of operations has added impetus from the need to adjust operations to climatic conditions and from the opportunity for large-scale specialized production.

Just as the size of unit of operation has changed, so has the tenure of the operator. Changes in tenure were necessary to accomodate the expansion in size of farm and the increase of farm mechanization.

It is the purpose of this chapter to examine the changes that were made during a specified five-year period, both in size of the farm and the tenure pattern of farm operators. Also in this chapter we will examine the plans operators had for further changes in their farming operations.

Data upon which to base an analysis of changes in size and tenure was available for only a five-year period, 1952 to 1957. It may be, however, that data for a period this short may show trends which will be useful to explore.

Changes in Land and Farm Size Since 1952

Land Operated

During the 1952-57 period, total land in farms operated by farmers in the sample increased by 19.6 percent. While owner operated land increased by 11.2 percent, renter operated land increased by 32.7 percent. The percentage increase in land managed for others during the five-year period was insignificant. Distribution of changes of farm land during the five-year period is shown in Table XXXVII.

The table discloses that most of the increase in land farmed has been through renting. About 71 percent of the increase in land operated has been rented land, while only 28.5 percent can be attributed to purchase. Farmers often may prefer to expand their operations by renting rather than buying land, because given the same amount of funds, a farmer can control more assets by renting than by buying, for he need not tie up part of his money in land. Hence, more farmers in the area have been renting additional land as a means for enlarging their operations.

The enlargement of farm size has been one of the major adjustments since 1952. During the five-year period, the average size of farms in the sample increased from 470 acres in 1952 to about 523 acres in 1957, that is to say, an increase of 11.3 percent--an average 2.3 percent each year. However, we must look to individual size categories to see the manner in which change in size occurred.

As indicated in Figure 11, the farms in sizes A and B decreased during the five-year period. Farms of over 400 acres in size had increased (sizes C, D, E). The greatest percentage increase for any one

TABLE XXXVII

CHANGES IN LAND OWNERSHIP AND OPERATION, AREA OF STUDY, 1952-1957

Item	Total Land Operated	Owned		Rented		Land Managed for Others	Average Size of Farm
		Operated	Rented Out	Operated	Rented Out		
				- Acres -			
1952	171,487	85,247	4,637	73,240	260	13,000	470
1957	205,140	94,826	6,681	97,154	599	13,160	523.1
Changes between 1952-57	33,653	9,579	2,044	23,914	339	160	53.1
				- Percent -			
Percentage increase between 1952-57	19.6	11.2	44.1	32.7	130.4	1.2	11.3

Note: The percentage increase of land operated due to increase of land owner operated amounts to 28.5; 71.1 percent of the increase in land operated was due to increase of land renter operated, and .47 percent due to increase in land managed for others.

LAND PURCHASED SINCE 1952, AREA OF STUDY, 1957

Total Land Purchased	Percent of Purchased Land To Total Land Owned	Average Unit of Purchased Land	Distribution of Operators by Size of Unit Purchased			Number of Operators Who Purchased	Percent of Operators Who Purchased
			320 Acres or Less	321-560 Acres	561 or Over Acres		
-Acres-	-Percent-	-Acres-	- Number -			-Number-	-Percent-
24,663	24.3	352.3	49	10	11	70	17.9

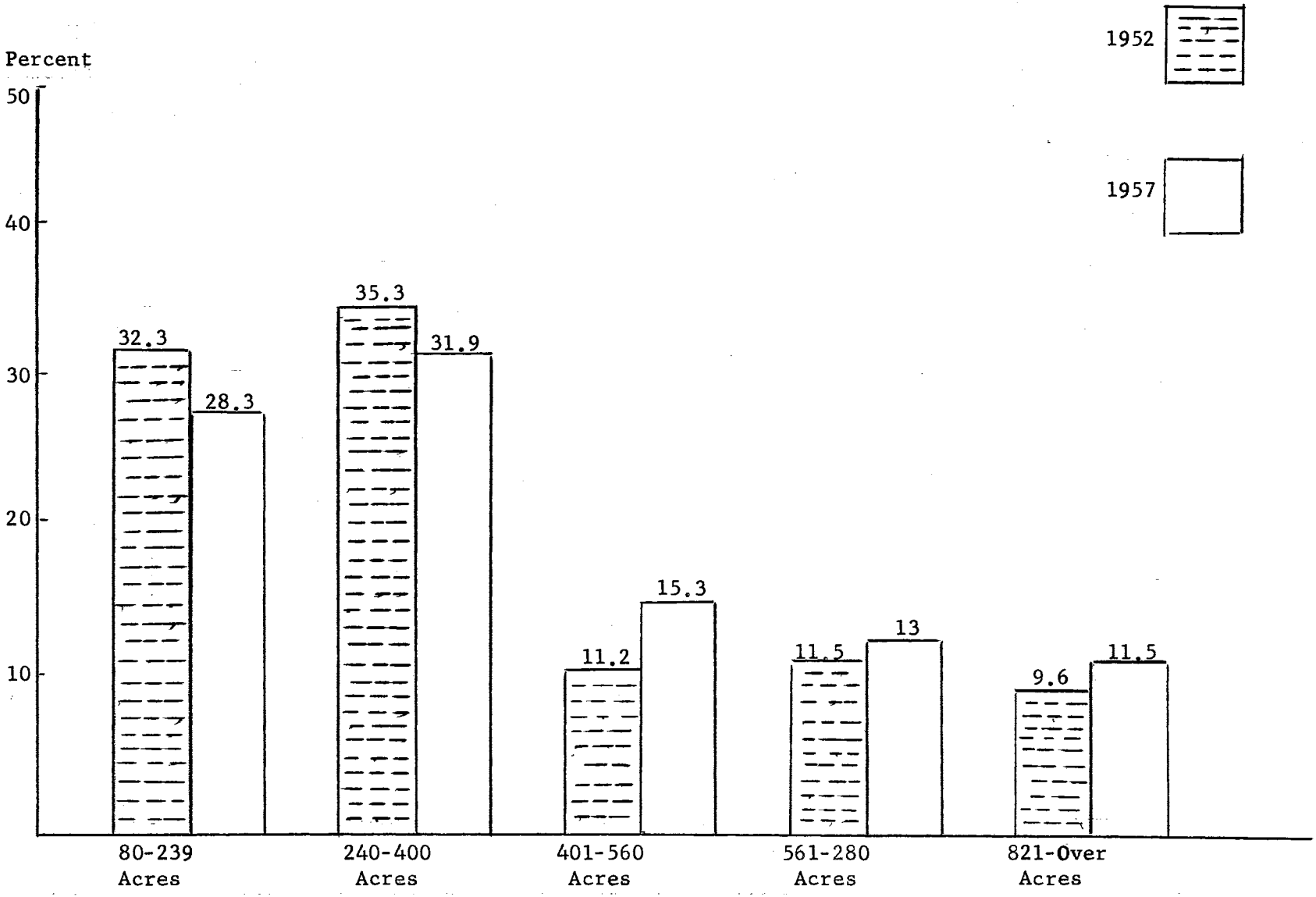

Figure 11. Percentage Distribution of Farms by Size Groups for 1952 and 1957.

category was in size range 401-560 acres (size C). While the two smaller size categories decreased in size at about the same annual rate between 1952-57, the three larger size categories increased at somewhat different rates. Consolidation activities seem to affect the 401-560 acre category more than any other category. Most of the adjustment in size probably was the result of fewer young farmers getting started on small units and because small size farm operators have been quitting the farm.

Part owner farms had increased most in size between 1952 and 1957. While the average increase in farm size each year during the five-year period was 15.4 acres per farm for part owners, it was less than one acre for full owners and nine acres for full tenants.

Land Purchased

Nearly 18 percent of farm operators purchased land between 1952-57. Seventy operators purchased 24,663 acres in the five-year period (Table XXXVII). Nearly one-fourth of the land owned by these 70 operators was purchased during the period.

While the average purchase was about 352 acres, a large majority of those purchasing, acquired 320 acres or less. Ten operators purchased units of 321 to 560 acres, and 11 out of 70 operators purchased units of more than 560 acres. Data were not available to indicate the characteristics of those operators who purchased land and under what terms they made their purchase.

Land Distribution

In an earlier section, the distribution of land among operators and owners in 1957 was discussed. In this section, we shall examine the distribution of land among operators and owners in 1952 to see whether a change occurred during the five-year period, and if so, the extent of the change.

One of the main advantages of the Lorenz Curve and the concentration ratio (which measures the degree of inequality) is that they can be used to compare directly the distribution of land over time. The curve and the ratio are used here to show the distribution of land for 1952, as compared with 1957.

Distribution of land operated is shown in Table XXXVIII and Figure 12. For 1952, the smallest octile (12.5 percent) of operators operated 3.28 percent, and the largest octile of operators operated about 43 percent of the total operated land. The degree of concentration, as indicated by the concentration ratio, equals .44. In a comparison made between 1952 and 1957, we find that while the average size of farm increased by 11.3 percent, the concentration ratio was nearly the same--.44 and .45 for 1952 and 1957, respectively. Smaller operators who were operating both in 1952 and 1957 probably did not sacrifice land to large operators. It is more probable that large operators expanded by absorbing land given up by operators who quit. However, since only a sample of farmers was surveyed and not the whole population, it is quite unlikely that an inter-change of land between operators surveyed would have been observed.

TABLE XXXVIII

PERCENTAGE OF ACREAGE OF FARM LAND OPERATED, BY OCTILES OF OPERATORS ARRAYED BY SIZE OF HOLDINGS, AREA OF STUDY, 1952

Operators	Total Acres Operated	Percent of Acres Operated	Accumulated Percentage of Operators	Accumulated Percentage of Acres Operated
1st Octile	5,630	3.28	12.5	3.28
2nd Octile	7,300	4.25	25.0	7.53
3rd Octile	9,491	5.53	37.5	13.06
4th Octile	13,552	7.90	50.0	20.96
5th Octile	15,019	8.76	62.5	29.72
6th Octile	20,052	11.69	75.0	41.41
7th Octile	27,464	16.02	87.5	57.43
8th Octile	72,979	42.56	100.0	100.0

Concentration Ratio = .44. The concentration ratio was computed as follows:

$$C = 1/2 \sum (P_{K-1} Q_K - P_K Q_{K-1}) \cdot \frac{1}{5,000} = (P_{K-1} Q_K - P_K Q_{K-1}) \cdot \frac{1}{10,000}$$

where: C = Concentration ratio; P_K = percent of farm operators
Q_K = Percent of acres operated
$K-1$ = Percentage of interval (Octile here) preceding K.

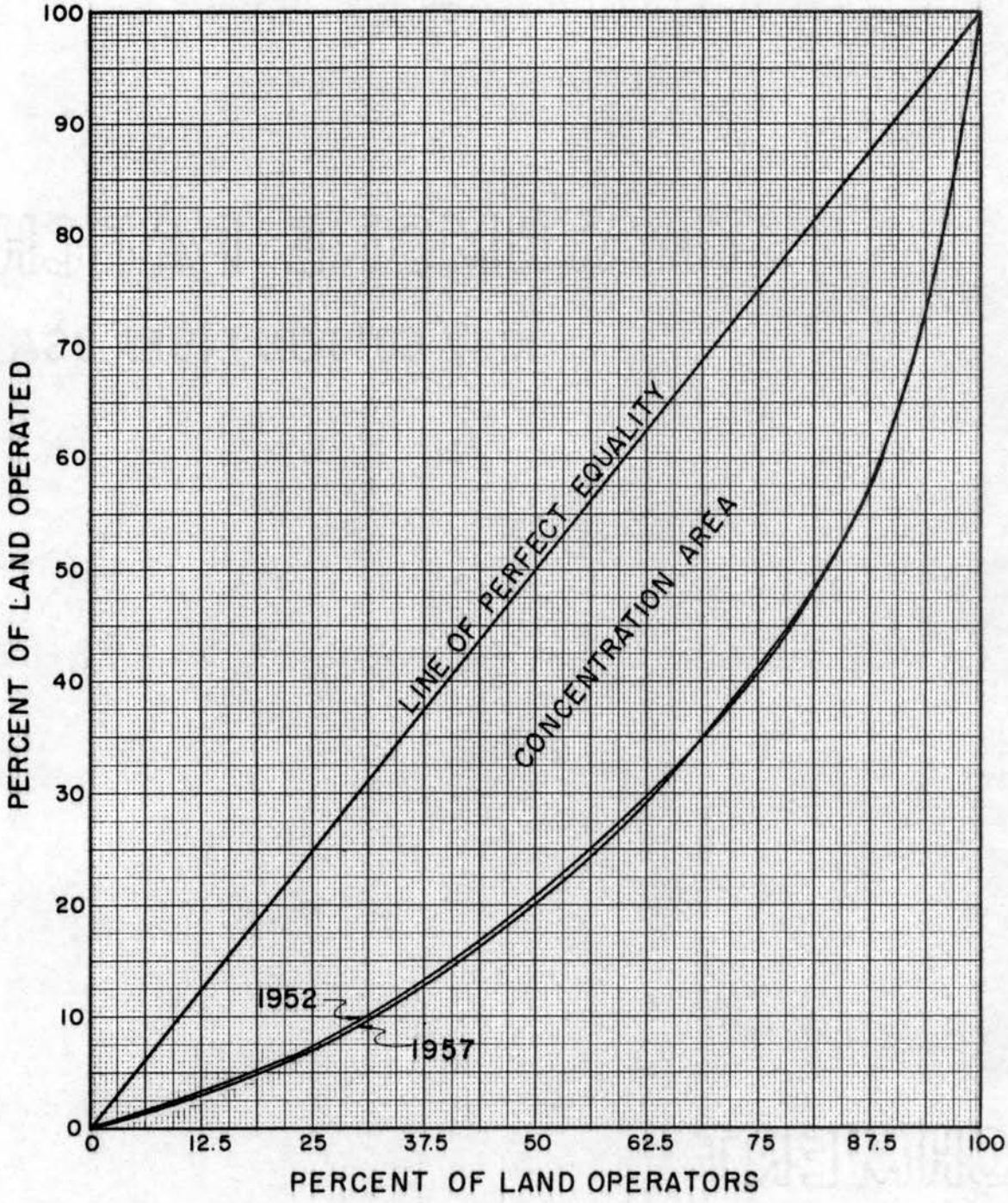

Fig. 12

CONCENTRATION OF LAND OPERATED
1952 and 1957

SOURCE: TABLES XXIII AND XXXVIII

It seems that most of the operated land in 1952 also was held by the part-owner group. While part owners represented about 40 percent of all operators in 1952, they operated about 54 percent of land. Meanwhile, full owners comprised about 34 percent of operators and held only 20 percent of land. Full tenants represented 26 percent of operators and operated about 18 percent of land.

Distribution of land ownership for 1952, as contrasted with land operated, is shown in Table XXXIX and Figure 13. The table shows that the second, the third, and the fourth octiles of owners owned land essentially in the same proportion as in 1957 (see tables XXIX and XXXIX). This is explained by the fact that in the second, the third, and the fourth octiles of owners, only 160 acres or the neighborhood of 160 acres was owned by each land owner. Thus, when owners were arranged from smaller to larger, there was not much difference in their land holdings.

It is of interest to note that the concentration ratio, for both land operated, and land owned in 1957, follows the same pattern as in 1952. While the concentration ratio for land operated and land owned in 1952 was .44 and .42, respectively, the corresponding figures were .45 and .43 for 1957.

Although the concentration ratio for land ownership increased but slightly from .42 in 1952 to .43 in 1957, the average size unit of ownership increased from about 329 acres to about 344 acres, or by five percent during the 1952-57 period,[1] (by one percent each year). This

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[1] Average size unit of land ownership = $\frac{\text{total land owned}}{\text{number of land owners}}$

For 1952--the average size unit = $\frac{89,884}{273}$ = 329.2 acres;

For 1957--the average size unit = $\frac{101,507}{295}$ = 344.1 acres.

TABLE XXXIX

PERCENTAGE OF ACREAGE OF LAND OWNED, BY OCTILES OF OWNERS ARRAYED BY SIZE OF HOLDINGS, AREA OF STUDY, 1952

Owners	Total Acres Owned	Percent of Acres Owned	Accumulated Percentage of Land Owners	Accumulated Percentage of Acres Owned
1st Octile	2,475	2.8	12.5	2.8
2nd Octile	5,456	6.1	25.0	8.9
3rd Octile	5,460	6.1	37.5	15.0
4th Octile	5,499	6.1	50.0	21.1
5th Octile	8,585	9.6	62.5	30.7
6th Octile	10,942	12.2	75.0	42.9
7th Octile	15,783	17.6	87.5	60.5
8th Octile	35,684	39.7	100.0	100.0

Concentration Ratio = .42. The concentration ratio was computed as follows:

$$C = 1/2 \; \Sigma \; (P_{K-1} \; Q_K - P_K \; Q_{K-1}) \cdot \frac{1}{5,000} = (P_{K-1} \; Q_K - P_K \; Q_{K-1}) \cdot \frac{1}{10,000}$$

where: C = Concentration ratio; P_K = percent of owners
Q_K = Percent of acres operated
$K-1$ = Percentage of interval (Octile here) preceding K.

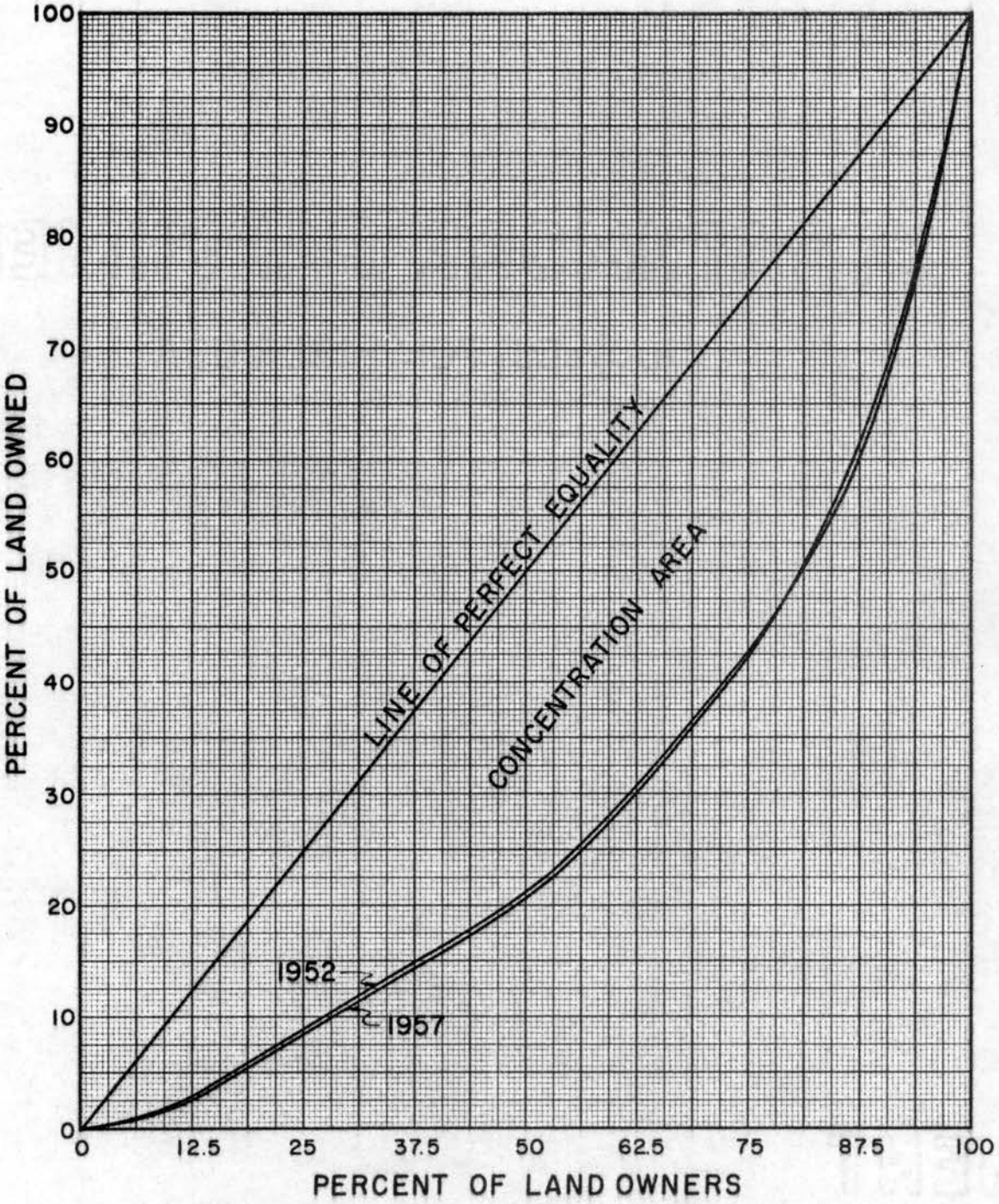

Fig. 13

OWNERSHIP CONCENTRATION
1952 and 1957

SOURCE: TABLES XXIX AND XXXIX

seems to suggest that the increase in the proportion of land holdings by the largest owners was due more to the general increase in the size of land holdings than to a shift of land from smaller owners to the larger owners, and that the added acres came from operators who quit farming.

Changes in Tenure Situation Since 1952[2]

Changes in tenure conditions during the 1952-57 period is shown in Table XL. Just as the farm size acreage had changed, so had the tenure types.

The trend during the five-year period was toward an increase in the proportion of operators who were part owners. The proportion of full owners and full tenants both declined, with the greatest decline being shown for full owners. Twenty-six percent of the farms and 18.3 percent of the land was operated by full tenants in 1952, and 25.3 percent of the farms and 18.1 percent of the land was operated by this group in 1957. Full owners operated about 34 percent of the farms and 20 percent of the farmland in 1952. In 1957, they operated about 31 percent of the farms and 17 percent of the farmland.

The percentage decline in full owners and full tenants was almost equivalent to the percentage increase in the number of farms and acreage operated by part owners between 1952 and 1957 (Table XL). Part owners operated more rented land than full tenants both in 1952 and in 1957,

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[2]For convenience, changes are shown by farm tenure, separate from farm size. However, the tenure-size classes for 1952 and 1957 are shown in the Appendix.

TABLE XL

TENURE CONDITIONS FOR 1952 AND 1957, AREA OF STUDY

Condition	1952	1957
	- Percent -	
Tenure of operator:		
Full owners	33.7	31.4
Part owners	40.2	43.3
Full tenants	26.0	25.3
Land operated by:		
Full owners	19.8	16.8
Part owners	54.1	58.7
Full tenants	18.3	18.1
Land rented and operated by:		
Part owners	57.2	61.8
Full tenants	42.8	38.2
Land owned and operated by:		
Full owners	40.03	36.4
Part owners	59.97	63.6
Part-owner operated land:		
Owned	54.9	50.1
Rented	45.1	49.9
	- Acres -	
Average size of farm for:		
Full owners	276	280
Part owners	636	713
Full tenants	330	375
Average increase in farm size each year for:		
Full owners	.8	
Part owners	15.4	
Full tenants	9.0	

Note: For both 1952 and 1957 there was one manager, and the land managed for others represented 7.6 and 6.4 percent of the total operated land in 1952 and 1957, respectively.

and the gap widened during the period because of the gain in rented acreage by part owners and loss in rented acreage by full tenants. While part owners were increasing their rented land, they also were increasing their proportion of owned land. The proportion of owned land operated by full owners declined in the same period.

This indicates that renting rather than buying land was a more important means of expanding farm operations. The rental of additional land to increase farm size acreage may be part of the reason why, in 1957, compared with 1952, more farmland was operated by part owners than by any other type of tenure.

It would appear that most of the consolidation instead of being that of two rented farms or two owned farms, was the consolidation of a rented and an owned farm.

The evidence summarized in this section indicates that over the five-year period, some adjustments in the land resource variable came about through the absorption by part owners of land once operated by full owners and full tenants. There was a definite trend for more land to be operated by part owners. The average acreage in part owner units had increased at a more rapid rate within the five years.

Potential Adjustment

We have examined the changes which occurred between 1952-57 by type of tenure and changes in farm size. Farm families, however, apparently could obtain higher incomes if they had larger, more highly developed farms, and thus, were able to make fuller, more efficient use of their labor and other resources, or if they were to adopt better

production practices. With adoption of improved cropping and livestock practices, both crop yield and livestock production on many farms could be increased. Hence, these types of adjustments may offer potential for increasing farm incomes.

Farm operators in the sample were asked to indicate their plans for the next two or three years. Thus, it is of interest here to throw some light on what plans farmers had to improve their production practices and to increase their incomes.

Employment Plans

A vast majority of farm operators in the sample reported that they would continue farming or ranching. Only a small proportion (10 out of 337 operators or about 3 percent--5 part owners, 5 full owners) indicated they would discontinue farming. These may have been at retirement age (Table XLI).

However, some farm operators did indicate that they would be seeking off-farm employment in the near future. Off-farm employment can help farmers in several ways, such as: (1) decrease the dependence on farm income, (2) provide steady income to build up farm capital and the volume of farm business, and (3) lessens the dependence on credit. Nevertheless, fewer than 10 percent of the operators intended to seek part or full time employment off the farm. This may suggest a lack of opportunity for off-farm work in the area. Thirteen full-tenant operators (or 10 percent) on small size farms (on 400 acres or less farms) said they would be seeking full or part time employment. For full owners, only 8 operators (or 7 percent) said they would be seeking part or full

TABLE XLI

FARM OPERATOR PLANS FOR NEXT TWO OR THREE YEARS, AREA OF STUDY, 1957

Class			Employment Plans				
Size	Tenure Groups	Number Reporting	Farm or Ranch	Retire	Part Time Employment	Full Time Employment	Other
A	1	27	20	0	5	1	1
	2	7	6	0	1	0	0
	3	3	2	0	0	1	0
	4	6	5	0	1	0	0
	5	67	56	3	5	1	2
B	1	41	34	0	5	2	0
	2	5	5	0	0	0	0
	3	26	22	1	2	1	0
	4	14	12	2	0	0	0
	5	36	31	2	0	1	2
C	1	17	16	0	0	1	0
	2	11	11	0	0	0	0
	3	10	7	1	2	0	0
	4	13	13	0	0	0	0
	5	8	7	0	0	1	0
D	1	7	7	0	0	0	0
	2	16	16	0	0	0	0
	3	12	11	0	1	0	0
	4	9	8	0	0	1	0
	5	7	7	0	0	0	0
E	1	5	5	0	0	0	0
	2	8	6	0	2	0	0
	3	16	14	1	1	0	0
	4	12	12	0	0	0	0
	5	4	4	0	0	0	0
Total		387	337	10	25	10	5

TABLE XLI (Continued)

Class		Farm Acreage Change				If Enlarge Farm Acreage				
Size	Tenure Groups	Number Reporting	Continue Same Size	Enlarge Farm Acreage	Reduce Farm Acreage	Number Reporting	Buy More Land	Rent More Land	Both Buy and Rent	Other Methods
A	1	20	10	10	0	9	1	5	3	0
	2	6	5	1	0	1	1	0	0	0
	3	2	1	1	0	1	0	1	0	0
	4	5	3	2	0	2	1	1	0	0
	5	56	42	12	2	12	9	2	1	0
B	1	33	19	13	1	13	3	9	1	0
	2	5	3	2	0	2	2	0	0	0
	3	22	13	8	1	8	4	4	0	0
	4	12	9	2	1	2	0	2	0	0
	5	31	23	6	2	6	4	0	2	0
C	1	16	10	6	0	5	0	5	0	0
	2	11	5	5	1	5	1	4	0	0
	3	8	6	1	1	1	0	1	0	0
	4	13	7	5	1	5	1	1	3	0
	5	7	5	2	0	2	2	0	0	0
D	1	7	6	0	1	0	0	0	0	0
	2	16	11	5	0	5	1	2	2	0
	3	11	8	2	1	2	2	0	0	0
	4	8	7	0	1	0	0	0	0	0
	5	7	5	2	0	2	1	0	1	0
E	1	5	1	4	0	4	3	1	0	0
	2	6	2	3	1	3	1	1	1	0
	3	14	11	3	0	3	3	0	0	0
	4	12	11	1	0	1	0	0	1	0
	5	4	4	0	0	0	0	0	0	0
Total		337	227	96	14	94	40	39	15	0

TABLE XLI (Continued)

Class Size	Tenure Groups	Start or Increase Irrigation: Number Reporting	Yes	No	Increase Livestock or Poultry Operation: Number Reporting	Yes	No	Clear or Drain Land: Number Reporting	Yes	No
A	1	27	3	24	27	12	15	27	4	23
	2	7	0	7	7	5	2	7	0	7
	3	3	0	3	3	0	3	3	0	3
	4	6	1	5	6	1	5	6	2	4
	5	68	6	62	68	26	42	68	10	58
B	1	43	3	40	43	27	16	43	4	39
	2	6	1	5	6	5	1	6	0	6
	3	26	3	23	26	9	17	26	3	23
	4	14	3	11	14	7	7	14	4	10
	5	36	4	32	36	16	20	36	4	32
C	1	17	0	17	17	13	4	17	3	14
	2	11	3	8	11	8	3	11	2	9
	3	11	0	11	11	5	6	11	2	9
	4	13	0	13	13	6	7	13	4	9
	5	8	0	8	8	6	2	8	2	6
D	1	7	0	7	7	5	2	7	1	6
	2	16	3	13	16	11	5	16	5	11
	3	12	3	9	12	7	5	12	4	8
	4	9	2	7	9	4	5	9	1	8
	5	7	0	7	7	2	5	7	2	5
E	1	5	1	4	5	5	0	5	0	5
	2	8	1	7	8	6	2	8	1	7
	3	16	1	15	16	6	10	16	3	13
	4	11	1	10	12	8	4	12	2	10
	5	4	0	4	4	0	4	4	1	3
Total		391	39	352	392	200	192	392	64	328

TABLE XLI (Continued)

Class		Improve Crop Practices			Improve Livestock Breeding and Practices		
Size	Tenure Groups	Number Reporting	Yes	No	Number Reporting	Yes	No
A	1	27	18	9	27	12	15
	2	7	4	3	7	6	1
	3	3	1	2	3	1	2
	4	6	5	1	6	3	3
	5	68	40	28	68	29	39
B	1	43	29	14	43	26	17
	2	6	3	3	6	2	4
	3	26	17	9	26	13	13
	4	14	8	6	14	9	5
	5	36	24	12	36	18	18
C	1	17	11	6	17	8	9
	2	11	7	4	11	7	4
	3	11	5	6	11	3	8
	4	13	7	6	13	9	4
	5	8	7	1	8	6	2
D	1	7	4	3	7	5	2
	2	16	13	3	16	11	5
	3	12	8	4	12	8	4
	4	9	7	2	9	4	5
	5	7	2	5	7	2	5
E	1	5	4	1	5	4	1
	2	8	4	4	8	5	3
	3	16	10	6	16	11	5
	4	12	9	3	12	5	7
	5	4	2	2	4	2	2
Total		392	249	143	392	209	183

time employment for the next two or three years. These operators also are found in the smaller size categories (Table XLI).

Not many part owners reported they would seek off-farm work for the next two or three years. Only 13 part owners (or 8 percent) on all farms, would be seeking part or full time employment. These operators were distributed among all tenure groups and sizes (Table XLI).

It seems likely that the relative high percentage of full tenants (compared with part owners or full owners) who would seek off-farm work was due mainly to the fact that they were operating smaller size farms and wanted off-farm work to use their excess labor and to supplement their income from farming.

Farm Acreage Change

The farm operator, to secure more income, may enlarge his farm unit. But farm enlargement depends upon the availability of farmland in the area to buy or rent, the possession of sufficient capital, and/or access to credit.

Operators who planned to continue operations were asked to indicate their plans for changing farm size over the next two or three years. Two hundred and twenty-seven out of 337 operators (about 67 percent) reported that they would continue with the same size of farm (Table XLI). About 29 percent (96 out of 337 operations) said they would enlarge their farm acreage, and a very small proportion (about four percent) of operators planned to reduce their farm acreage--mostly they were full owners or part owners. These may be operators about to retire.

About 34 percent of the operators who planned to enlarge farms were full tenants who operated farms of size 400 acres or less. Also,

22 out of 96 full-owner operators planned to enlarge their farm unit, and 41 out of 96 part owner operators reported they would increase their acreage in the next two or three years. Most of these part owners owned 66 percent or less of the land they operated.

Buying and renting land is a major means of expanding farm size. But in order to be able to buy land, operators need to have enough savings to furnish the down payments and access to sufficient credit to provide the rest of the purchase price. In effect, this means only farmers with substantial savings can buy land. In the area of study, the value of real estate averaged $108 per acre, and if we assume that mortgage credit from commercial banks, insurance companies, and Federal Land Banks is limited to about 60 percent of the market value of the land purchased, the buyer would have to have at least $44 per acre of his own in order to buy land. But the average value of savings of operators in the study was too small to allow much land purchase under this requirement. This may partially explain why only a small proportion of farmers (40 operators out of 392) planned to buy land in the future. A substantial number, 17, of those who planned to buy land were part owners, and they were operating mostly in larger size categories. Also, 16 out of the 40 who planned to buy land were full owners and seven were full-tenant operators.

While a farm operator needs much less capital to rent than to buy land, he is likely to find that the amount of land he can rent also is related to his savings. Savings can be used as operating capital and with greater operating capital the operator may find it economical to secure additional land.

Although additional capital need not come entirely from savings, credit available from commercial banks and the Production Credit Association depends upon the ability of the farmer to provide security, and usually the greater the value of owned assets, the easier it is to get credit. Hence a lack of enough savings or credit may explain why only 39 operators in the sample planned to rent more land (Table XLI).[3] However, more full tenants in Sizes A, B, and C were apt to rent land than full owners. Only two full owners, both in class A_5, planned to rent more land. This may suggest that full-tenant operators, perhaps because of lack of owned capital, are forced to enlarge their farms through renting rather than buying.

Farm Operation Improvements

Important economic and technological changes which influence adjustments in farming operations have occurred in recent years. Of particular importance are the opportunities to improve crop and livestock practices. This would mean the adoption of improved or more efficient enterprises. Improvements in feed crops would mean that present sizes of farms would support more livestock. An enlarged and improved farming operation would offer considerable potential for increasing incomes of farm families.

Operators in this study were asked to indicate their plans regarding irrigation, clearing or draining land, increase or improve crop

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[3]The average value of savings was $4,430, and the average value of loans was $4,962 per farmer in the study.

and livestock practices. Table XLI shows major plans of farm operators for the next two or three years.

Only 39 out of 391 operators (10 percent) indicated that they would start or increase irrigation--seven full tenants, 22 part owners, and 10 full owners.

Two hundred operators out of 392 (about 50 percent) indicated that they would increase livestock or poultry operations. Of those operators, 25 percent were full owners, 44 percent part owners, and 31 percent were full-tenant operators. Most full tenants were to be found in class A_1, B_1, and C_1. Full owners were found mainly in classes A_5 and B_5 (small size categories). Meanwhile, part owners who intended to increase livestock operations were found in all size categories.

Slightly more than 50 percent of all operators planned to improve livestock breeding and practices. While about 55 percent of full tenants indicated improvement of livestock breeding in the next two or three years, the corresponding figures were 57 percent and 46 percent for part owners and full owners, respectively. Most full tenants and full-owner operators were found to be in A and B size categories, while part owners were found in all size categories.

While slightly more than half of the operators would improve livestock breeding and practices, about 64 percent of all operators (249 out of 392) planned to improve crop practices. About 60 percent of full owners, about 64 percent of part owners, and about 66 percent of full tenants reported crop improvement practices in the next two or three years. For full tenants, most of these operators were in A, B, and C size categories; for full owners, most of these operators were

in A and B size categories; and part owners were to be found in all size categories.

Finally, only 64 out of 392 operators indicated that they would clear or drain land. In the area of the study, this likely would consist largely of clearing land for pasture improvements. Surprisingly enough, 12 full tenants reported that they planned to clear or drain land. Data do not show whether this is a cooperative project with the owner or whether the tenant has a long-term lease.

CHAPTER V

STATISTICAL ANALYSIS

This study has shown that sales of farm products varied widely in 1956 for farm operators in the area. Some of these variations might have been due to relatively favorable conditions for one operator as compared with another. However, much of the variation may be the result of other causes. Hence, it is important to explore some of these causes and to present the factors which may affect the value of farm products produced on the farm.

The sample data were used to define variables with which to test the hypotheses discussed below.

Hypothesis

The null hypothesis used in this analysis was that variation in farm product sales is not significantly associated with differences in the following factors used by farm operators:

1. Operating capital (non-real estate assets),
2. Acres in cropland,
3. Acres in permanent hay and pasture.

The above variables were associated by multiple regression, wherein the dependent variable, farm product sales, was expressed as a function of the variables defined below that added significantly to the sales of farm products.

X_1 = farm product sales (dollars).

X_2 = operating capital (non-real estate assets), (dollars).

X_3 = acres in cropland.

X_4 = acres in permanent hay and pasture.

When the regression equations were fitted to the data, the standard error of estimate; the coefficient of multiple correlation, and the coefficient of multiple determination were computed (Table XLII).

The standard error of estimate measures the closeness with which the estimated values agree with the original values, while the coefficient of multiple correlation measures the combined importance of several independent factors as a means of explaining the difference in the dependent factor.[1] The square of the coefficient of multiple correlation, R^2 is the coefficient of multiple determination which indicates the proportion of the variation in the dependent factor associated with the variation in the dependent factor.

The results of multiple regression analysis is shown in Table XLII. The three different variables, operating capital (X_2), acres in cropland (X_3), acres in permanent hay and pasture (X_4) were used to compute the following estimating function for the sample farms.

$$X_1 = 1240.9 + \underset{(.03)}{.28}\ X_2 + \underset{(1.3)}{9.9}\ X_3 + \underset{(.29)}{.07}\ X_4 \qquad R^2 = .4235$$

The regression coefficients were statistically significant for the variables, operating capital and acres in cropland, at both 95 and 99 percent levels. However, the regression coefficient was not significant at either 95 or 99 percent levels for acres in permanent hay and pasture.

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[1] J. Ezekeil, and K. A. Fox, Methods of Correlation and Regression Analysis (New York), pp. 188-190.

TABLE XLII

STANDARD ERROR OF ESTIMATE; COEFFICIENT OF MULTIPLE CORRELATION AND DETERMINATION FOR MULTIPLE REGRESSION ANALYSIS, AREA OF STUDY, 1957

Dependent Variable (Farm Product Sales)	Independent Variables			Standard Error of Estimate	Coefficient of Multiple Correlation R	Coefficient of Multiple Determination R^2
	Operating Capital	Acres in Cropland	Acres in Permanant Hay and Pasture			
X_1	X_2			5207.2	.578[a]	.3341[b]
X_1	X_2	X_3		4852.3	.6507	.4234
X_1	X_2	X_3	X_4	4858.3	.6508	.4235

[a]Simple Correlation Coefficient.

[b]Simple Coefficient of Determination.

TABLE XLII (Continued)

RESULTS OF MULTIPLE REGRESSION ANALYSIS

	$X_1:X_2$	$X_1:X_2$	X_3	$X_1:X_2$	X_3	X_4
Regression coefficient (b)	.397	.285	9.8	.28	9.9	.07*
Standard Error of Regression Coefficient (S_b)	.028	.03	1.3	.03	1.3	.29
Constant	2954.300	1243.80			1240.9	
Partial Correlation	.578	.43	.37	.40	.36	.01
Computed "t"	13.9	9.40	7.7	8.60	7.60	.25

Tabulated "t" at .025 = 1.96, at .005 = 2.58.

*Not significant at both 95 and 99 percent levels.

Number of observations (n) = 384.

It will be noted that labor, another factor of production in farm product sales, is not included in the above equation. Data on the labor variable were not available. However, land, labor, and capital are the set of factors of production all contributing to farm output.

The absence of the labor variable almost certainly affects the value of the "b" coefficients determined for land and capital since their levels are not independent of labor used. Therefore, omission of the labor variable results in specification error which may affect the results of the regression analysis.

In terms of the regression coefficients, if operating capital X_2 is increased by one dollar, output will be increased by \$.28 $\pm$ .03, with other variables held constant. Also, with other variables held constant, an increase in cropland by one acre increases output by \$9.9 $\pm$ 1.3.

Hypotheses Verified[2]

For the area of the study, the following hypotheses were verified:

Part owners use more operating capital (non-real estate assets) per farm than either full owners or full tenants.

There is no significant difference between full owners and full tenants in operating capital (non-real estate assets) used on farm.

Total assets accumulated by the farm family is positively related to the number of years in farming.

The proportion of farmland owned is positively related to age of the operator and the number of years in farming.

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[2]Methods used to verify the hypotheses are shown in the Appendix.

The size of the farm in acres is independent of the age of the farm operator.

Part owners operate more acres per farm than either full owners or full tenants.

There is no significant difference in acres per farm between full owners and full tenants.

Part owners have more cropland per farm than either full owners or full tenants.

Full tenant operators have more cropland per farm than full owners.

Farm product sales are positively correlated to the number of acres per farm; assets used on the farm; amount of machinery, and nonfarm assets.

The scale of operation, in terms of output, is larger under part ownership than under either full ownership or full tenancy.

There is no significant difference in the scale of operation, in terms of output, between full-owner and full-tenant operators.

Net income of the farm family is independent of the age of the operator.

The operation of nonadjoining tracts by the farmer is related to the farm size in acres.

Reflection on Statistical Analysis

The statistical analyses have shown important points:

1. Variations of farm product sales among farm operators can be partially explained by the differences in operating capital, total assets used in farming operation, number of acres in cropland per farm, and acres in farmland.

2. A negative simple correlation between the percentage of land owned and farm product sales (Appendix F) may simply mean that had the farm operator owned more proportion of the land operated, he is likely to operate a smaller size farm and use less capital in farm operation which influences farm production.
3. A significant simple correlation coefficient between operating capital and the number of acres rented per farm (Appendix N) may indicate that the farm operator uses any surplus capital for farm operation and gains control of additional land by renting.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The over-all objective of the study was to analyze farm land tenure in Western Oklahoma. Specifically, the first objective of the study was to expand and refine the conventional census classification of farm tenure in terms of tenure status of operators and the size of units they operated. The second objective was to relate tenure-size classes to selected social and economic characteristics of operators. The third objective was to determine what changes had occurred in farm tenure and size of farm between 1952-1957.

The 1957 survey of the Great Plains furnished the data used in the study. The eight counties included in the area of study were Commanche, Grant, Kingfisher, and Washita, representing a cotton-wheat type of farming, and Beaver, Custer, Ellis, and Woodward counties representing a winter-wheat type of farming area.

A new model of classification for farm operators was developed, taking into account the degree of ownership of operators in their operated land and the size of the farm. Five size categories were established, and for each size, operators were ranked in terms of the percentage of land owned, into five tenure groups. Then operators in different tenure-size classes were compared for selected social, resource use, income and operational and geographical mobility characteristics.

Results

Farmers generally are in the older age brackets. While 13.5 percent of operators were 34 years or less, slightly more than half of the operators were in the 45-64 age bracket. The high age of operators may reflect the fact that the population in general in the United States is living longer and has a longer productive life or by reducing the number of new farming opportunities, the movement out of agriculture is heaviest in the younger age groups. Thus, the average age of farmers tends to rise.

Time as a factor also appears to be reflected in age among tenure groups. Full tenants were found in younger age groups, and full owners were in the older age brackets. Very few operators attained an ownership status under 35 years of age. Most owner operators were in the 45-64 age bracket.

The agricultural ladder which has been offered as an explanation of the process by which ownership is attained appears to have little meaning for some farmers. Only about eight percent of full-owner operators progressed from hired hand to tenant operation then to full-owner operatorship. However, the single "rung" tenancy continues to be an important factor in the progress to ownership. Tenancy was the only intermediate step in the career of 25 percent of the full owners, but 71 percent of these owners were tenants sometime during their career. Nonfarm experience seems to have replaced hired hand experience in the careers of many owners.

Nonfarm experience may shorten the time required for capital accumulation necessary to acquire ownership of land. The study showed that more full owners who had nonfarm experience were found in younger age groups than those who had only hired farm hand experience in their careers.

About 90 percent of all farm operators in the study considered their primary occupation to be farmers. Fifteen percent of the full owners classified themselves as nonfarmers, and 14 percent of the full tenatns and about four percent of the part owners also classified themselves as nonfarmers.

As farmers were the largest group operating land, the vast majority lived on farms. Even so, more than half of those who classified themselves as nonfarmers actually lived on the farm.

Real estate assets comprised more than four-fifths of the total value of farm assets for all farms in the area. Motor vehicles and machinery comprised about eight percent of total farm assets, and livestock comprised about five percent of the total. The value of real estate in a family farm averaged $45,801 for full tenants; $32,213 for full owners; $77,063 for part owners, and $56,305 for all operators.

Investment in motor vehicles and machinery was, in general, small for the selected farms. This was explained by the fact that slightly more than one-fourth of the farms were less than 240 acres and about three-fifths were 400 acres or less. Investment in motor vehicles and machinery was related to size of farm.

Full-tenant operators invested more in machinery than full owners on smaller and larger farms. But, part owners in general invested more in machinery than either full tenants or full owners.

While full tenants controlled more farm assets than full owners the latter, as might be expected, owned more farm and nonfarm assets than did full tenants. Practically speaking, farm operators in the area owned more than 50 percent of the total farm assets.

Full tenants as a class and especially those on larger size farms had a heavier rate of debt to assets than other tenure groups operating similar size units. This was attributed to the fact that full tenants were younger and had not had enough time to accumulate owned assets. However, the average debt of full tenants was smaller than that of full owners or part owners, probably because full-tenant operators had less owned farm land and nonfarm assets to be used as a collateral for securing credit. The average value of loans to all farmers was relatively small--$4,962.

Banks and businesses were the leading sources of credit, but insurance companies and banks supplied the major portion of the value of total loans to farmers in the area. However, banks were the primary source of credit for all tenure groups, especially for full tenants. The second main source was Federal Land Banks for full owners, and businesses for full tenants. Also, Farmers Home Administration was equally important as a source of credit for full tenants and full owners.

The relative size and the concentration of land holdings were questions involved in this study. While full owners represented about 31 percent of operators in 1957, they operated about 17 percent of the farm land. Full tenants who comprised about 25 percent of all operators, operated about 18 percent of the land. Part owners, however, represented about 43 percent of all operators and operated nearly 59 percent of the

land. Hence, full owners and full tenants operated less than their proportionate share of the farm land, while part owners operated more than their proportionate share in 1957. Part-owner land was about equally divided between rented and owned land.

The Lorenz curve method was applied to analyze the extent of land concentration for operated land in 1957. The curve showed that the concentration area was about half of the total area under the line of perfect equality. A major factor in concentration was due to the extensive holding of grazing land by larger farmers.

In the tenure process, purchase was the chief means of attaining ownership. About three-fourths of all owners acquired their holdings through purchase. A little more than four-fifths of all owned acreage had been acquired by purchase. Other methods--inheritance, gifts, homestead, and foreclosure played a part in about 17 percent. Eleven percent acquired land through a combination of purchase and inheritance.

Not many owners had definite plans for disposing of their land. Only 30 percent of the owners reported that one or more sons were going to take over when reaching the age of 18 or more. Also, 18 owners who had more than one son indicated how the farm would be operated. Eleven out of 18 reported that the land would be operated in partnership; six operators reported that the farm would be divided; and, only one operator indicated that a corporation would be formed.

Regarding land use in the area, slightly more than half of the farm land was cropland and about two-fifths was in permanent hay and pasture. Cropland per farm for all operators averaged 279 acres with 239 acres in permanent hay and pasture. Part owners had more cropland

per farm than either full owners or full tenants. Also, full tenants had more cropland per farm than full owners.

Forty-seven percent of all operators reported acreage reserve and about seven percent of the land in farms was under the acreage reserve program. Full tenants, in general, participated to a greater extent than full owners in acreage reserve programs, and part owners generally participated to a greater extent than full tenants. However, on the whole, participation in the conservation program was insignificant.

Sales of farm products furnished the largest proportion of farm receipts, and government payments for participating in acreage and conservation reserve programs was of minor significance. Likewise, crop sales accounted for about three-fifths and livestock slightly more than one-third of total farm receipts for all farms in the sample. Slightly more than 50 percent of farmers had sales of less than $5,000, and only 20 percent sold $10,000 worth or more per farm.

Full owners received 21 percent of total farm receipts for all farms, while full tenants received 23 percent. Fifty-six percent of total farm receipts were to part owners. The average value of sales of farm products was $4,331 for full owners; $8,523 for part owners, and $5,840 for full tenants. While part owners produced, on the whole, a greater value of output than either full owners or full tenants, the latter produced a greater value of output than full owners on farms of 400 acres or less. However, full owners produced more than full tenants on larger farms. Most of the difference in sales among operators could be attributed to differences in number of acres; total farm assets; acres in cropland, and value of operating capital.

One-eighth of the farmers in the area had net cash income per family from all sources of less than $1,000 and about 37 percent had less than $2,500. Nearly 41 percent of full owners; 35 percent of part owners, and about 37 percent of full tenants had net income of less than $2,500. Only about five percent of operators reported net cash income from all sources of $10,000 or more. Most of these operators were part owners. The data strongly indicate that most farm operators cannot finance the acquisition of additional assets to permit a farm size adjustment, as about 70 percent of all operators had net cash income per family of less than $5,000. If this income does not exceed the family living requirements, there is little hope that operators can accumulate capital for expansion of operations.

On all sizes of farms, except the 561 to 820 acres category, full tenants had more net cash income per family than full owners. There is reason to believe that full tenants had more off-farm work than full owners to supplement their incomes from the farm. In general, part owners had more income per family than full tenants, but the difference was not great.

Nearly 28 percent of farm operators had been on their present farms 25 years or more, and seven percent had been on their farms four years or less. Owners, generally, had occupied their farms longer than full tenants. For full tenants, 48 percent had been on their present farms for less than 10 years, and only five percent had a tenure of 20 years and more. On the other hand, a great proportion of full owners had been on their present farm for 20 years or more. The pattern for part owners was similar to full owners.

When operators expand operations by increasing farm size, they may be faced with operating dispersed tracts. However, farm operators in this study who operated one or two tracts had most of the land they operated within the county where they lived. Furthermore, operators who owned less of their land tended to travel a greater distance to reach all the land they operated than other operators.

While 160 acres owned and operated by a farm family was the prevalent pattern of the family farm at the time of settlement, the number of 160 acre farms had fallen to about 20 percent of all farms in the area in 1952 and to 16 percent in 1957. The average size of farm for all operators was 470 acres in 1952 and 523 acres in 1957, an increase of 53 acres during the five-year period.

Although the average size of farm increased by 11 percent during the 1952-1957 period, the distribution of land among farm operators did not change significantly. It appears that the larger operators did not grow at the expense of smaller operators, but instead absorbed whole farm units once operated by farmers who quit farming.

While land operated by farmers in the survey increased between 1952 and 1957, most of the increase came about through renting. Buying additional land was not of substantial importance. Probably the reason for this was the higher value per acre and with a debt ratio limit of 50 to 60 percent, many could not afford the required downpayments on land. Major financial outlays often are required, and buyers who had little capital or lower equities found it difficult to obtain credit to buy land.

Farmers with inadequate capital may rent land to enlarge their operations. This explains why part ownership increased during the five-year period. Part ownership was the only form of tenure which showed percentage increases both in number and acres operated. The increase was concentrated among part owners who owned about one-third or one-half of the land they operated.

Farm operators usually have different possibilities in adjustment to increase the farm family income such as (1) off-farm work, (2) increase farm resources, and (3) increase the productivity of the existing resources. However, less than 10 percent of all operators in the study reported that they would be seeking off-farm work in the next two or three years. Most were full tenants, about 14 percent of whom said they would be seeking off-farm work. These tenants generally were on small farms (400 acres or less). Only seven percent of full owners, also mostly on smaller farms, and eight percent of part owners, distributed on all sizes, said they would seek off-farm work in the next two or three years.

The second way an operator may attempt to increase his family income is to enlarge his farm unit. Thirty-three percent of all full tenants, 24 percent of all part owners, and 18 percent of all full owners planned to enlarge their farms in the immediate future. Most full tenants and full owners who planned to enlarge were to be found on farms of 400 acres or less. Most part owners already were on larger farms. It seems likely that the lack of ability of operators to enlarge their farms stems from four problems: (1) a lack of capital--savings or credit, available to them, (2) a shortage of land available

to buy or rent, (3) low incomes per family for the vast majority of farmers, and (4) a probability that their present equipment would not easily allow them to operate more land.

The third way an operator may seek to raise his income is to increase the productivity of present resources. About two-thirds of the operators planned to improve their cropping practices and slightly more than half said they would improve their livestock breeding and operational practices in the next two or three years.

Implications

As farming becomes more of a business and less a way of life, the goal of farm ownership clearly becomes less important. Instead, the farm operator seeks a larger cash income. Security in old age, nowadays, is provided for by a wide variety of private and governmental agencies. In the area of study, full ownership declined from the time of settlement up till now. Farm owners seek to secure more income either through renting more land or through off-farm work.

Probably there is no system of land tenure that fits all times. A system of tenure in which owner operatorship is dominant, was desirable during a pioneer period of free or cheap land. A system of tenure with considerable tenancy is almost inevitable during a period when land must be bought, at increasing prices, rather than homesteaded. The main changes in the system of tenure is likely to come about as a result of changing technology and the seeking of more income by farm operators. That is to say, the tenure pattern of a period must be adapted to changes occurring in the economy, and the objectives of the

tenure system become: (1) more income, (2) more equality, (3) greater security, and (4) greater efficiency.

However, the study showed that there have been no fundamental changes in the farming pattern in the area. The family farm is still the basic tenure pattern. Only one farm was operated by a manager in 1952 and in 1957, and only one operator out of 18 reported that a corporation would be formed when his sons would take over the farm. However, the size of the family farm is increasing. How big the family farm will be, depends upon: (1) type of farming, (2) managerial ability, (3) capital available, and (4) the availability of land to buy or rent.

Although the number of acres was a pertinent factor, size in acreage alone is not the measure of the family farm. It was shown in this study that total assets used on the farm, acres in cropland and operating capital were more related to farm production than the number of acres. However, increase in credit available, especially to those with fewer owned assets, can help tenants to increase the size of the farm and volume of production.

Need for Further Study

A primary limitation of this study was the availability of data for 1952 comparable to 1957 for operators in the sample. Another limitation was that in 1956 farm income probably was lower than normal since yields were affected by the drouth in 1956 and preceding years.

Data for rental arrangements were not available. Research is needed to determine landlord-tenant relationships prevalent in the area to see whether equity exists in the division of returns and costs between landlord and tenant.

Land tenure can be improved by making adequate credit available and adapting it to the needs of farmers. Thus, research is needed on types of credit available over time. Such study may suggest changes in credit policy to promote efficiency.

Data were not available to determine the extent and source of off-farm work in the area. Research is needed to determine the dependence of farm families in different tenure-size classes on off-farm incomes.

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A P P E N D I X E S

APPENDIX A

DISTRIBUTION OF LAND IN FARMS, NUMBER OF FARMS, AND INCREASE OR DECREASE IN NUMBER OF FARMS BY TENURE OF OPERATOR, UNITED STATES, SELECTED YEARS, 1900-1954

Tenure of Operator	1900	1910	1920	1925	1930	1935
	Distribution of Land in Farms by Tenure of Operator					
	- Percent -					
All operators	100.0	100.0	100.0	100.0	100.0	100.0
Full owners	51.4	52.9	48.3	45.4	37.7	37.1
Part owners	14.9	15.2	18.4	21.3	24.9	25.2
Managers	10.4	6.1	5.7	4.7	6.3	5.8
Tenants	23.3	25.8	27.7	28.7	31.1	31.9
	Number of Farms by Tenure of Operator					
	- Number -					
All operators	5,737,372	6,361,502	6,448,343	6,371,640	6,288,648	6,812,350
Full owners	3,201,947	3,354,897	3,366,510	3,313,490	2,911,644	3,210,224
Part owners	451,376	593,825	558,580	554,842	656,750	688,867
Managers	59,085	58,104	68,449	40,700	55,889	48,104
Tenants	2,024,964	2,354,676	2,454,804	2,462,608	2,664,363	2,865,155

	Increase or Decrease in Number of Farms by Tenure of Operator		
	1900-1920	1920-1945	1945-1950
	- Percent -		
All operators	12.4	-9.1	-8.1
Full owners	5.1	-1.9	-6.4
Part owners	23.8	18.2	24.9
Managers	15.8	-43.2	-39.5
Tenants	21.2	-24.3	-22.3

APPENDIX A (Continued)

Tenure of Operator	1940	1945	1950	1954
		- Percent -		
All operators	100.0	100.0	100.0	100.0
Full owners	36.0	36.1	36.2	34.2
Part owners	28.3	32.5	36.5	40.7
Managers	6.3	9.3	9.1	8.6
Tenants	29.4	22.0	18.3	16.4
	Number of Farms by Tenure of Operator			
	- Number -			
All operators	6,096,799	5,589,169	5,382,162	4,783,021
Full owners	3,084,138	3,301,361	3,089,583	2,744,708
Part owners	615,039	660,502	824,923	868,180
Managers	36,351	38,885	23,527	20,894
Tenants	2,361,271	1,858,421	1,444,129	1,149,239

	Increase or Decrease in Number of Farms by Tenure of Operator	
	1950-1954	1900-1954
	- Percent -	
All operators	-11.1	-16.6
Full owners	-11.4	-14.5
Part owners	3.9	89.8
Managers	-12.2	-65.1
Tenants	-19.1	-42.3

Source: A Statistical Summary of Farm Tenure 1954, Agricultural Information Bulletin No. 200, Agricultural Research Service, U. S. Department of Agriculture, November, 1958.

APPENDIX B

CLASSIFICATION OF FARMS BY TENURE-SIZE CLASS, AREA OF STUDY, 1957

Percentage of Land Owned or Tenure Groups	Farm Size (Acres)										Total		Mode		
	80-239		240-400		401-560		561-820		821-Over						
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Mode	Number	Percent
0	27	6.9 27.3 (24.3)	43	11.0 43.4 (34.4)	17	4.3 17.2 (28.3)	7	1.8 7.1 (13.7)	5	1.3 5.1 (11.1)	99	25.3			
.1-34.0	7	1.9 14.6 (6.3)	6	1.5 12.5 (4.8)	11	2.8 22.9 (18.3)	16	4.1 33.3 (31.4)	8	2.0 16.7 (17.8)	48	12.2	25	11	22.9 2.8
34.1-66.0	3	.8 4.4 (2.7)	26	6.6 38.2 (20.8)	11	2.8 16.2 (21.7)	12	3.1 17.6 (23.5)	16	4.1 23.5 (35.6)	68	17.3	50	19	27.9 4.8
66.1-99.9	6	1.5 11.1 (5.4)	14	3.6 25.9 (11.2)	13	3.3 24.1 (21.7	9	2.3 16.7 (17.6)	12	3.1 22.2 (26.7)	54	13.8	66.7	16	29.6 4.1

APPENDIX B (Continued)

Percentage of Land Owned or Tenure Groups	Farm Size (Acres)										Total		Mode		
	80-239		240-400		401-560		561-820		821-Over						
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Mode	Number	Percent
100	68	17.3 55.3 (61.3)	36	9.2 29.3 (28.8)	8	2.0 6.5 (13.3)	7	1.8 5.7 (13.7)	4	1.0 3.3 (8.9)	123	31.4			
Total	111	28.3	125	31.9	60	15.3	51	13.0	45	11.5	392				
Mode	160		320		480		640		1120						
Number	64		55		29		19		5						
Percent	(57.7)		(44.4)		(48.3)		(37.3)		(11.1)						
Percent	16.3		14.0		7.4		4.8		1.3						

Percentages in parentheses are within size categories.

Percentages underlined are within tenure groups.

Percentages, otherwise, are to the total farms.

APPENDIX C

DISTRIBUTION OF AGE GROUPS BY TENURE-SIZE CLASS, AREA OF STUDY, 1957

Class Size	Tenure Groups	All Ages	34 or Less	35-44	45-64	65 and Over
				- Number -		
A	1	27	8	12	7	0
	2	7	0	2	5	0
	3	3	0	0	3	0
	4	6	2	1	3	0
	5	68	3	12	39	14
B	1	43	13	17	13	0
	2	6	0	4	1	1
	3	26	3	4	17	2
	4	14	0	1	11	2
	5	36	3	7	21	5
C	1	17	5	7	5	0
	2	11	1	3	7	0
	3	11	1	3	7	0
	4	13	0	4	7	2
	5	8	0	5	3	0
D	1	7	1	5	0	1
	2	16	5	9	2	0
	3	12	1	3	8	0
	4	9	0	0	9	0
	5	7	0	1	5	1
E	1	5	4	1	0	0
	2	8	2	3	3	0
	3	16	0	1	14	1
	4	12	1	1	9	1
	5	4	0	0	3	1
Total		392	53	106	202	31

APPENDIX D

DISTRIBUTION OF FARM OPERATORS BY PRINCIPAL OCCUPATION, AREA OF STUDY, 1957

Principal Occupation	Number	Percent of Total Operators
Farming or Ranching	352	89.80
Nonfarm Job[a]	40	10.20
Professional	4	1.02
Laborer, clerical service	16	4.08
Housewife	--	--
Business	14	3.57
Retired from nonfarm job	1	0.30
Retired from farming	1	0.30
Other	4	1.02
Total	392	100.00

[a]Fifteen percent of the full owners, 14 percent of the full tenants, and about four percent of the part owners classified themselves as nonfarmers.

APPENDIX E

MEANS; STANDARD DEVIATIONS, AND COEFFICIENT OF VARIATION OF VARIABLES SHOWN BELOW, AREA OF STUDY, 1957

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
Mean	6,373	522	53	65,180	34,402	4,430	42,962	4,962	37,946	5,296
Standard Deviation	6,378	976	40	67,183	41,640	12,045	52,722	7,392	50,977	4,618
Coefficient of Variation[a]	1.0	1.9	.75	1.0	1.2	2.7	1.2	1.5	1.3	.87

[a] Coefficient of variation (CV) = $\frac{\text{Standard Deviation}}{\text{Mean}}$.

X_1 = Sales of farm products.

X_2 = Farm size (acres).

X_3 = Percentage of land owned.

X_4 = Total assets used in farm operation (dollars).

X_5 = Farm assets owned by operator (dollars).

X_6 = Nonfarm assets (dollars).

X_7 = Total assets of operator and family (dollars).

X_8 = Borrowed capital (dollars).

X_9 = Net worth (dollars).

X_{10} = Motor vehicles and machinery (dollars).

APPENDIX F

SIMPLE CORRELATION MATRIX, AREA OF STUDY, 1957

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
X_1	1.00	.27	-.14	.56	.51	.26	.46	.26	.44	.45
X_2		1.00	-.01**	.79	.44	.11*	.35	.18	.34	.21
X_3			1.00	.08**	.30	.04**	.28	.06**	.28	.01**
X_4				1.00	.73	.30	.64	.30	.62	.57
X_5					1.00	.46	.92	.30	.91	.61
X_6						1.00	.67	.09**	.68	.32
X_7							1.00	.29	.98	.58
X_8								1.00	.15	.28
X_9									1.00	.56
X_{10}										1.00

X_1 = Sales of farm products.

X_2 = Farm size (acres).

X_3 = Percentage of land owned.

X_4 = Total farm assets used in farm operation.

X_5 = Farm assets owned by operator.

X_6 = Nonfarm assets.

X_7 = Total assets of operator and family.

X_8 = Borrowed capital.

X_9 = Net worth.

X_{10} = Motor vehicles and machinery.

APPENDIX F (Continued)

Note: 1. Correlation coefficients without stars are significant at both 95 and 99 percent levels.
2. Correlation coefficients with one star are significant at 95 and not significant at 99 percent levels.
3. Correlation coefficients with two stars are not significant at both 95 and 99 percent levels.

The following method was used to test the hypothesis, H_0: $R = 0$, H_1: $R \neq 0$. The test used was to calculate $t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$, $n = 384$. See Michael J. Brennan, Preface to Econometrics, South Western Publishing Company, New Rochelle, New York, p. 314.

APPENDIX G

ANALYSIS OF VARIANCE AND LEAST SIGNIFICANT DIFFERENCE TEST FOR OPERATING CAPITAL (NON-REAL ESTATE ASSETS) PER FARM, AREA OF STUDY, 1957

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	Calculated F	Tabulated F.05
Total	387	34,719,809,592.23			
Classes[a]	2	2,688,032,539.68	1,344,016,269.84	16.15[b]	3.0
Error	385	32,031,777,052.55	83,199,420.92		

[a]Classes refer to tenure classes, i.e., full-owner, part-owner, and full-tenant operators.

[b]Significant at 95 percent level.

The least significant difference, (LSD) = $t\ (1-\alpha)\ (\nu) \sqrt{EMS\ (\frac{1}{n_i} + \frac{1}{n_j})}$, $i \neq j$ where ν represents the error degree of freedom; α, level of significance.

Let: n_{FO} = number of full-owner operators = 121

n_{PO} = number of part-owner operators = 168

n_{FT} = number of full-tenant operators = 99

$\overline{X}_{FO}$ = the mean (average) value of operating capital per farm for full owners (observed): $6687.24

$\overline{X}_{PO}$ = the mean (average) value of operating capital per farm for part owners (observed): $12000.41

$\overline{X}_{FT}$ = the mean (average) value of operating capital per farm for full tenants (observed): $6689.60.

EMS = error mean square

$t_{.025}$ = the tabular value of t for error degrees of freedom at .05 significance level.

APPENDIX G (Continued)

1. $LSD = t_{.025}\sqrt{EMS\ (\frac{1}{n_{FO}} + \frac{1}{n_{PO}})}$

$= 1.96 \quad 83199420.92\sqrt{(\frac{1}{121} + \frac{1}{168}} = \$2131.60$

The observed difference:

$$\bar{X}_{PO} - \bar{X}_{FO} = 12000.41 - 6687.24 = \$5313.17$$

Conclusion: since the observed difference is greater than the least significant difference, thus the observed difference is significant at 95 percent level, which means that part-owner operators, on the average, have more operating capital per farm than full-owner operators.

2. $LSD = t_{(.025)}\sqrt{EMS\ (\frac{1}{n_{FT}} + \frac{1}{n_{PO}}}$

$= 1.96\sqrt{83199420.92\ (\frac{1}{99} + \frac{1}{168})}$

$= \$2265.17$

The observed difference:

$$\bar{X}_{PO} - \bar{X}_{FT} = 12000.41 - 6689.60 = \$5310.80$$

Conclusion: since the observed difference is statistically significant at 95 percent level, then part-owner operators, on the average, have more operating capital per farm than full-tenant operators.

3. The difference is not significant, comparison wise, for full-owner and full-tenant operators, i.e., there is no significant difference of the amount of operating capital per farm between full-owner and full-tenant operators.

APPENDIX H

CHI-SQUARE TESTS FOR INDEPENDENCE BETWEEN SELECTED CHARACTERISTICS, AREA OF STUDY, 1957

Characteristics Tested For Independence	Computed Chi-Square	Chi-Square .05	Chi-Square .01	Conclusion
Tenure status--age of the operator	109.7	16.919	21.616	Significant
Tenure status--years in farming	100.4	21.026	26.217	Significant
Farm size acreage--age of operator	17.39	21.026	26.217	Not Significant
Wealth accumulation--number of years in farming	74.02	26.296	32.000	Significant
Number of nonadjoining tracts on farm--and farm size acreage	105.00	7.815	11.341	Significant
Net income of operator and family--age of operator	10.35	12.592	16.812	Not Significant

The following method was used to test the hypothesis that there is no relationship between two characteristics. The test used was to calculate:

$$\chi^2 = \sum_{i=1}^{r} \sum_{i=j}^{c} \frac{\left(n_{ij} - \frac{n_i . n_{.j}}{n}\right)^2}{\frac{n_i . n_{.j}}{n}}$$

where n_{ij} = the number of individuals in the cell in the i^{th} row and j^{th} column; $n_i.$ = the sum of frequencies in the i^{th} row; $n._j$ = the sum of frequencies in the j^{th} column, and $n = \Sigma n_i. = \Sigma n._j$

See Paul G. Hoel, Introduction to Mathematical Statistics, Second edition. New York, p. 175.

APPENDIX I

PERCENTAGE DISTRIBUTION OF TOTAL NUMBER OF LOANS BY TENURE OF OPERATOR, AREA OF STUDY, 1957

Tenure of Operator	Source of Credit							
	Banks and Trust Companies	Production Credit Association	Federal Land Bank	Insurance Companies	Farmers' Home Administration	Merchants and Dealers	Individuals	Total
	- Percent -							
Full Owners	32.8	2.3	20.3	12.5	7.8	11.7	12.5	100.0
Part Owners	40.0	4.3	10.9[a]	13.9	5.2	14.3	11.3	100.0
Full Tenants	44.2	4.3	0.0	2.9	7.2	24.6	16.7	100.0

[a]Part-owner operators who borrowed from Federal Land Bank, when examined in terms of the land owned, were distributed as follows: 34.6 of operators were in tenure groups who owned 66.1-99.9 percent of their land, 50 percent of operators were in tenure groups who owned 34.1-66.0 percent of their land, and 15.4 percent of operators were in .1-34 tenure groups.

APPENDIX I (Continued)

PERCENTAGE DISTRIBUTION OF TOTAL NUMBER OF LOANS BY SOURCE OF CREDIT, AREA OF STUDY, 1957

Source of Credit	Tenure of Operator			Total
	Full Owners	Part Owners	Full Tenants	
	- Percent -			
Banks and Trust Companies	21.5	47.2	31.3	100.0
Production Credit Association	15.8	52.6	31.6	100.0
Federal Land Bank	51.0	49.0	0.0	100.0
Insurance Companies	30.8	61.5	7.7	100.0
Farmers' Home Administration	31.3	37.5	31.3	100.0
Merchants and Dealers	18.3	40.2	41.5	100.0
Individuals	24.6	40.0	35.4	100.0

APPENDIX J

ANALYSIS OF VARIANCE AND LEAST SIGNIFICANT DIFFERENCE TEST FOR FARM SIZE IN ACRES, AREA OF STUDY, 1957

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	Calculated F	Tabulated F.05
Total	390	201,118,691.28			
Classes[a]	2	141,881,932.83	7,440,966.42	15.5[b]	3.0
Error	388	186,236,758.45	479,991.65		

[a] Include full-owner, part-owner, and full-tenant operators.

[b] Significant at 95 percent level.

$$LSD = t_{(.025)}\sqrt{EMS\ (\frac{1}{n_i} + \frac{1}{n_j})},\ EMS = \text{error mean square};\ i \neq j$$

$$LSD_{FT,FO} = 1.96\sqrt{479991.65\ (\frac{1}{99} \quad \frac{1}{123}} = 183 \text{ acres},$$

where: F_O = full owners, F_T = full tenants.

Observed difference between full tenants and full owners:

$$\bar{X}_{FT} - \bar{X}_{FO} = 375 - 280 = 95 \text{ acres } \therefore \text{ the difference is not significant}$$

$$LSD_{PO,FT} = 1.96\sqrt{479991.65\ (\frac{1}{169} + \frac{1}{99}} = 172 \text{ acres}$$

where: F_T = full tenants, P_O = part owners.

Observed difference: 713 - 375 = 338 acres $\therefore$ the difference is significant at 95 percent level.

Also, the difference of farm size in acres is significant between part-owner and full-owner operators.

APPENDIX K

ANALYSIS OF VARIANCE AND LEAST SIGNIFICANT DIFFERENCE TEST FOR CROPLAND, AREA OF STUDY, 1957

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	Calculated F	Tabulated F.05
Total	388	20,730,729.69			
Classes[a]	2	3,891,566.05	1,945,783.025	44.62[b]	3.0
Error	386	16,839,163.64	43,624.78		

[a]Classes refer to full-owner (FO), part-owner (PO), and full-tenant (FT) operators.

[b]Significant at 95 percent level.

Let: $\bar{X}_{FO}$ = mean value of cropland for full-owner operator: 161.73 acres

$\bar{X}_{PO}$ = mean value of cropland for part-owner operator: 389.68 acres

$\bar{X}_{FT}$ = mean value of cropland for full-tenant operator: 239.31 acres

LSD = Least significant difference.

Observed Differences:

$\bar{X}_{PO} - \bar{X}_{FO} = 227.95$ acres

$\bar{X}_{PO} - \bar{X}_{FT} = 150.37$ acres

$\bar{X}_{FT} - \bar{X}_{FO} = 77.58$ acres

$LSD_{PO,FO} = 48.7$ acres $\therefore$ the difference is significant at 95 percent level.

$LSD_{PO,FT} = 51.7$ acres $\therefore$ the difference is significant at 95 percent level.

$LSD_{FT,FO} = 55.4$ acres $\therefore$ the difference is significant at 95 percent level.

APPENDIX K (Continued)

Least significant difference at 95 percent level was computed as follows:

$$LSD = t_{.025} \sqrt{EMS \left(\frac{1}{n_i} + \frac{1}{n_j}\right)}$$

where $t_{.025}$ = tabulated t value (two tailed test)

EMS = error mean square

n_i = number of observation in i class

n_j = number of observation in j class; $i \neq j$.

APPENDIX L

ANALYSIS OF VARIANCE AND LEAST SIGNIFICANT DIFFERENCE TEST FOR FARM PRODUCT SALES, AREA OF STUDY, 1957

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	Calculated F	Tabulated F.05
Total	383	15,549,549,511.06			
Classes[a]	2	1,283,607,308.88	641,803,654.44	17.14[b]	3.0
Error	381	14,265,942,207.18	37,443,417.87		

[a]Classes refer to full owners (FO), part owners (PO), and full tenants (FT).

[b]Significant at 95 percent level.

Let: $\bar{X}_{FO}$ = mean value of farm sales for full owners: \$4330.98.

$\bar{X}_{PO}$ = mean value of farm sales for part owners: \$8523.05.

$\bar{X}_{FT}$ = mean value of farm sales for full tenants: \$5839.61.

LSD = least significant difference = $t_{(.025)}\sqrt{EMS\ (\frac{1}{n_i} + \frac{1}{n_j})}$, $i \neq j$;

EMS = error mean square.

Observed differences:

$\bar{X}_{PO} - \bar{X}_{FO} = 8523.05 - 4330.98 = \$4192.07$

$\bar{X}_{PO} - \bar{X}_{FT} = 8523.05 - 5839.61 = \$2683.44$

$\bar{X}_{FT} - \bar{X}_{FO} = 5839.61 - 4330.98 = \$1508.63$

$LSD_{PO,FO}$ = \$1437.27 ∴ the difference is significant at 95 percent level.

$LSD_{PO,FT}$ = \$1526.40 ∴ the difference is significant at 95 percent level.

$LSD_{FT,FO}$ = \$1625.30 ∴ the difference is not significant at 95 percent level.

APPENDIX M

DISTRIBUTION OF FARMS BY DOLLAR VALUE OF FARM PRODUCTS, AREA OF STUDY, 1956

Range Of Value Of Farm Sales	Number of Farms	Percent of Farms	Total Value of Sales	Percent of Value of Sales	Average Value of Sales	Accumulated Percentage of Farms	Accumulated Percentage of Value of Sales
			-Dollars-		-Dollars-		
Less than $5,000	201	52.2	503,161	20.16	2,503	52.2	20.16
$5,000-$9,999	105	27.3	747,742	29.97	7,121	79.5	50.13
$10,000-$14,999	52	13.5	626,916	25.12	12,056	93.0	75.25
$15,000 and Over	27	7.0	617,473	24.75	22,869	100.0	100.00

APPENDIX N

SIMPLE CORRELATION MATRIX, AREA OF STUDY, 1957

	X_1	X_2	X_3	X_4	X_5
X_1	1.00	.58*	.54*	.17*	.37*
X_2		1.00	.48*	.35*	.49*
X_3			1.00	.03	.32*
X_4				1.00	.62*
X_5					1.00

X_1 = Sales of farm products.

X_2 = Operating capital (non-real estate assets).

X_3 = Acres in cropland.

X_4 = Acres in permanent hay and pasture.

X_5 = Acres rented from others.

*Significant at both 95 and 99 percent levels.

Coefficients without stars are not significant at both levels.

The following method was used to test the hypothesis, H_0: $R = 0$, H_1: $R \neq 0$. The test used was to calculate $t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$, $n = 384$. See Brennan, p. 314.

APPENDIX O

DISTRIBUTION OF NET INCOME OF OPERATOR AND FAMILY BY TENURE OF OPERATOR, AREA OF STUDY, 1956

Tenure of Operator	Reporting	Net Income of Operator and Family											
		Under $1,000		$1,000-2,499		$2,500-$4,999		$5,000-$7,499		$7,500-$9,999		$10,000- and Over	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Full Owners	113	18	15.9 (39.1)	28	24.8 (30.4)	40	35.4 (32.5)	19	16.8 (29.2)	6	5.3 (25.0)	2	1.8 (10.5)
Part Owners	162	16	9.9 (34.8)	41	25.3 (44.6)	51	31.5 (41.5)	34	21.0 (52.3)	9	5.6 (37.5)	11	6.8 (57.9)
Full Tenants	94	12	12.8 (26.1)	23	24.5 (25.0)	32	34.0 (26.0)	12	12.8 (18.5)	9	9.6 (37.5)	6	6.4 (31.6)
Total	369	46	12.5	92	24.9	123	33.3	65	17.6	24	6.5	19	5.1

Percentages without parentheses are of total number of operators by tenure.

Percentages in parentheses are within income brackets.

APPENDIX P

DISTRIBUTION OF FARM OPERATORS BY NUMBER OF YEARS IN FARMING, AREA OF STUDY, 1957

Class Size	Tenure Groups	Number of Operators	1 Year or Less	2 Years	3 Years	4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25 Years or Above	No Report
						- Number -						
A	1	27	0	0	1	1	5	8	1	5	6	
	2	7	0	0	0	0	0	0	1	1	5	
	3	3	0	0	0	0	0	0	0	0	3	
	4	6	0	0	0	0	2	2	0	1	1	
	5	68	0	0	0	1	8	4	5	7	43	
B	1	43	0	0	3	1	6	19	2	5	7	
	2	6	0	0	0	0	0	3	2	0	1	
	3	26	0	0	0	0	1	1	1	6	16	1
	4	14	0	0	0	0	0	0	0	1	13	
	5	36	0	1	0	0	1	4	4	3	23	
C	1	17	0	1	1	0	3	1	4	3	4	
	2	11	0	0	0	0	0	2	2	1	6	
	3	11	0	0	0	0	0	2	2	4	3	
	4	13	0	0	0	0	1	1	0	3	6	2
	5	8	0	0	0	0	0	1	2	2	3	
D	1	7	0	0	0	0	1	2	1	2	1	
	2	16	0	0	0	1	2	2	6	2	2	
	3	12	0	0	0	0	0	1	4	1	6	
	4	9	0	0	0	0	0	0	0	1	8	
	5	7	0	0	0	0	0	0	2	0	5	

APPENDIX P (Continued)

Class Size	Tenure Groups	Number of Operators	1 Year or Less	2 Years	3 Years	4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-Years or Above	No Report
							- Number -					
E	1	5	0	0	0	0	3	1	0	1	0	
	2	8	0	0	0	0	0	3	1	1	3	
	3	16	0	0	0	0	1	0	1	0	14	
	4	12	0	0	0	0	1	0	3	0	8	
	5	4	0	0	0	0	0	0	0	0	4	
Total		392	0	2	5	4	35	57	44	50	192	3

APPENDIX Q

DISTRIBUTION OF LAND OPERATED,[a] AREA OF STUDY, 1957

Item	Acres	Percent
Land operated by:		
Full owners	34,629	16.8
Part owners	120,456	58.6
Full tenants	37,334	18.2
Managers	13,160	6.4
Total	205,579	100.0
Land-rented operated	97,422	47.4
Land-owned operated	94,997	46.2
Land-managed operated	13,160	6.4
Total	205,579	100.0
Land rented, operated by:	97,422	
Part owners	60,088	61.7
Full tenants	37,334	38.3
Land owned, operated by:	94,997	
Full owners	34,629	36.5
Part owners	60,368	63.5
Part owner, operated by:	120,456	
Owned	60,368	50.1
Rented	60,088	49.9

	Number	Percent of Total Operators
Full owners	130	32.2
Part owners	170	42.1
Full tenants	103	25.5
Managers	1	.2

[a]Includes farms of less than 80 acres.

APPENDIX R

MAJOR LAND USE,[a] AREA OF STUDY, 1957

Land Use	Total Acres	Percent
Cropland	109,267	53.1
Permanent hay and pasture	89,976	43.7
Other land	6,460	3.1
Total	205,703	99.9

Cropland and Permanent Hay and Pasture Operated by	Cropland		Permanent Hay and Pasture	
	Total Acres	Percent	Total Acres	Percent
Full owners	19,840	18.2	13,580	15.1
Part owners	65,507	59.9	51,153	56.9
Full tenants	23,880	21.8	11,798	13.1
Managers	40	.04	13,445	14.9
Total	109,267	99.94	89,976	100.0

Land Use by Tenure of Operator	Total Acres	Cropland	Permanent Hay and Pasture	Other Land
		Percent	Percent	Percent
Full owners	34,629	57.3	39.2	3.5
Part owners	120,456	54.4	42.5	3.2
Full tenants	37,334	64.0	31.6	4.4

[a]Includes farms of less than 80 acres.

APPENDIX S

CLASSIFICATION OF FARMS BY TENURE-SIZE CLASS, AREA OF STUDY, 1952

Percentage of Land Owned or Tenure Groups	Farm Size (Acres) 80-239		240-400		401-560		561-820		821-Over		Total		Mode		
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Mode	Number	Percent
0	36	9.9 37.9 (30.5	39	10.7 41.1 (30.2)	12	3.3 12.6 (29.3)	5	1.4 5.3 (11.9	3	.8 3.2 (8.6	95	26.0			
.1-34.0	5	1.4 12.2 (4.2)	7	1.9 17.7 (5.4)	9	2.5 22.0 (22.0)	15	4.1 36.6 (35.7)	5	1.4 12.2 (14.3)	41	11.2	25.0	9	22.0 2.5
34.1-66.0	4	1.1 7.4 (3.4)	31	8.5 57.4 (24.0)	3	.8 5.6 (7.3)	6	1.6 11.1 (14.3)	10	2.7 18.5 (28.6)	54	14.8	50.0	23	42.6 6.3
66.1-99.9	5	1.4 9.6 (4.2)	14	3.8 26.9 (10.1)	11	3.0 21.2 (26.8)	9	2.5 17.3 (21.4)	13	3.6 25.0 (37.1)	52	14.2	66.7	13	25.0 3.6
100	68	18.6 55.3 (57.6)	38	10.4 30.9 (29.5)	6	1.6 4.9 (14.6)	7	1.9 5.7 (16.7)	4	1.1 3.3 (11.4)	123	33.7			
Total	118	32.3	129	35.3	41	11.2	42	11.5	35	9.6	365				

APPENDIX S (Continued)

Percentage of Land Owned or Tenure Groups	Farm Size (Acres)									
	80-239		240-400		401-560		561-820		821-Over	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Mode	160		320		480		640		880	
Number	74		59		23		19		4	
Percent	(62.7)		(45.7)		(56.1		(45.1)		(11.4)	
Percent	20.3		16.2		6.3		5.2		1.1	

Percentages in parentheses are within size categories.

Percentages underlined are within tenure groups.

Percentages, otherwise, are to the total farms.

VITA

Mahmoud Abdelhamid Elshahat

Candidate for the Degree of

Doctor of Philosophy

Thesis: ANALYSIS OF FARM LAND TENURE IN WESTERN OKLAHOMA

Major Field: Agricultural Economics

Biographical

Personal Data: Born in Shebet Kash, Minyet Elkamh, Shorkia, Egypt, May 19, 1930, the son of Abdelhamid Elshahat and Skina Mohmmed Tehemar.

Education: Attended El-ithad El-Wataney primary school at Minyet Elkamh, in 1939; Dawawin secondary school at Cairo in 1943; Agricultural College at Giza, Cairo University, in 1948. Received the Bachelor of Science degree in 1952 with a major in general agriculture. Attended Oklahoma State University in 1960. Received the Master of Science degree in 1961, with a major in Agricultural Economics. Engaged in graduate study toward the Degree of Doctor of Philosophy at Oklahoma State University, Stillwater, Oklahoma, from September, 1961, to May, 1964.

Professional Experience: Teaching in primary school from 1952-1953, and in preparatory school from 1953-1954. Attended Military Service from 1954-1955. Taught in the agricultural secondary schools from 1955-1957. Taught in the Higher Institute of Agriculture at Minia, Egypt, from 1957 through 1959.