THE EFFECT OF LOCAL INDUSTRIALIZATION IN A

RURAL, LOW-INCOME COUNTY

By

WILLIAM E. KLEIN, JR.

Bachelor of Science

Pennsylvania State University

State College, Pennsylvania

1954

Submitted to the faculty of the Graduate School of
the Oklahoma State University of Agriculture and
Applied Science in partial fulfillment of the
requirements for the degree of
MASTER OF SCIENCE
August, 1959

THE EFFECTS OF LOCAL INDUSTRIALIZATION

IN A RURAL, LOW-INCOME

COUNTY

Thesis Approved:

_____
Thesis Advisor

_____

_____

_____

_____
Dean of the Graduate School

ACKNOWLEDGMENT

The author wishes to convey his sincere appreciation to Professor E. J. R. Booth, Graduate Committee Chairman, for his counsel and constructive criticism during his graduate program, and the preparation of this thesis; to Dr. William B. Back and Leo V. Blakley for the reading and improvement of the manuscript.

Appreciation is also expressed the Hugo Chamber of Commerce and Choctaw County agricultural specialists. Without their cooperation this study would not have been possible.

The writer is indebted to Mrs. Juanita Marshall and her staff for their aid in publishing this manuscript and to Mrs. June Ulsaker for typing the final manuscript.

Finally, a special word of appreciation goes to my wife, Polly, for her sacrifices, encouragement, and understanding during the author's graduate program and the writing of this thesis.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDIX

CHAPTER I

PROBLEM SETTING

Intoduction

The purpose of this study was to determine the effects of limited

industrialization in a small underdeveloped area which until recently was

highly dependent on low-income farming. The process of development en-

compasses many interacting changes. Although this study concentrates on

the effects of local industrialization on agriculture, changes in other

major sectors of the local economy will be observed and analyzed.

Choctaw County was selected for study for three major reasons: it

is one of the 21 counties in Oklahoma designated as low-income counties;

the county was selected as the first Pilot County of the state's rural-

development program and a rural survey was made in 1955 which provides

useful comparative data concerning the rural economy; citizens of the

county and especially those of Hugo, the county seat, have recently spent
1
large amounts of time, effort, and money in the promotion of industry.

Choctaw County has received much attention in rural and industrial

development studies. Previous studies, however, emphasized individual

sectors of the economy, but in order to determine whether growth and de-

velopment has occurred, the entire economy must be considered. This

_____

1
    Hugo Story, Choctaw County, Oklahoma, Report by Rural Development
Committee, (Hugo, Oklahoma, 1958).

study attempts to investigate the interaction of all sectors of economy during the process of economic development especially the effects of industrialization on local agriculture.

Problem Situation

Income situation of Choctaw County. Choctaw County was one of 21 counties in Oklahoma classed as low-income areas in 1954. In 1950 Choctaw County had a per capita income of $499 with 41.9 percent of its population employed in agriculture, as compared with per capita income of $1,133 for the state and only 20.5 percent of the population employed in agriculture. Comparing these figures with 1940 data, the county income per capita had doubled in this 10 year period, with a reduction of 7.2 percent in farm population. For the entire state, we find that over the same 10 year period, per capita income had tripled and there was a reduction of 12.6 percent in its farm population.

Income per capita in Choctaw County was 44 percent of the state average with 50 percent greater employment in agriculture.

Population situation of Choctaw County. The increase in income per capita in Oklahoma was accompanied by a 16.8 percent net decrease in population as compared to the substantial increase of income per capita for the United States accompanied by a 14 percent population increase. Choctaw County, while practically doubling its per capita income, had a net loss of 36.6 percent of its population during this period.

Industrial situation. Industrially, Choctaw County, with its single urban center of Hugo, had shown increases in Value Added by Manufacturing over this 10 year period. The number of manufacturing firms was reduced by one, but total industrial employment remained rather constant.

Manufacturing consisted mostly of processing agricultural and wood products. The products required little capitalization and were not labor intensive (saw mills, cotton gins, etc.).

Agricultural situation. Choctaw County had been primarily a cotton-corn and cotton-peanut economy, a very labor intensive farm economy made up of many small land holdings. A trend away from row-crop farming began in the 1930's and continued with but slight divergence up to the present. During the 10 year period considered here, farm size increased, livestock numbers increased and, with them, acres in pasture. The number of tractors increased eight-fold, horse and mule numbers decreased. The average farm size increased by 50 percent during this period.

This change in the county's agriculture caused a labor surplus condition with under-employment of much farm labor.

Problem Statement

The problem attacked in this study consists of several inter-related hypothetical statements. Some of these concern facts to be established; others imply relationships to be demonstrated and analyzed. Chapter III will probe more deeply into the nature of these statements and how they might be justified. For the present they are listed in broad outline as follows:

> Choctaw County is a low-income rural county.
>
> A relative decline in agriculture has occurred there.
>
> The county has recently experienced a relative growth in local industry.
>
> It has experienced considerable out-migration.
>
> These factors have changed the structure of the local economy and have had unknown differential impact on its several sectors.

Agricultural welfafe has been affected by the recent local industrial growth.

General Objectives

In line with these statements concerning the scope of the problem studied, some general objectives can be listed:

The identifiable gross economic changes which have occurred in Choctaw's economy from 1940 to 1958 will be described and compared.

The composition of these changes by population and by industrial sector will be analyzed.

The nature of the impact of structural change in the local economy on agriculture will be assessed. This impact has special importance due to the size of the county's farm sector and to its low level of past development.

Data and analysis will be provided for use by planning groups and researchers. There is a decided lack of knowledge of the results of recent development in eastern Oklahoma. More realistic programs for development could be organized on the basis of this improved knowledge.

CHAPTER II

THEORETICAL CONSIDERATIONS

Introduction

Economic development can be defined as an increase in an economy's success in satisfying freely changing human wants - not only satisfying old wants but also the new wants which arise as an economy develops.

Satisfaction of growing human wants to the highest possible level attainable, within the limitations of some fixity in the supply of resources, is what the science of economics is all about. Much of economic research has centered around specific means of efficient resource allocation and has ignored the actual ends of economic activity; the satisfaction of wants or the welfare of people.

A framework of theory is needed not only to develop hypotheses but also as a means of attaining organization from the mass of assumptions and presumptions concerning the nature of economic development. A theoretical base will not only aid in organizing this study, but also may provide possible solutions to the problems of development.

There is no clear and obvious theory of economic development; no two instances of development are exactly alike. Our present understanding of development is mostly hypothetical but does provide us with a frame of reference for simplifying the complexity of the subject.

Further difficulties arise due to the need for measurement of economic growth and development. Economic growth is usually defined as

increases in the real income of an economy; economic welfare as income
per person; economic development as increases in this real income per
person. To the extent that income and population are known and measurable,
and to the extent that a deflating index can reliably indicate changes in
actual purchasing power of a given income for the changing economic wants
of people, a positive change in income per capita can be used to reflect
an improvement in economic welfare or economic development.

It has become customary to base the distinction between economic
and non-economic activities on the closeness of ties with the market.
There are activities not directed toward the market which yield satis-
faction of wants, but their values cannot be accurately measured (the
value of housewives' services, etc.). Therefore, the non-economic con-
tent of welfare must be ignored. Although disadvantages of ignoring the
non-economic content of welfare can in some cases be great, the estimates
are nevertheless tolerably reliable. Support is given to this argument
in that the activities so segregated for measurement are the ones subject
to economic criteria.[1] It will be hoped, with Pigou, that changes in
total welfare will be in the same direction as changes in economic welfare
as herein measured.[2]

Incomes per capita and their distribution are imperfectly measured
and are often not representative of the specific situation described.

---

[1]Simon Kuznets, National Income, A summary of Findings, National
Bureau of Economic Research, Inc., (New York, 1946), p. 124 and p. 136.

[2]A. C. Pigou, Economics of Welfare, (Macmillan & Co., Fourth Edition,
London, 1952), pp. 20 - 22.

Nevertheless, if we consider each of these measurements as closely approximating the true measure, we can gauge the net positive contribution of economic activity to consumer satisfaction in the form of commodities and services. These estimates should be used and discussed in terms of relevance to a specific problem, fully recognizing the underlying assumptions and compromises in measurement forced by a lack of data.

Economic Development

Development pattern. Colin Clark[2] in his book, "The Conditions of Economic Progress," states, "as time goes on and communities become more economically advanced, the numbers engaged in agriculture tend to decline relative to the numbers in manufacture, which in turn decline relative to the number engaged in services."

Increases in real income per capita affects labor distribution by changing demand for products. As real income per capita increases, the relative demand for manufactured goods first rises and then falls in favor of services. Erst Engel[3] formulated the phenomena into four laws based on statistical studies: (1) the greater the income, the smaller is the percentage of the total which is spent for food; (2) the percentage spent on clothing remains about the same; (3) the percentage spent on housing remains the same; (4) the percentage spent on miscellaneous items increases with increases in total income.

---

[2] Colin Clark, The Conditions of Economic Progress, (Macmillan & Co., New York, 1957), p. 492.

[3] Engel's Law, 1800, quoted in Heflebower and Norman's Economics with Application to Agriculture, (McGraw-Hill Book Co., Inc., New York, 1950), p. 204.

Given an increased level of income per capita and a new set of de-
mands, efficiency with which the demands will be satisfied by each sector
must be considered. Agriculture in the United States has shown a steady
tendency toward increasing productivity per man-hour, so with a de-
creasing relative demand and increasing productivity, there is a de-
creasing proportion of the labor force needed in agriculture. Real pro-
ductivity per man-hour in manufacturing has also shown great advances,
in some instances more so than for any other sector. Because of this
factor, in the long-run, and even with relative demand for manufactured
goods not decreasing, it is generally expected that there will be a de-
creasing proportion of the labor force employed in manufacturing. Taking
the aggregate of the service industries into consideration (because certain
specific services may not actually comply with this generalization) an ad-
vancing country's relative demand for these services increases more rapidly
than the increase in their workers' productivity per man-hour. Therefore,
the proportion of the labor employed in service industries will tend to
show steady increases.

Development outlined. Economic growth and development as discussed
by C. P. Kindleberger,[4] involves changes in three determining variables;
land, labor, and capital.

Land.—Economic development requires some minimum of land as an in-
put, the question is how much, the variety and richness of resources con-
dition the extent or even the possibility of development. On the other
hand, capital and social capacity of the labor force for development are

---

[4]Charles P. Kindleberger, Economic Development, (McGraw-Hill Book
Co., Inc., New York, 1958) pp. 10 - 12.

sometimes difficult to distinguish from land, and can be substituted for land under most circumstances.

Capitol.--Economic development brings with it an increase in the capital stock; and the process of economic growth involves a change in the rate of capital formation. In a static, stationary, or stagnant economy the production of capital goods is needed only to maintain the stock of capital as it gradually wears out through depreciation. In a developing economy positive net capital formation takes place as an essential part of the process, and growth entails increases in the ratio of capital to limited land while development requires increases in the ratio of capital to labor. If labor is increasing, economic progress requires additional increases in the ratio of capital to labor and there-fore to land.

Labor.--The changes in population numbers and in the size of the labor force are significant in economic development. One part of growth is the acquiring of labor skills--knowledge of tools, machines and the techniques of their use. Another part is the increasing of the pro-portion of productive persons in the population. But even more important and fundamental is the change in social behavior that makes growth possi-ble and cumulative. This change of social behavior or psychology is im-portant in establishing a climate responsive to change.

The growth process. The growth process, as viewed historically, follows the trends of economic sectors generalized by Colin Clark[5] and involves the interaction of land, labor, and capital in their changing quantities, qualities, and technological substitution patterns.

_____

[5]Clark, p. 492.

The historical process of development in countries now high in income per capita has depended significantly on a series of revolutions in techniques of production. But inventions, innovations, and imitation have also played an important part in distribution, administration, social relations, in fact, throughout economic, political, and social behavior.

With more real income comes an inevitable change not only in the scale of operational units in economic life, but in political and social fields as well. Whether change in the size of the operational units follows or precedes the rise in income per capita is not altogether clear in most cases. But as the economy broadens, it is vital to provide the communications and the appropriate monetary and market institutions if the process is not to be inhibited.

With more real income per capita comes a change in the products demanded and in the composition of output. At an early stage in the study of development it was noticed that the poorer countries have a large proportion of their resources engaged in primary production—mainly agriculture and mining—whereas the more developed countries concentrate their employment in manufacturing. The conclusion was that the way to achieve higher income was by building manufacturing industry. It is now recognized that the development of an economy involves first the transformation of resources; for example, labor being trained in skills necessary for a more modern economy. In particular, more attention must be paid to tertiary industry, which consists in services such as transport, communications, trade, and government; and increases in manufacturing are neither necessary nor sufficient conditions of growth in an open economy with ability to trade. But they are the usual accompaniment of higher incomes and may in some cases be their cause. In any event, growth in

income requires transformation and reallocation of resources while economic development entails changes in the character of wants.

Inter-Regional Development

Local development pattern. Development theory discussed thus far has referred to an entire national economy; one must now ask, how do these development patterns compare to those of a small sub-region of an economy such as a rural low-income county.

Development patterns for a closed economy covering a large land area and including a variety of productive resources follow some sort of pattern of self-sufficiency. A nation the size of the United States can be self-sufficient to some degree when the diverse geographical areas within it are aggregated. But if a specific area is isolated from the rest of the economy and happens to be relatively poor in some productive factors, its attempts at self-sufficiency will result in a lower level of living.

To consider an individual rural county, whose productive resources are geared and suited to agricultural endeavors, as being capable of following the general growth pattern would be unsatisfactory. The general growth pattern does provide insight as to productivity changes and reallocation of factors within this limited geographical area.

A more realistic means of viewing the growth of such a limited area would be to consider its available productive resources and the degree of growth possible under these restrictions. If, for example, a county is best suited for agriculture, development should be orientated around the establishment of a vigorous and prosperous agricultural economy.

Causes of rural low-income in the United States. Low income farming communities are easily recognized but the causes and solution

of the low-income situation are difficult to isolate.[6]

There are many theories that have been advanced in explanation of income disparity in agriculture and its seemingly, ever-widening trend. The available literature contains both support for and criticism of these individual theories; a definite answer is still lacking.

The popular explanations of farm income disparity may be grouped broadly as follows: (a) those which rest on some "original" difference between communities in the natural capabilities of the human element; (b) those which rest on some "original" difference between communities in the quality of the agricultural land; (c) those which rest on some "dynamic" difference (e.g., differential rate of local industrial-urban development) between communities; and (d) those which rest on the ground that communities have not been uniformly affected by the varying pattern of secular drifts in (farm) commodity prices.

The theory based on some "original" difference between communities in the natural capabilities of the human element has not been used very widely in current development literature. Many of the more prominent authors assume that the differences in capabilities of different communities are a function of both heredity and education, and prior to industrialization in the United States, most communities were essentially alike in productive capabilities.

The more recent literature deals with the original differences in values, motives and cultural forces of different communities and not the

---

[6]*Development of Agriculture's Human Resources*, United States Department of Agriculture, (Washington, D. C., April, 1955). A detailed discussion of some low-income criteria may be found in this publication.

natural capabilities.

W. B. Back[7] discusses these causes of income disparity while recognizing the risk of over-emphasizing them in relation to other possible causes. He believes that the incentives to earn income for low-income farmers are weaker when compared with those of people in other areas. This is explained by differences in the motives and values between cultural groups.

Professor Back states that, "people in low farm income areas do not have strong economic motives. This results in the use of more 'feeling' or 'emotion' in the decision making process as applied to economic problems and less use of the careful thinking process. The culture provides the modes of behavior which are substituted for individual thinking and use of knowledge in making economic decisions. Thus, knowledge and motives to some extent are dependent on each other. Farmers in the high income areas generally have a very favorable attitude and interest toward new ideas in farm output, while low income farmers often pay little attention, or are down-right against new production methods."

According to Professor Back, the United States developed in such a manner that it provided the initial basis for the by-passing of isolated or distant areas and thus causing them to lag behind the performance of the economy has a whole. But, in time, the spread of economic development should have covered the entire country. "That is why the development of cultural values consistent with low incomes, and perpetuating

[7] W. B. Back, Perpetuation of Low Farm Income Areas, Farm Policy Forum, The Low Income Farm Problem, (Iowa State College Press, Ames, Iowa, Vol. 8, No. 4, Spring, 1956), pp. 19 - 24.

these values over time through the influence of the culture on the at-
titude of individuals, must be taken into account when attempting to
explain why the low farm income situation continues to exist."

The original difference between communities in the quality of
agricultural land can be proven by any soil map, but John K. Galbraith[8]
gives support to settlement patterns rather than in soil quality alone.
He claims that during the last century—the century of settlement—the
basic political goal for settlement of farm land, was the idea of the
family farm. This commitment provided a rigid settlement pattern, with
little or no consideration to soil characteristics. The poor land
could not sustain a decent level of living in any possible combination
with other resources, while the good land, provides near optimum levels
of living. The settlement pattern in effect provides a fixed input of
land and thus preventing the proper factor adjustment to occur.

Professor Galbraith uses the example of the Great Plains to support
his hypothesis. He stated that the Great Plains poor land returns high
income because the poverty of the soil resource is compensated for by a
large input in terms of acres.

T. W. Schultz[9] has rejected the first two theories. He stated three
propositions in expanation of income disparity: (1) the differences in
per capita income and level of living among communities were not so great
at the time when people pioneered new areas or at the time industrializa-
tion began as they have become since then, (2) the marked differences in

---

[8]John K. Galbraith, Inequality in Agriculture-Problem and Program,
First J. J. Morrison Memorial Lecture, Delivered at Ontario Agricultural
College, Guelph, Canada, November, 1956.

[9]Theodore W. Schultz, The Economic Organization of Agriculture,
(McGraw-Hill Book Co., Inc., New York, 1953), pp. 156 - 157.

level of living that have emerged within agriculture are not mainly the
result of a deterioration on the part of those communities in which
people are now living under conditions of poverty but largely the con-
sequences of the increases in per capita incomes that have been realized
by people in other communities, (3) these gaps, consisting of differences
on level of living, are basically consequences of the way in which the
economy of the United States has developed and not primarily the results
of any original differences in the cultural values or capabilities of
the people themselves.

Professor Schultz further states that industrial-urban development
in an economic unit will greatly affect the local agricultural sector.
The accumulation of capital, due to the higher industrial incomes, can
be made available for investment in agriculture. Industrial-urban de-
velopment brings with it division and specialization of labor, and more
continuous employment; thereby allowing the farmer to be more fully em-
ployed and raising his income. No matter how poor his land may be, by
being near to an industrial-urban center the value of this land is en-
hanced.

W. H. Nicholls[10] in his study of the upper south accepts the pro-
position of differential economic development but contends that a de-
terioration has occurred in these by-passed communities. His findings
are based on the lack of an access to product as well as factor markets
by these isolated communities. Ultimately they developed temporarily
favorable markets for grain and livestock only to lose them in compe-
tition with the products of the newer and richer lands of the Midwest,

_____

[10]W. H. Nicholls, The South's Low-Income Problem, Farm Policy Forum,
Vol. 8, No. 4, (Ames, Iowa State College Press, Spring, 1956), pp. 13 - 19.

while failing to find satisfactory alternative sources of cash income.

Professor Nicholls states, "that although the South's rural emigration was high, it has been insufficient to result in adequate farm incomes for the remaining families. The potential gains to the rural South from emigration were largely offset by (1) continuing high natural increase of population, (2) a steady drain on its limited public investment in the education and health of its youth as the latter left the community upon reaching their productive years, and (3) the failure of outside capital to move into the low-income community. The result has been the selective deterioration of the residual population."

The proposition that commodities have not been uniformly affected by the varying pattern of secular drifts in farm commodity prices is given support by Willard W. Cochrane.[11]

His general proposition is, "that when resources may be freely substituted between different productive enterprises, the prices of the commodities involved (and therefore income levels) will hold their positions in the general pattern with some precision."

Professor Cochrane compares individual product response to changes in price levels and concludes that if prices and profits are relatively high for a particular type of enterprise, the producers shift more resources into that enterprise and thus the price of the product returns to its average pattern. He further states, "there is a deterring influence of custom and habit on production adjustments which have been

---

[11] W. W. Cochrane, The Nature of the Farm Price Problem, Contemporary Readings in Agricultural Economics, Edited by Harold G. Halcrow, Prentice-Hall, Inc., (New York, 1955), pp. 92 - 108.

particularly pronounced in the cotton-South (a region with many low-income areas). Thus, the unwillingness and/or the inability of cotton growers to respond to price changes, by varying their output of cotton, have contributed to the more extreme price movements for cotton." Tradition, coupled with the unavailability of attractive alternatives has acted to hold producers in low-income areas to out-moded enterprises.

Earl O. Heady and Joseph Ackerman[12] in a joint article on the low-income problem, support Cochrane's proposition. They place the major cause, of surplus and income problem in agriculture, as due to output increasing faster than can be absorbed by growth in the population and national income. But they also contend that such things as decreased export demand for wheat and cotton have added to the problem. Thus, the cost-price squeeze reflects the low elasticity of demand for certain commodities and the lack of resource or factor adjustment to changing demands of the consumer.

Generation of differential growth. Income disparity is a fact, propositions have been stated as to the possible causes but what are the conditions which bring about this disparity?

There are three sets of conditions inherent in economic development each of which can bring about disparity in income. They are: (a) those that alter the proportion of population engaged in productive work in one

---

[12] Earl O. Heady and Joseph Ackerman, The Income and Resource Problem, Agricultural Adjustment Problems in a Growing Economy, Edited by Heady, Diesslin, Jensen and Johnson, (Iowa State College Press, Ames, Iowa, 1958), pp. 3 - 18.

community relative to another; (b) those that change the abilities of a population to produce, of one community relative to another; and (c) those that impede factor price equalization of comparable human agents between communities.[13]

Those conditions that alter the proportion of population in productive work (that contributes to income) are basically a consequence of the social evaluation of our society set in motion by the character of our economic development. These proportions changed as economic development has proceeded, the more advanced communities have a lower birth rate and a higher percentage of its population twenty-one years of age and over than do the less advanced communities. T. W. Schultz[14] compared Grundy County, Iowa, (a very prosperous rural county) with the low-income Breathitt County, Kentucky. He found that in 1940, 62 percent of the Iowa county was twenty-one years of age and over, as against 42 percent of the Kentucky county.

Those conditions that determine the abilities of a population to produce; those which they acquire. The amount of capital that is invested per person is extremely unequal from one community to another. Where the community is poor, families are also poor, and therefore, neither can afford to make these investments; the opposite is true of prosperous communities. There is a significant difference in productivity and awareness of opportunities and willingness to migrate existant between those communities having a sufficient level of investment to those who have not.

_____

[13] T. W. Schultz, The Economic Organization of Agriculture, (McGraw-Hill Book Co., Inc., New York, 1953), p. 163.

[14] Ibid., p. 164.

The third set of conditions are closely related to the second set, these are the conditions that impede factor-price equalization. If it is assumed that most of the people located in low income areas within agriculture are essentially comparable to most of the people situated in prosperous communities in terms of their native capabilities, then a short-run acclimatization is all that is required for improvement of their productive abilities. (This has been proven during war-time migration to industrial centers). It then follows that the cultural impediments and non-recognition of opportunities are important in deterring the adjustment and equalization of income earned by the human factors between communities.

Potential for development of low-income areas. The discussion thus far has centered around the explanations of the generation of low income areas. The question of how these areas might best improve and thus develop regional income parity, is answered generally in conformity with the particular explanation offered for them.

Professor W. B. Back[15] contends that, since cultural values consistent with low incomes influences the shaping of values and motives of the individuals living in these low farm income areas, their influence needs to be removed. "The most effective way of doing this probably is a general education program. At present we invest less per person in education in the low-income areas than in the higher income areas." This he feels, may tend to continue or perpetuate the disparity unless greater investment in education of low-income areas is brought about.

[15] W. B. Back, Perpetuation of Low Farm Income Areas, Farm Policy Forum, Vol. 8, No. 4, (Iowa State College Press, Ames, Iowa, Spring, 1956) pp. 19 - 24.

According to Professor W. E. Hendrix[16] we can alleviate the low-income problem by taking fuller cognizance in administering the agricultural agencies and program which are already available. He believes that two major changes must take place to raise the income of these people: (1) improvement in the type, size and method of farming, and (2) move many of the people to more renumerative non-farm employment. He recognizes the fact that many of the low-income farm people are too far along in age or their occupational handicaps are too great for them to make these adjustments. Therefore, improvement of the low-income areas must be associated with changes in marketing and farm product processing facilities, tenure and credit which face the residual agricultural population.

T. W. Schultz[17] emphasizes the need for factor market adjustment to bring about development. He believes that the failure of the price mechanism to function properly in the factor markets and the factor markets themselves are a "key" to the very uneven development and resultant income disparity in the United States agriculture. He groups the factors into two categories: (a) labor and (b) capital.

For the labor market he suggests two remedies: (1) eliminate the existing barriers to migration and (2) reduce the necessity for migration. To eliminate the existing barriers to migration and thereby increase mobility, he suggests the use of informational programs coupled with special adult training programs. Funds could then be provided, in the form of

---

[16]W. E. Hendrix, The Problem of Low-Income Farms, in B. Aly and E. A. Rogge, Ed. American Farm Policy Vol. 1, National University Extension Association Discussion and Debate Manuel No. 30, (Columbia, Missouri, 1956), p. 211.

[17]T. W. Schultz, The Economic Organization of Agriculture, (McGraw-Hill Book Co., Inc., New York, 1953), pp. 283 - 320.

grants or loans, to families who are willing to move but lack the means to do so. To reduce the necessity for migration he suggests the re-organization of farms in the low-income areas to raise their producing and earning capacity. An increase in demand for labor intensive crops as well as decentralization of industries would all reduce the burden on the labor market.

For the capital market, Professor Schultz believes that the problem is one of "capital rationing" which can be improved through an increase in information relating to investment opportunities in agriculture and reduction of uncertainty to the purchaser of this factor within agri-culture. These uncertainty considerations provide a case for forward prices by the Federal Government. This, he claims, could induce the low-income farmers to enlarge their units and employ their resources more ef-ficiently.

Professor W. H. Nicholls[18] believes that industrial-urban develop-ment of rural area speeds readjustments towards higher productivity and incomes in agriculture because: (1) it is easier to these under-employed farm people to change occupations than residence, (2) the drain on local capital is avoided, (3) industrialization brings capital which allows financial institutions to provide local agriculture with capital resources to increase farm size and efficiency, (4) improvement of the quality of human resources and stimulation of further economic development will re-sult, and (5) new markets which are more efficient and competitive are created for locally produced farm products and for the factors of farm

---

[18] W. H. Nicholls, The South's Low-Income Problem, Farm Policy Forum, Vol. 8, No. 4, (Iowa State College Press, Ames, Iowa, Spring, 1956) pp. 13 - 19.

production. "With a greater concentration of population and rising per capita incomes, such developing communities can supply much improved public services which raise nearby rural levels of living, improve the quality of agriculture's human resources, and stimulate further economic development."

Implications For This Study

This chapter has outlined the theoretical pattern of economic development as it affects an aggregated economy of smaller economic entities (counties and states). The general pattern will be tested for relevance to a single economic unit, Choctaw County, which contains relatively little geographic aggregation.

The analysis will consider all sectors of the economy. Determination of whether or not economic development has occurred, will provide the foundation for an analysis of sector change and sector contribution to total economic development and welfare.

Emphasis will be placed upon industrialization effects on local agriculture; a comparison will be made of the theoretical effects, with those of the empirical findings. Consideration will also be given to interactions between the service sector and agriculture.

CHAPTER III

DATA GENERATION

Introduction

Since the problem statements in Chapter I were quite broad in scope,
a set of specific objectives, some in hypothetical form, will be set
forth in this chapter to establish these objectives. The necessary data,
their sources, and the procedure of analysis will then be discussed in
the light of these objectives.

Specific Objectives

To describe the gross economic characteristics of Choctaw County
under the following hypotheses:

that Choctaw is an area of relative under-development;

that the county is still largely rural;

that farm income is low;

that recent development has occurred;

that decreases in population have been the important
component of this development.

To examine structural effects of recent out-migration:

with respect to rural _versus_ urban differences;

with respect to age, sex, and color.

To test the hypotheses that as development occurred, the agri-
cultural sector has experienced relative decline by examining:

proportion of the work force employed in agriculture;

proportion of income received by agriculture;

comparison of these two facets of decline.

To investigate the impact of local development on agriculture by observing:

trends in the scale of farming;

trends in the type of farming;

out-migration from rural areas and rural employment;

actual change in farm factor markets;

attitudes of farmers toward their markets for factors.

To test the hypothesis that industrialization has taken place by enumerating trends in:

number of manufacturing firms;

size of work force;

income from manufacturing.

To test the hypothesis that the service sector has increased as development of supporting industry took place by examining the county income dependence on services.

To test the hypothesis that, as general economic development occurred, the county's dependence on unearned transfer payments has decreased by observation of trends in:

unearned transfer payments;

unearned transfer recipients.

To examine the structure of economic development over:

time periods; 1950-54, 1954-58;

sectors; agriculture, manufacturing, services, and unearned transfer;

components; growth and employment changes.

Data and Data Source

<u>Secondary</u> <u>data</u>. Secondary data were obtained from state and Federal Government documents and their abstracts. The United States Census reports of Agriculture, Manufactures, Retail-Trade, Population, Wholesale-Trade, and the Survey of Current Business. Welfare data were obtained from the Oklahoma Department of Welfare Annual Reports. Data for years not covered by a United States Department of Commerce Census were obtained from the Statistical Abstract of Oklahoma.

The greatest single restriction of this study has been the lack of sufficient detailed information on the county level.

<u>Primary</u> <u>data</u>. Three schedules taken of Choctaw County and personal interviews with FHA, SCS, and USDA representatives provide all of the primary data.

Two schedules were taken in 1958, one consisted of a survey of the service and manufacturing sector of Hugo, which is the only service-manufacturing center in Choctaw County. The method of personal interviewing was used on the entire manufacturing sector of Choctaw County. This survey was taken to determine the change in this sector's makeup from 1954 to 1958. Data as to the number of firms, type of firm; the number of people employed and their residence, the seasonality of the work, the wage rates and production volume were gathered so as to determine not only the number of people so employed but how fully employed, and at what wage rates, in order to determine the job opportunities available for rural people desiring off-farm work, the growth of industry in the county since 1950, the per capita income added by manufacturing and the possibility of still further expansion in this section.

The second schedule was of the rural sector of Choctaw County. In order to determine changes in the rural farm and rural non-farm situation of Choctaw County since the 1955 study, a small sample was drawn from the group which made up the original sample. Care was taken to make this sample as representative as possible of the various income and occupational groups within the county.

A copy of the original survey map was obtained and from the areas originally sampled, a sub-sample was drawn. The pattern of the original sampling which divided the county into six sectors, was followed. With the aid of county extension specialists, rural farm and rural non-farm households were selected as to their representation of the various occupational and income groups. Five families were thus selected from each sector, providing a sample size of 30.

Due to out-migration and changing of residence by many from the original sample, complete randomization of this smaller sample was impossible to achieve. Therefore, it is understood that there may be some non-representative findings which could be misleading. Nevertheless, even under these restrictions, this sample is assumed to be a fair approximation of the true population distribution.

The third, and original survey from which primary data were drawn, was of the rural sector taken in 1955. Choctaw County was designated by the State Agricultural and Industrial Development Committee as a Pilot county under the Rural Development Program of the United States Department of Agriculture. The county group concerned with agriculture decided that a survey of the rural area was needed to provide information that would aid in the development of better plans and procedures. The survey was designed by agricultural research extension personnel of

Oklahoma State University with assistance from county workers. Data from this survey pertaining to economic development, agricultural production, employment opportunities, size of farms, and farm income will be taken and incorporated into the present study.

Data classification. Primary data were classified to conform to the classification of secondary data in a manner consistent as feasible. The lack of county data forced aggregation of some sub-sectors into a residual figure in order to obtain some degree of consistency with the pattern of development as outlined by theory.

The business sector of Choctaw County was divided into two sub-sectors:

> Manufacturing Sector—Contains all firms which produce a finished or semi-finished product from raw materials (gloves, furniture, etc.).
>
> Service Sector—A residual which includes all firms not classified as manfacturing or mining. These are firms dealing in sale of a commodity or services to individuals (grocery store, gas stations, laundries, barber shops, etc.).

This classification of the business sector provided data that is compatible throughout the study. The United States Census of Manufactures defines manufacturing as the mechanical or chemical transformation of inorganic or organic substances into new products. The assembly of component parts of products is also considered to be manufacturing if the resulting products is neither a structure nor other fixed improvement. Thus, the reorganization of sectors should not materially reduce the reliability of the figures so obtained.

The rural sector was divided into two sub-sectors, (sub-sectors pertain to income levels, incomes less than $2,500 per year and incomes greater than $2,500 per year):

Rural Farm—Included all rural residents whose farm income was greater than $2,500 per year.

Rural Non-Farm—Includes all rural residents whose farm income is less than $250 per year.

The Choctaw County population was divided into the three traditional classes:

Pre-Labor Force—All children under the age of 15 or still attending school.

Labor Force—Includes all males and working females, 15 to 65 years of age.

Post-Labor Force—Includes all aged and disabled people and the aggregate of the welfare group.

CHAPTER IV

EMPIRICAL ANALYSIS

Gross Comparative Economic Development 1940—1958

The comparative levels and the changes over time of real

personal income per capita provide a simple though gross introduction

to the analysis of recent economic trends in Choctaw County. Table I

shows some of these gross measures of economic welfare and development

in the county as compared to the state and nation.

It may be seen that there has been considerable economic develop-

ment in both the county and the state with per capita incomes increased

by 95.9 ,percent in the county and 102.5 percent in the state during the

18 years until 1958. This represents an average yearly rate of increase

of 5.7 percent for the state and 5.3 percent for the county.

The rate of increase, then, was only slightly greater for the state

than for the county. However, Choctaw started out with an income per

capita of only 54.2 percent of the state in 1940 and in 18 years this

index has fallen to 52.4 percent. Economic development in Choctaw

County, although great, has not been sufficient even to maintain its

relatively low position in relation to the state. Figure I illustrates

the disparity between county and state income per capita, which has in-

creased in the period 1940—58 by $321 constant dollars.

When compared with the United States, it can be seen that the level

of welfare in Choctaw is seriously lower, less than 40 percent of the

TABLE I

Economic Welfare and Development in Choctaw County
Compared with Oklahoma and the United States, – 1940–58

Item	1940	1950	1954	1958
Economic Welfare[a] ($/cap.)				
United States	993	1450	1539	1686[d]
Oklahoma	635	1067	1185	1286
Choctaw	344	470	647	674
U. S. and Oklahoma Absolute Disparity ($/cap.)	358	383	354	400
State and County Absolute Disparity ($/cap.)	291	597	538	612
Annual Rate of Economic Development[b] (%)				
United States		4.60	1.55	3.13[d]
Oklahoma		6.80	2.77	2.13
Choctaw		3.66	9.41	1.43
U. S. Comsumer Price Index[c]	58.7	106.2	117.7	123.7

Source: United States Department of Commerce, Personal Income by
States Since 1929, Supplement to the Survey of Current
Business, (Washington D. C., 1956).

Statistical Abstract of Oklahoma, 1956–1959, (Bureau of
Business Research, University of Oklahoma, Norman, Oklahoma,
1956–1959).

1958 Choctaw Survey.

[a] Personal income in constant dollars divided by total population.

[b] Change in income per capita divided by the time span multiplied by
the base income per capita.

[c] U. S. Consumer Price Index, 1947–49 = 100, all items.

[d] 1957 Figure for the United States. In August, 1958, deflated
personal income was flowing at an annual rate of $1,656.

FIGURE 11
TRENDS IN INCOME PER CAPITA FOR CHOCTAW
COUNTY AND OKLAHOMA, 1940-1958
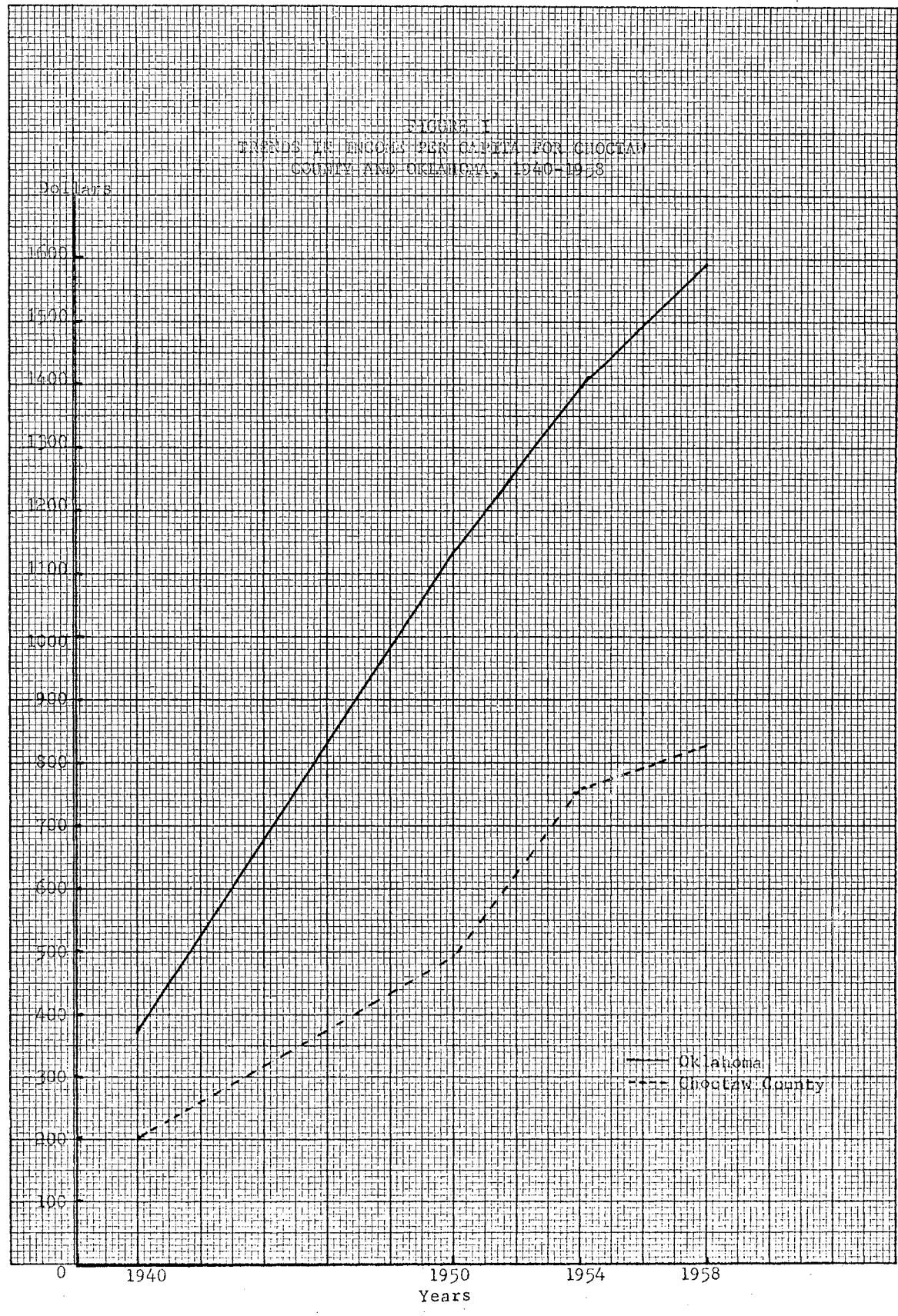
United States figure in 1958. The welfare index of the state compared
to the nation was 63.9 percent in 1940, but in 1958 relative state wel-
fare had increased to 76.2 percent of the nation. Nevertheless, the ab-
solute disparity had increased slightly from $358 to $400 in the same
period as measured by constant 1947--49 dollars. In summary, the state
was barely holding its own with the nation, while Choctaw County was re-
trogressing in relative terms. If any significant economic development
had taken place, it was not yet showing itself in a relative sense al-
though on absolute terms the county had shown improvement.

The welfare index, income per capita, has two components; income
and population. Trends in these components must be examined in an analy-
sis of economic development.

Population trends. During the decade 1940--1950, 36.6 percent of
the population had out-migrated in Choctaw against 16.8 percent in the
state.[1] In the following eight years, state population increased by 0.5
percent whereas Choctaw population decreased another 18.2 percent.[2]
Figure II illustrates the comparative population trends in absolute
numbers.

It can be readily seen that the state population trend has shown re-
lative increases since 1950, although not as much as the expected natural
increase. The county on the other hand, had a declining population until
1954 but one that increased sharply during the following four years.

---

[1] James D. Tarver, Population Change and Migration in Oklahoma 1940-
-1950, Bulletin No. B-485, Oklahoma State University, 1957.

[2] Population changes for 1950--1958 were obtained in the same manner
as J. D. Tarver accomplished the 1940--1950 estimates. Appendix Table I
illustrates this method in computing the county estimates.

FIGURE II

POPULATION TRENDS FOR THE UNITED STATES, OKLAHOMA, AND
CHOCTAW COUNTY, 1930-1955
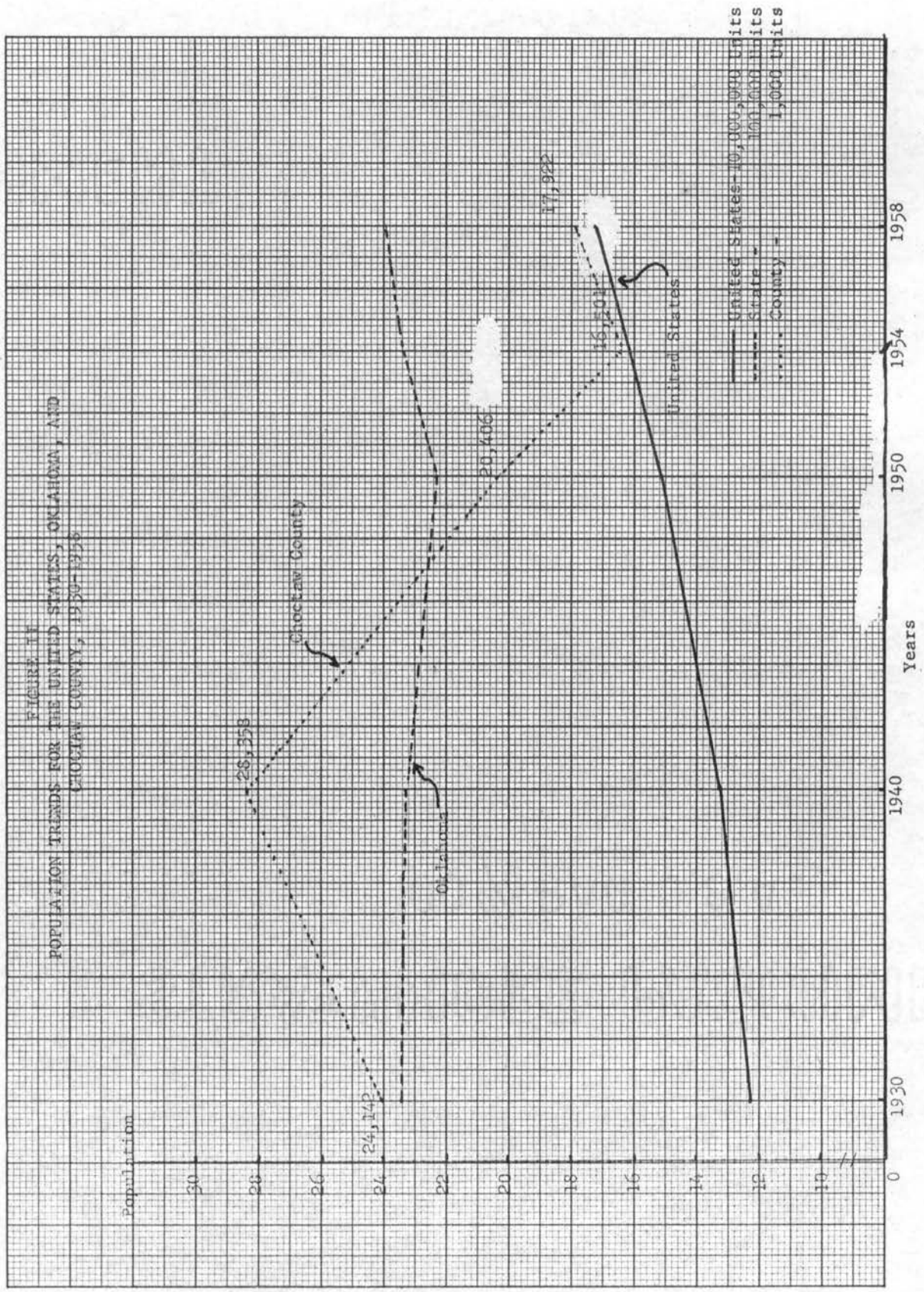
Table II contains the population figures used in constructing Figure II and shows the relative population changes which have occurred.

TABLE II

Relative Population Change in Choctaw County Compared
with Oklahoma 1940--1958

Area	1940	1950	1954	1958
State	2,334,437	2,233,351	2,340,344	2,339,603
County	28,358	20,406	16,501	17,922
Relative Change[a] (%)				
State		-4.52	4.61	2.46
County		-38.96	-23.66	7.92

Source: United States Department of Commerce, Bureau of the Census, Characteristics of the Population 1939--1949, (Washington D. C., 1939--1949).

Statistical Abstract of Oklahoma, 1956--1959, Bureau of Business Research, University of Oklahoma, Norman, Oklahoma, 1956--1959).

1958 Choctaw County Survey.

[a]Relative population change $\frac{\Delta P}{P_{1AP}}$, population change divided by the population after the change.

Later in this chapter, these trends in population will be further analyzed to illustrate the urban-rural components of these changes.

Income trends. Changes in total real income provide a measure of economic growth. Care must be taken in the use of this gross measure, for it does not consider the income source and therefore may lead to erroneous conclusions. Later in this chapter, income will be analyzed by its source.

Income, to be comparable in a welfare sense over time, must be reduced to dollars of constant purchasing power. Personal income in Table III, has been deflated by the U. S. Consumer Price Index to constant 1947--1949 dollars. It is necessarily assumed that the commodity composition of this index will adequately reflect the freely changing structure of local consumer wants to that inter-temporal comparisons may be made. Inter-regional comparisons will be less valid due to differences in local purchasing power. However, the comparison of changes in real income as defined do provide a reasonable comparison of economic growth for Choctaw and the state. Some underestimation of the purchasing value of county income must be allowed for in the analysis.

TABLE III

Economic Growth in Choctaw County Compared
With Oklahoma, 1940--1958

Item	1940	1950	1954	1958
Personal Income[a] (constant dollars)	($1,000)	($1,000)	($1,000)	($1,000)
State	1,482,368	2,383,986	2,773,308	3,085,890
County	9,738	9,601	10,671	12,301
Yearly Relative Economic Growth[b] (%)				
State		6.07	4.10	2.82
County		-0.14	2.77	3.82
United States Consumer Price Index[c]	58.7	106.2	117.7	123.7

Source: Ibid., Table I

[a]Total personal income in constant 1947--49 dollars.

[b]Change in personal income divided by the time span.

[c]Consumer Price Index, 1947--1949 = 100, all items.

From Table III, it can be seen that both the state and county have experienced economic growth; 108.1 percent for the state and 26.3 percent for the county. This was better than doubling of real personal income for the state in 18 years or a rate of 5.7 percent growth per year. The county did not fare as well, personal income had been at a relatively low level to begin with, and some retrogression in the 1940--1950 decade. After 1950, economic growth continued at a low 1.5 percent per year.

There has been a significant change in the 1950--1958 period. The state has had an increasing in real personal income trend, which has been increasing at a decreasing rate, over the entire study period. The county, on the other hand, experienced a decreasing income trend in the first decade of the study, but since 1950, the growth trend is increasing at an increasing rate. Of course, it must be remembered that the level of income upon which this growth is occurring still is far below the average level within the state.

This is the last four years of study the county had experienced real economic progress with real income rising faster than the increases in population. The progress, however, has not yet been sufficient to overcome the disparity with the state nor, even, to close the gap.

Components of economic development. In the preceding three sections, real income per capita, population and real income trends were discussed in relation to time. This section analyses relative economic development (rate of change in income per capita over time) into its components, economic growth, and population changes for the three periods of this study. The county data will be compared with those for the state. Since the rate of economic development is defined as the relative change in real

TABLE IV

Component Contribution to Economic Development in Choctaw
Compared with Oklahoma 1940--1958[a]

Component	Rates of Change					
	1940--1950		1950--1954		1954--1958	
	State	County	State	County	State	County
	%	%	%	%	%	%
Economic Development[b]	68.00	36.66	11.07	37.65	8.52	4.17
Economic Growth[c]	60.76	-1.40	16.41	11.27	11.30	13.25
Population Change[d]	4.52	38.96	-4.60	23.69	-2.48	-7.92
Interaction	2.72	-0.80	-0.75	2.64	-0.29	-1.16

[a]To determine economic development and component contribution, the equality

$$\frac{\Delta W}{W} = \frac{\Delta Y}{Y} - \frac{\Delta P}{P + \Delta P} - \left(\frac{\Delta Y}{Y} \cdot \frac{\Delta P}{P + \Delta P} \right) \quad \text{was}$$

used:

Where

$$\frac{\Delta W}{W} = \text{relative development;}$$

$$\frac{\Delta Y}{Y} = \text{relative growth;}$$

$$\frac{\Delta P}{P + \Delta P} = \text{population change;}$$

$$\left(\frac{\Delta Y}{Y} \cdot \frac{\Delta P}{P + \Delta P} \right) = \text{interaction of growth and population.}$$

[b]Economic development $\frac{\Delta W}{W}$ figures from Table I

[c]Economic growth $\frac{\Delta Y}{Y}$ figures from Table III

[d]Population change $\frac{\Delta P}{P + \Delta P}$ figures from Table II

The economic development which occurred in the first decade observed was due primarily to loss of population in the county but for the state, relative economic growth was the main contributor. In fact, Choctaw's economy retrogressed slightly with respect to real income and there would have been deterioration in economic welfare had population not decreased by 39 percent.

income per person, this rate may be algebraically broken down into the contributions of relative change in persons and in real income (economic growth). Table IV summarizes the results with footnotes explaining the derivation of components.[3]

In the 1950--1954 period, the state's economic development was solely due to growth whereas, 62 percent of the county's development came about as a result of a continued population loss.

The state in the 18 years of this study has shown development and growth trends which are increasing at a decreasing rate. The county, from 1940--1954 had depended upon population loss for most of its economic development. Figures illustrating the 1954--1958 trends, indicate that a significant change has occurred. Economic development was due to relative growth while population change, being positive for the first time in 14 years, actually "retarded" economic development. This condition is often referred to as economic progress, that is, the rate of real growth out-weighing the rate of increase in population.

Characteristics of the Population

In the preceding section population was analyzed in terms of general trends. The purpose of this section is to describe the composition of the population and the sector contribution to out-migration.

----

[3]

This analysis was taken from a manuscript: E. J. R. Booth, _Economic Change in Eastern Oklahoma_, in preparation for Vanderbilt University Ph.D Thesis, 1959.

Population distribution. Population composition by sector over time will be analyzed in the following section. Table V contains the proportional distribution of Choctaw's population compared with that of the state.

TABLE V

Population Distribution by Sector, Choctaw County
Compared with Oklahoma 1940--1958[a]

Sector[b]	1940		1950		1958	
	State %	County %	State %	County %	State %	County %
Urban	37.6	20.9	51.0	29.3	c	39.2
Rural non-farm	22.7	22.0	24.2	26.0	c	23.8
Rural farm	39.7	57.1	24.8	44.7	c	37.0

Source: Appendix Table II and III

[a]Sector population as a proportion of total population.

[b]Sector designation is that used by U. S. Bureau of Census.

[c]Data unavailable.

An important characteristic of county population is the high proportion of rural farm to urban residents. Where in 1940, the state had approximately an equal proportion of its population in rural farm and urban sectors; the county had a 2.5 to 1 relationship.

In 1958 the county had reached a population distribution similar to that which the state had 18 years previously. There are no figures available for the state but from the 1940--1950 trend and increased industrialization throughout the state, it would be expected that urban population approaches 60 percent of the total and rural farm population 20 percent.

From this analysis it can be seen that the prosperity of the county must have been significantly affected by the prosperity in the relatively large but decreasing rural farm sector.

Out-migration and sector contribution. The preceding section analyzed the county's population trend in general terms. Table VI provides detailed information as to population trend by sector contribution.

TABLE VI

Distribution of Choctaw County Population by Sector (1940--1958)

Sector[a]	1940	Change 1940--50	1950	Change 1950--58	1958
County	28,358	-7,952	20,406	-2,484	17,922
Urban	5,909	175	6,084	929	7,013
Rural Non-Farm	6,240	-1,032	5,208	-928	4,280
Rural Farm[b]	16,209	-7,096	9,113	-2,483	6,630

Source: United States Department of Commerce, Bureau of Census, Characteristics of the Population 1939--1949, (Washington, D. C., 1939--1949)

1958 Rural Survey

[a]Sector designation is that used by the U. S. Census of Population.

[b]As of the 1950 Census of Agriculture, places of three or more acres were counted as farms if the annual value of agricultural products, exclusive of home-garden products, amounted to $150 or more. Places of less than three acres were counted as farms only if the annual value of sales of agricultural products amounted to $150 or more. For the 1945 and earlier censuses of agriculture, the definition of a farm was somewhat more inclusive. Farms, for census purposes, included places of three or more acres on which there were agricultural operations, and places of less than three acres with agricultural products for home use or for sale with a value of $250 or more. For places of three or more acres, no minimum quantity of agricultural production was required for purposes of enumeration. The change in the definition of a farm has but a minor effect on the total, for the places affected by this change ordinarily account for less than one percent of total for a county or state.

FIGURE III

SECTOR POPULATION TRENDS OF CHOCTAW COUNTY, 1930-1958
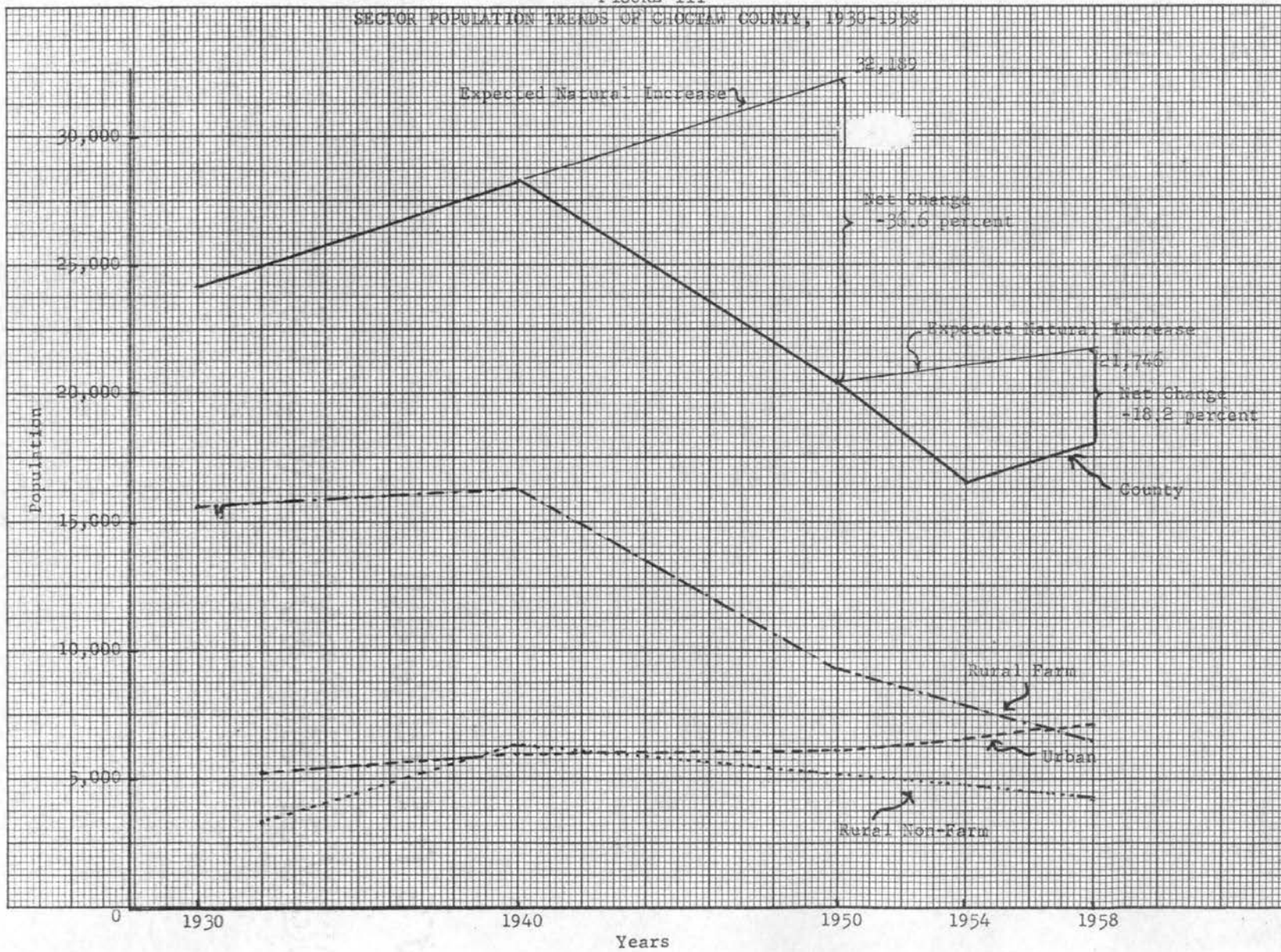
Choctaw County population in 1940 was the largest of the study period. With the 1940 figure as the base, the expected natural increase by 1950 would have increased the population to 32,187. The actual enumerated population for 1950 was 20,405 persons, or a net out-migration of -36.6 percent.[4] The magnitude of this decrease can be more readily understood by referring to Figure III.

As seen in Table VI, the absolute population decrease was a -28.0 percent. In this decrease, the rural-farm sector played a significant part. There was a decrease of 7,096 persons, or, 43.8 percent of the rural farm population. The change in definition of rural-farm population decreased by 1,032 persons, or, 76.6 percent, while the urban sector gained 75 persons.

Some part of the rural-farm population must have entered the other two sectors, and members of these sectors may have exchanged positions or migrated out of the county. Due to the magnitude of the decrease in rural-farm population, it can be inferred that the rural-farm sector was the main contributor to out-migration in the 1940--1950 period. Figure III illustrates these trends.

In the eight years, 1950--1958, Choctaw County again experienced out-migration. With 1950 as the new base, the expected natural increase would have increased the population to 21,746. The actual enumerated population was 17,922, a net decrease of 18.2 percent, somewhat less on a yearly basis, than during the preceding decade.

Once again rural-farm population decreased, this time by 2,471 persons, or, 27.2 percent of the rural-farm population. During the same period, rural non-farm population decreased by 928 persons, or 17.9 percent and the urban sector gained 929 persons.

---

[4]Appendix Table I shows the method of computation of net out-migration.

It is conceivable that the total of county net loss of population of 2,484 persons could have come solely from the urban group and transfers of people between sectors (including a consideration of changes in census definition) accounted for the net increase on the urban sector. Nevertheless, considering the higher rates of natural increase in the rural-farm sector, it seems reasonable to infer that this sector contributed a major portion of the county's out-migration. At all events, only the rural-farm sector experienced a net loss at all equivalent numerically with the total net loss in the county.

Migration by age group, sex, and color. James D. Tarver[5] demonstrated that migration was selective as to age and sex in Oklahoma during the 1940--1950 decade. Table VII has been constructed from Appendix Figures IV and V to illustrate the population distribution by age and sex in 1940 and 1950. Appendix Table III provides data as to the proportion of non-white population.

The only available figures of population distribution by age and sex are for 1940 and 1950. Even under this restriction, an understanding of the effects of migration on the potential work force can be obtained.

It has previously been mentioned that the 1940 population was the greatest of the study period. In 1940 the productive age group, 15 to 64 years of age, made up 60 percent of Choctaw's population; 30.13 percent was male and 29.85 percent was female. The median age was 23.5 years.

The expected number to be in the productive group for 1950 was

---

[5] James D. Tarver, Population Change and Migration in Oklahoma 1940--1950, (Bulletin No. B-485, Oklahoma State University, 1957).

TABLE VII

DISTRIBUTION OF CHOCTAW COUNTY POPULATION BY AGE GROUP AND SEX, 1940-1950

Years	1940				1950 (expected)[a]		1950 (enumerated)			
	Male	Percent	Female	Percent	Male	Female	Male	Percent	Female	Percent
65 and over	944	(3.33)	744	(2.60)	1,002[b]	837	1,166	(5.70)	1,087	(5.69)
15-64	8,543	(30.13)	8,464	(29.85)	10,840	10,869	5,536	(27.55)	5,919	(28.95)
55-64	1,002	(3.53)	837	(2.95)	2,030	1,967	939	(4.59)	944	(4.62)
40-54	2,030	(7.16)	1,967	(6.94)	2,855	2,974	1,621	(7.92)	1,655	(8.09)
25-39	2,855	(10.07)	2,974	(10.49)	2,656	2,686	1,593	(7.79)	1,836	(8.98)
15-24	2,656	(9.37)	2,686	(9.47)	3,299	3,242	1,483	(7.25)	1,484	(7.25)
5-14	3,299	(11.63)	3,242	(11.43)	1,586	1,536	2,270	(11.10)	2,045	(10.00)
Under 5	1,586	(5.59)	1,536	(5.42)	c	c	1,169	(5.71)	1,163	(5.67)

Source: United States Department of Commerce, Bureau of Census, Characteristics of the Population 1939-1949, (Washington, D. C., 1939-1949).

[a]These figures were obtained by projecting 1940 population distribution forward by 10 year intervals.

[b]This figure plus some residual of persons over 75 years.

[c]Data unavailable.

10,840 males and 10,869 females. The enumerated population was 5,636 males and 5,919 females, a net loss of 5,442 persons over the 1940 distribution and 9,971 from the expected level 1950. In 1950 the productive age group, 15 to 64 years of age, made up 56.60 percent of Choctaw's population. There was also a slightly larger proportion of the population in the "65 and over" age group and slightly smaller proportion below 15 years of age. Non-white population which was 22.1 percent of the total in 1940, decreased to 22.0 percent. Median age rose sharply to 27.7 years.

During the 1940—1950 decade, 67 percent of the out-migration was from productive ages with a 3.0 percent greater proportion of males to females making the exodus. The non-white population is as active in migration as the white population.

Although figures are not available for 1958, it would be expected that the general pattern remains the same.

The out-migration, which has occurred in Choctaw County, was accomplished at the expense of decreasing the proportion of persons in the productive age groups of the remaining population. A more significant factor is the change in the proportional make-up of the county. Where, in 1940, the county's population was predominantly rural farm, in 1958 the rural farm and urban sectors are roughly the same proportion of the total.

The great out-migration of rural farm residents results from a relatively declining agricultural sector. In the following section, this decline will be analyzed as to source and probable cause and effect.

The Agricultural Sector

Relative change. In the preceding section, it was shown that the rural-farm sector lost a large proportion of its population; much larger in absolute number and its proportion to the total than for the other sectors. A declining agricultural population and number employed in this sector indicate that agriculture in Choctaw County is declining. This is a condition of economic progress as outlined by Colin Clark.[6] The number engaged in agriculture must first decline relative to manufacturing, which in turn will decline relative to services. Table VIII shows the declining employment level of Choctaw County agriculture in relation to the other sector employment, 1940—1958.

From Table VI, it can be seen that the rural-farm population decreased by 59.6 percent in the study period, 1940—1958. During this same period the number employed in agriculture declined by 48.4 percent (see Table VIII). Where in 1940, agricultural employment made up 59.1 percent of the total employed, in 1958, the proportion decreased to 41.5 percent. The decline is continuing at an increasing rate as indicated by the following data: In the 1940—1950 decade, employment decreased 23.9 percent or 2.39 percent per year; for the period 1950—1954, employment decreased an additional 12.9 percent, or 3.22 percent per year; and in the 1954—1958 period, employment again decreased, this time by 22.4 percent or 5.60 percent per year.

This analysis has shown that Choctaw County agriculture is declining, in fact, at an increasing rate. The farm work force is

---

[6] Colin Clark, The Conditions of Economic Progress, (MacMillan and Co., Ltd., New York, 1957), p. 492.

declining at a slower rate than its population. The following section
analyses this decline to determine the components of the change and its
possible causes.

TABLE VIII

Employment by Industry for Choctaw County 1940—1958

Year	1940	1950	1954	1958
Total Labor Force[c]	8,804	5,877	d	d
Total Employed	6,633	5,719	5,358	4,858
Agriculture	3,922	2,986	2,601	2,019[a]
Mining	16	14	31	24
Manufacture	124	139	87	303
Service	2,571	2,570	2,436[b]	2,512[b]
Personal Services	744	789	843	877

Source: United States Department of Commerce, Bureau of the Census,
Characteristics of the Population, 1939—1949, (Washington,
D. C., 1939—1949).

United States Department of Commerce, United States Census
of Agriculture, 1939—1954, (Washington, D. C., 1939—
1954).

United States Department of Commerce, United States Census
of Manufactures, 1939—1954, (Washington, D. C., 1934—
1954).

1958 Choctaw Survey

[a]This figure is the average number of workers per farm in 1954 times
the estimated number of farms in 1958.

[b]Average number of workers per firm in 1950 times the number of firms
in 1954 and 1958.

[c]Civilian labor force.

[d]data unavailable.

Components of the decline. Factors which contribute to a given level
of employment in agriculture are: Farm numbers and size, percent of

TABLE IX

COMPARATIVE AGRICULTURAL TRENDS FOR CHOCTAW COUNTY,
1930-1958

Subject and Unit	1930[b]	1940	1950	1954	1958
			(Percent)		
Number of Farms[c]	3,159	- 3.7	-42.6	-31.1	-21.9
Average Size of Farms[c]	84.4 A.	18.7	45.0	37.9	24.1
Percent of Tenancy	73.1	63.8	28.1	16.2	11.4
Acres in Crops[c]	144,914	-35.0	4.3	-33.7	-25.2
Corn, Cotton, and Peanuts as Percent of Total Crop Acres	73.0	65.0	34.0	16.0	15.5
Acres of Pasture[c]	100,738	97.8	16.0	22.9	10.8
Number of Tractors[c]	18	205.6	730.9	51.2	a
Number of Horses and Mules[c]	9,929	-18.4	-32.3	-50.0	a
Number of Cattle[c]	12,802	65.6	14.2	45.7	8.5
Number of Hogs[c]	16,911	-30.2	2.2	-59.3	-20.6

Source: Figures are derived from Appendix Table VI.

[a] Data unavailable.

[b] The 1930 figures are designated as the base year.

[c] Percentage figures show the relationship of a specific year to that of the preceding year calculated. (" + " designates an increase over the preceding date and " - " designates a decrease over the preceding date).

tenancy, and type of production. Table IX has been constructed to show the proportional change in these factors which will be related to declining employment.

Choctaw agriculture had been traditionally a system of many small land holdings, with a majority of the farmers of the tenant class, specializing in row crop production. The nature of such an agricultural system requires a large agricultural population. Tenants on small acreages usually had few resources with which to work, other than family labor supply and therefore, families were large.

From the trends illustrated in Table IX, it can readily be seen that average farm size increased, while farm numbers have decreased, tenancy and row crop production have decreased. In the 18 years, 1940--1958, farm numbers decreased by 58.2 percent, average size of farm increased by 62.4 percent and farm tenancy decreased by 92.5 percent. While total crop production decreased by 40.4 percent, row crop production decreased by 70.5 percent.

Agricultural production changed from the labor intensive row crop production, to the more land intensive cattle production; cattle numbers increased 43.9 percent in this 18 year period. Livestock dependent on row crops for feed (hogs) declined 66.9 percent over the same period; while hay increased 69.5 percent and pasture 44.0 percent (in support of cattle production).

Another indicator of production change is farm expenditures. Appendix Table VIII contains data on specified farm expenditure and farm power source for Choctaw, 1940--1954.

Unfortunately, there is no formula by which increases in mechanical power can be compared with decreases in animal power to determine

whether there has been an increase or decrease in power use. However, gas and oil expenditures decreased by 22.1 percent in 1954 over the 1950 figure; machine hire decreased 20.0 percent and labor expenditures decreased 22.3 percent in the same four year period. Fertilizer expenditures in 1954 were approximately the same as in 1940 while expenditures for livestock feed increased by 35 percent.[7] There changes are all indicative of greater livestock production.

A comparison of data from the 1955 and 1958 Choctaw County Rural Surveys (Table X) further illustrates these agricultural production shifts. During this three year period, average size of farm in the sample area increased 8.8 percent, or an average of 2.9 percent per year. The 1958 figures show a 22.44 percent decrease in the proportion of crop farms to total farms. Livestock farms showed a minor increase in proportion, livestock-crop farms had a 21.25 percent proportional increase. These figures lead to the conclusion that even the remaining crop farmers are diversifying to include livestock.

This change would allow the crop farmer to be more fully employed throughout the year and thus increase their income. It has been previously stated that the change in cropping has been to the non-row crop variety, (grass-land farming), which would tend to reduce labor requirements and therefore provide some further surplus labor potential on the farms of the county. Referring once again to Table X, it can be seen that although the percentage of farmers desiring off-farm employment has

[7]The 1958 Choctaw Survey was able to determine the character of the increased livestock feed expenditures. Local feed dealers stated that sales of protein supplement and calf starters are the only feeds which have shown any increase in the past 14 years, while hog and poultry feed sales have declined.

decreased since 1955 (a statistically significant decrease), there still remains a large proportion of farmers desiring additional employment.

These changes have evolved into an agricultural system of larger holdings, a smaller percent of tenancy, and a much smaller agricultural work force. The causes of the change are many, but probably the most important are: The wearing out of a once productive soil by constant and improper row cropping, periodic droughts in the area, boll weevil infestations, and the advent of acreage allotments on the important row crops (cotton and peanuts). Crop farming, which was already at a level close to subsistence, just could not withstand these events and had to eventually decline in favor of the present production system.

The following analysis of farm markets and farm product processing firms is corollary to the changes in production.

Farm markets and farm product processing firms. The development of agricultural markets and their effects on economic developments are important in approaching the low income problem. W. H. Nicholls believes that the efficiency, adequacy, and competitiveness of marketing services available to a community are probably related to its stage of economic development.[8] He believes that a change in marketing services either accompany or lead production changes in agriculture.

As part of the rural survey, each farmer was asked questions pertaining to the markets for farm products which he faced. The sample, although small, yielded information consistent with the above mentioned theory of economic development as related to markets.

_____

[8] William H. Nicholls, unpublished report of the Subcommittee on Low Income Rural Areas, S. S. R. C. Committee on Agricultural Economics.

TABLE X

RURAL CHARACTERISTICS FOR CHOCTAW COUNTY, 1955 and 1958

Item	1955	1958
Sample Characteristics		
Segments Sampled	6	6
Areas Sampled	76	26
Households per Segment	36.45	1.08
Proportion of Rural Non-Farm Residents[c]	61.35 percent	20.00 percent
Proportion of Livestock Farmers	43.76 percent	45.83 percent
Proportion of Crop Farmers	34.94 percent	12.50 percent[b]
Proportion of Livestock-Crop Farmers	12.08 percent	33.33 percent[b]
Proportion of Livestock-Product Farmers	10.00 percent	8.33 percent
Change in Average Farm Size		+8.8 percent[a]
Income[d] (< $2,500/year income)		
Rural Residents	82.00 percent	50.00 percent
Rural Farm (no off-farm income)	58.00 percent	38.00 percent
Rural Farm (with off-farm income)	38.00 percent	38.00 percent
Employment		
Proportion of Farmers Interested in Off-farm Employment	40.00 percent	23.00 percent
Proportion of Non-Farmers Interested in Further Employment	38.00 percent	50.00 percent
Proportion of Farmers Employed in Non-farm Work	e	20.00 percent

TABLE X Cont'd

Source: 1955 Choctaw County Rural Survey

1958 Choctaw County Rural Survey

[a] The statistical test of significance, "t"-test, has proven the change to be a significantly positive increase at the 95 percent level of confidence.

[b] The Chi-Square Test was applied, the computations show a significant change at the 95 percent level of confidence.

[c] Not tested due to different sampling procedure that ensured a high proportion of farmers selling "250 or more of farm sales.

[d] Income figures are gross returns to recipient; for farm income, receipts from product sales was used; for non-farm employment, gross earned income was used.

[e] Not comparable due to footnote "c".

As shown in Table XI, farmers selling cattle were completely satisfied with the local markets; there were no criticisms as to adequacy of competition of services. The farmers selling livestock products were fairly satisfied with markets; criticisms of livestock product markets made up only 29.2 percent of market criticism and these were for the lack of outlets for small quantities of surplus "B" milk not used by the farm family. Crop farmers showed the greatest dissatisfaction with the markets they faced. They were dissatisfied with competition in the markets, prices received, and the lack of a market for small quantities of truck crops which were surpluses from their farm gardens.

Some of the lack of competition in the markets for farm crops came about as a result of a decrease in the number of firms processing these products. Appendix Table X shows the change in Choctaw industry by industrial group. One of the firms which went out of business was a peanut processing firm. Although cotton gins were not listed in any of the

TABLE XI

FARM PRODUCT MARKET INFORMATION FOR CHOCTAW COUNTY, 1958

		Type of Product Sold			
				Livestock	
		Total	Cattle	Product	Crop
A.	Method of Transport				
	(1) Self	65.00%	53.85%	7.69%	38.96%
		26	14	2	10
	(2) Contract	22.50%	66.67%	22.22%	11.11%
		9	6	2	1
	(3) Dealer Pick-up	12.50%	20.00%	20.00%	60.00%
		5	1	1	3
	Grand Total[a]	40	21	5	14
			55.26%	7.90%	36.84%
B.	Number of Outlets		18.18%	36.36%	45.46%
		11	2	4	5
C.	Choice of Outlets				
	(1) Price		72.41%	6.90%	20.69%
		29	21	2	6
	(2) Service	0			
	(3) Location		67.74%	6.45%	25.81%
		31	21	2	8
	(4) Other[b]			20.00%	80.00%
		5		1	4
D.	Number of Criticisms of Available Markets				
	(1) Lack of Competition			20.00%	80.00%
		5		1	4
	(2) Distance	0			
	(3) Price			33.33%	66.67%
		3		1	2
	(4) Need a "B" milk and egg market			28.50%	71.50%
		7		2	5
	(5) Market for small amounts of truck crops				100.00%
		9			9
TOTAL		24		12.0%	88.0%
				4	20

Source: 1958 Choctaw Survey.

[a]Grand total differs from total farmers surveyed (26) due to sale of products under more than one category.

[b]All choices listed as "other" were due to lack of other outlets for products sold.

industrial groups, their numbers are significant in analyzing changes in agricultural production. Prior to 1950, there were six cotton gins in Choctaw County, the 1958 survey found only one still in operation.

Apparently, from the above analysis, the markets for livestock and livestock products have become more favorable than those for farm crops. The exodus of firms processing these farm crops has made the market even less favorable. A market situation of this sort correlates with the present trend away from crop production to increased livestock farming where markets have generally become adequate to handle the new product but inadequate for the old.

Agricultural income. A declining agricultural work-force in relation to a developing economy, would theoretically indicate an increase at least in per-worker income to the residual work force in agriculture. Table XII contains a comparison of agricultural and total county income 1940—1958.

For the decade, 1940—1950, total county income from all sources remained rather constant but agricultural income declined 54.6 percent. Where in 1940 agriculture's contribution to total income was 25.2 percent, in 1950 it had decreased to 11.9 percent of the total. The 1954 income showed a decline of 34.4 percent to only a 6.8 percent contribution to total county income. Only the 1958 figures indicate any change in the downward trend in agricultural income, an increase of 6.2 percent over the 1954 figure but agriculture's contribution to total county income declined to 6.3 percent.

Income per firm provides another measure of economic welfare and therefore is a significant indicator of what effect the decline has had on the residual operating units left in agriculture. As indicated in Appendix Table XII, not only total agricultural income, but also income

TABLE XII

A. TOTAL AND SECTOR REAL INCOME FOR CHOCTAW COUNTY, 1940-1958[a]

Sector	1940	1950	1954	1958
Agriculture[c]	$2,453,000	$1,114,000	$ 731,000	$ 776,000
Value added by manufacturing	551,000	395,000	393,000	744,000
Services	6,220,000	6,421,000	7,890,000	8,927,000
Unearned Income[e]	514,000	1,671,000	1,657,000	1,854,000
Total	$9,738,000	$9,601,000	$10,671,000	$12,301,000

B. TOTAL AND SECTOR EMPLOYMENT FOR CHOCTAW COUNTY, 1940-1958

Sector	1940	1950	1954	1958
Agriculture[d]	3,922	2,986	2,601	2,019
Manufacture	124	139	87	303
Service	2,571	2,570	2,436	2,512
Unearned Income Recipients[e]	2,268	4,716	3,847	4,041
Total	8,885	10,411	8,971	8,875

C. INCOME PER WORKER FOR CHOCTAW COUNTY, 1940-1958[b]

Sector	1940	1950	1954	1958
Agriculture	$ 625	$ 373	$ 281	$ 384
Manufacture	4,443	2,842	4,517	2,455
Service	2,419	2,498	3,239	3,554
Unearned Income Recipient[e]	227	354	431	459
Total	$1,096	$ 922	$1,189	$1,386

TABLE XII cont'd

Source: United States Department of Commerce, United States Census
of Agriculture, 1939--1954, (Washington, D. C., 1939--
1954).

United States Department of Commerce, United States Census
of Manufactures, 1939--1954, (Washington, D. C., 1939--
1954).

United States Department of Commerce, Bureau of the Census,
Characteristics of the Population, 1939--1954, (Washington,
D. C., 1939--1949).

United States Department of Commerce, Personal Income by
States Since 1929, A Supplement to the Survey of Current
Business, (Washington, D. C., 1956).

Statistical Abstract of Oklahoma, 1958, Bureau of Business
Research (University of Oklahoma, Norman, Oklahoma, 1959).

Oklahoma Department of Public Welfare, Annual Report, 1940-
-1959, (Oklahoma City, Oklahoma, 1940--1959).

[a]Real personal income is personal income deflated by the Consumer
Price Index, 1947--1949 = 100, all items. Personal means is an
estimate of the current income, before income tax, by residents
from all sources, including inter-personal transfers and non-
monetary benefits.

[b]Income per worker is derived by dividing real income from each
sector by the number of workers.

[c]Net farm income was estimated by applying to each receipt from
farm sales the state ratio of "realized net income" to cash re-
ceipts. Realized net income includes Government payments, home
consumption, rental value of farm dwellings, and production ex-
penses; but does not include change in inventories. The state
ratio will perhaps underestimate county net farm income due to
heavier local reliance on home consumption and lower production
costs.

[d]Non-family hired labor is not included because farm income is a
net figure.

[e]Transfer payments which are not for past services are considered
as unearned income, (old age assistance, assistance to dependent
children, etc.).

per farm firm, declined in the 1940--1954 period. Although income per farm firm increased over the 1954--1958 period by 36.5 percent, the income per firm was only 76.5 percent of the 1940 level.

Of greater importance to welfare than the average income per firm, is the distribution of this income among the recipients. Figure IV compiled from Appendix Table X, graphically depicts the gross farm income distribution for Oklahoma and Choctaw County, 1954.

Unfortunately, income distribution figures for 1958 are not available, but the analysis of the 1954 distribution provides insight into the general agricultural income situation of the county.

As can be seen from the graph, gross farm income for both the state and county are skewed to the right. The 50 percent range of gross farm incomes for the state was between $390.16 and $4,315.45, while for the county, the range was between $192.84 and $1,181.83, or approximately 1/3 of the state level. The state had 63 percent of gross farm incomes below $2,499 whereas the county had 87 percent. The mean income for the county was $1,031.42; the state had $3,441.00, or three times higher mean income than the county. In addition, the county distribution has greater proportion of farms in the lowest two income classes and a greater slope thereafter than the distribution of all state farms. Beyond the second income class, the state distribution has greater proportion by class, and where there are 1.28 percent of the state's farmers receiving gross incomes greater than $25,00, there are none in Choctaw County.

The gross income figures obtained from the 1958 rural survey contribute to the analysis of agricultural development. Figures from the 1955 survey illustrated that 82 percent of the rural non-farm households

FIGURE IV
GROSS FARM INCOME
DISTRIBUTION OKLAHOMA AND CHOCTAW COUNTY, 1954
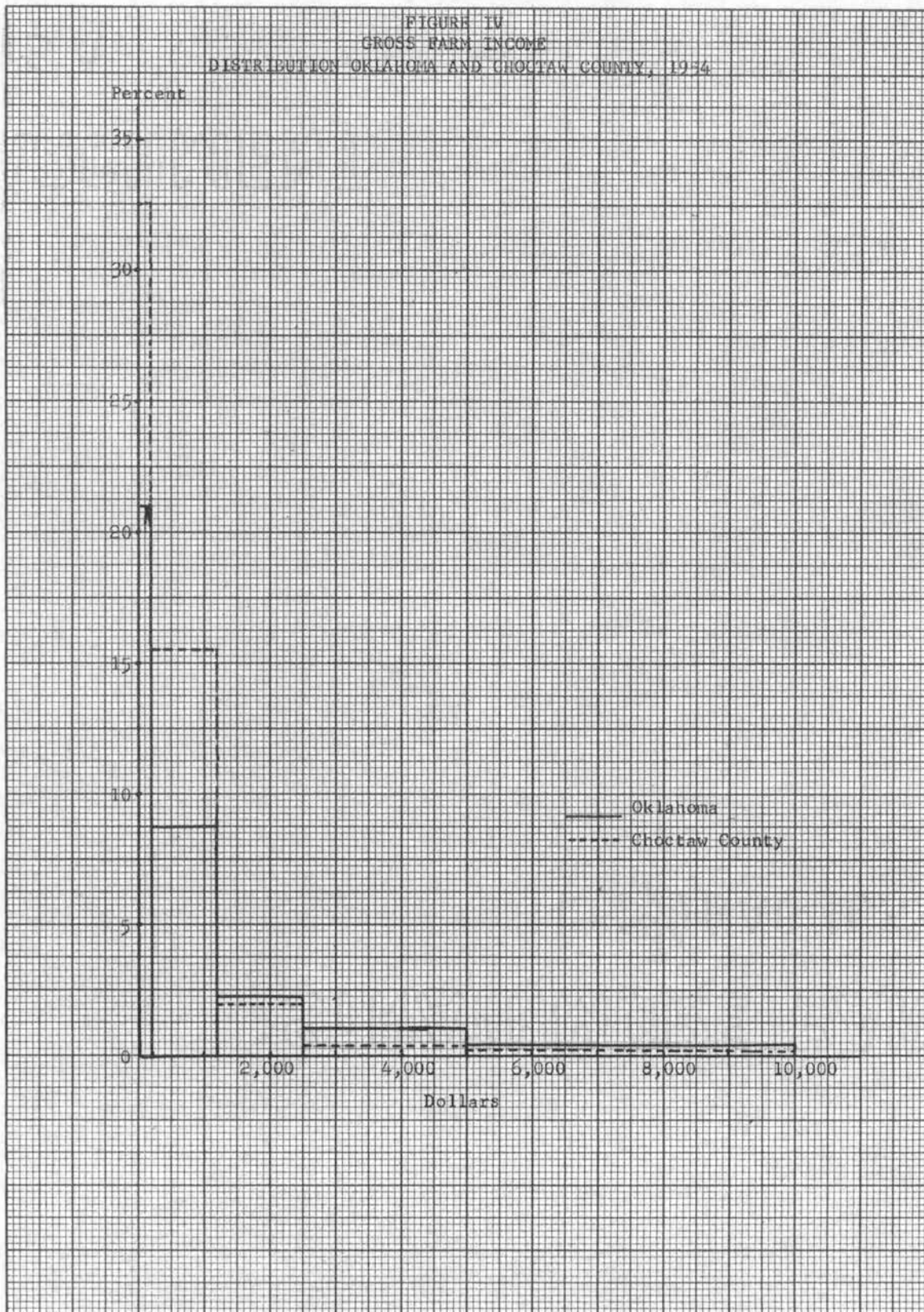
received less than $2,500 gross income per year (Appendix Table IX),
Whereas in 1958, only 50 percent received less than $2,500 gross income.
From the same Table it can be seen that 58 percent of the rural farm
households (with no off-farm employment), in 1955, earned less than
$2,500 but in 1958 there were only 38 percent. Rural farm households
(with off-farm employment) had the highest average income from all
sources in 1955 and the smallest proportion of households with less
than $2,500 gross income, 38 percent. The 1958 figures show no change
in this proportion. Average incomes per farm have increased and it
appears that the distribution of farm income has not become more unequal.

Later sections will be needed to analyze further the changes felt
on the agricultural sector. The farm work-force did decline both rela-
tively and absolutely, but income accruing to farm workers declined even
more. Only in the last four years of the study did income increase so
that the shrinking residual farm work-force obtained a per-worker income
greater than before. The distribution change has been to a more evenly
distributed gross income than was shown in Figure IV.

The Manufacturing Sector

Relative change. It has been previously stated that as an economy
develops, the number of persons engaged in agriculture first tends to
decline relative to the numbers in manufacturing. The changes in the
manufacturing sector will be analyzed in relation to this hypothesis in
order to determine the contribution of manufacturing to agriculture's
decline.

Reference is again made to Appendix Table VIII which lists the in-
dustrial firms of Choctaw County, 1940--1958. This Table shows that,

in absolute numbers, Choctaw County gained one manufacturing firm since 1940. During this 18 year period, firms changed between industry groups, as one firm left, another has taken its place. The most significant factor of the change is the type of new industry which has replaced the old. Three of the firms which left are; a peanut processing plant, a transport equipment firm, and a beverage bottling plant all of which were capital intensive requiring large labor-saving equipment. The firms which have entered the county since 1940 (a glove factory, two furniture factories, and a rodenticide factory) are more labor intensive operations.[9]

More important to economic development than the number of manufacturing firms, is the change in number of job opportunities and created income created by industrialization. The first question to be answered is; was the increase in manufacturing job opportunities large enough to absorb the surplus farm labor due to agriculture's decline. This is the topic of the following analysis.

Job opportunities. In the first decade of this study, 1940---1950, employment in manufacturing increased by only 15, while agricultural employment decreased by 936. The employment in manufacturing actually decreased by 52 jobs in the following four years, 1950---1954, while agriculture employment had a decrease of 385. The 1950---1958 period was the era of recent industrialization for the county and employment increased by 143.5 percent over the 1940 date. The actual increase in job opportunities in the four year period was 216. During this same period, agricultural workers had decreased by 582.

---

[9]The largest firm in the county is Wells--Lamont Glove Factory; it employs 176 persons. The glove factory which moved to Choctaw in 1954, was the result of a local industrialization self-help program. Next largest is the Whitson Food Products Co., hiring 31 persons, and is also the result of the self-help program. Another important firm is Carthage Wood Products, employing 28 persons.

Of course, it cannot be proved that all or even some of the new jobs were filled by the emigrating farm labor. Nevertheless, the above analysis of job opportunities has shown that in no period were job opportunities in manufacturing sufficiently large to absorb the number of workers leaving agriculture, let alone reduce the farm work force sufficiently to eliminate all surplus farm labor. However, the glove factory, which employs 170 persons, has hired 80 percent of its employees from rural sectors.

The remaining facet, of the change in manufacturing, needed to be analyzed is by far the most important. This is the change in value added by manufacturing (VAM),[10] a measure of real economic growth.

Income from manufacturing. Value added by manufacturing, as shown in Table XII, has had a downward trend from 1940—1954. Not only did the real dollar value decline but also the proportional contribution of manufacturing to total county income from all sources. Where in 1940, VAM contributed 5.66 percent to the total, by 1954 this proportion had decreased to 3.68. The 1954 level of employment, as well as VAM, was

---

[10] Although value added by manufacturing sometimes overestimates the contribution of manufacturing to personal income, the amount is small and there is considerable variability between the VAM to P. I. ratios between industries. For Oklahoma the total value added by manufacture was $580,633,000 in 1954 while personal income derived from manufacturing was estimated at $399,000,000 in 1955. Additional amounts of personal income would be added for consistency from certain forms of construction activity and wholesale trade. Contribution to personal income excludes other costs such as depreciation, labor maintanence costs, state and local taxes and advertising. In view of the nature of local county industry with ratios of other costs to total costs assumed for smaller than the state average, value added by manufacture was used as identical with contribution of manufacture to personal income. Employer contributions to social security will therefore be included in the residual service sector.

lowest of the study period. From 1954--1958 an 89.3 percent increase in value added manufacturing occurred. Contribution to total income of the county increased to 6.04 percent, is the largest proportional contribution recorded for the period 1940--1958. The value added by manufacturing in the 1954--1958 period can be attributed primarily to the local glove factory. The 1954 census of manufactures did not include a very substantial contribution by the firm due to the fact that it had just begun operation and was in the midst of a training program. In 1958 this firm produced an estimated $3000,000 VAM or 85.71 percent of the 1954--1958 increase. The remainder of the increase in VAM can be directly attributable to the new box-spring factory and expansion of the canning plant to include winter operations.

The changes recorded in Choctaw County in the manufacturing sector were concomitant with those in the agricultural sector, income declined in both sectors from 1940--1954. From 1954--1958 income in agriculture and VAM increased as did employment in manufacturing. Undoubtedly, there has been economic development in the county, but not until the 1954--1958 period, did the manufacturing sector render any possible assistance towards adjustment in face of the agricultural decline.

The third stage in the theoretical development pattern is the relative decline in numbers engaged in manufacturing relative to the number engaged in services. In the following section, changes in the service sector will be analyzed in relation to changes in agriculture and manufacturing.

The Service Sector

Data for the service sector are derived as a residual from the other sectors due to the lack of detailed information on the county level.

This aggregation is not in-compatible with economic development theory, which segregates the economy into primary, secondary, and tertiary industry; tertiary industry being the aggregate of an economy's services. Unfortunately, there is little data upon which to base the contribution of tertiary industries except as a residual, as now examined, are earned retirement incomes, head rights, unemployment payments and many other unassigned income sources. It is not expected that this aggregation conceals contrary trends of the components of this residual income, since retired persons and the unemployed have apparently shown sufficient changes since 1950. Consideration must also be given to the fact that the true tertiary industries reflect development in the wealth producing sectors almost simultaneously, while social security, private pensions, etc., tend to remain at a rather fixed level or at best, lag far behind the economic development of an area.

Relative change. The following Table, Table XIII, contains the aggregated service establishments for the county, 1940—1958, which will be used in analyzing some of the changes which have occurred. Appendix Table X contains the income figures necessary for the analysis.

TABLE XIII

Service Establishments in Choctaw County 1940—1958

Item	1940	1948	1954	1958
No. of Establishments	320	346	241	251
Employees	744	789	843	877[a]

Source: United States Department of Commerce, State and County Abstract, 1940—1956, (Washington, D. C., 1940—1956).

[a]Estimated from the average number of workers per firm in 1954 times the increased number of firms.

The number of service establishments and the number employed in-creased in the first eight years covered by this study, in spite of the out-migration of the county's population. From 1948 to 1954, the county had a decline of 30.01 percent in the number of service establishments, but service employment rose 6.87 percent. A survey of Hugo's business sector shows that there had been no major changes in this urban center. Therefore, the brunt of the failures were in the rural areas, which is consistent with the great population changes in this sector. The in-creased use of U. S. Highway 70, which passes through Hugo from East to West, contributed to the stability of the services in the urban center.

By 1958, the number of establishments had increased by 10, six of which were along U. S. Highway 70 (gas stations, drive-in diners, etc.)[11] The increase in highway establishments is consistent with the larger national trend.

The remainder of the service sector cannot be analyzed by changes in the number and type of establishments but will have to be interpreted through changes in the total level of service employment.

Employment opportunities. Employment in the aggregated service sector (Table XII) remained the same during the 1940--1950 decade. The period 1950--1954 indicates a 5.21 percent decrease in employment. This is the same period in which manufacturing as well as agricultural employ-ment declined. Therefore, it is assumed that those who became unemployed were the result of a general decline.

As indicated by the analysis of the manufacturing sector, 1954--1958, employment increased by 216 jobs. Also, at this time, service em-ployment recovered, increasing by 75. The above assumption, that the

---

[11]Oklahoma State Highway Department estimates that U. S. Highway 70 has shown a 7.0 per cent per year increase in traffic.

1950---1954 unemployment in the service sector was partially the re-
sult of a decline in manufacturing and agricultural employment, may also
be applied to this period. Employment in agriculture continued to de-
cline but there was economic growth in manufacturing which contributed
directly to growth in the service sector.

Prior to 1954, the service sector did not provide any new job op-
portunities which could absorb the surplus farm workers. However, there
were 75 new job opportunities in the service sector in the 1954--- 1958
period and with the new job opportunities available in manufacturing in
the same period, approximately 50.0 percent of the surplus farm labor
could have been absorbed.

From the apparent changes which have occurred in the three sectors
of the county, economic development has not as yet progressed into the
third stage, where numbers engaged in manufacturing decline relative to
the numbers engaged in services. Thus far, there appears to be a direct
relationship between changes in manufacturing employment and that of the
service sector.

Income from services. This section will analyze the income changes
in this sector in order to determine whether economic growth in this
sector has depended on the growth in the other sectors.

Service income (Table XII) increased by 43.5 percent in the 18 years
of this study. There were income increases in each period, including
those of declining manufacturing. In 1940, the service sector contri-
buted 6.8 percent to total county income; in 1950, 66.8 percent; in 1954,
73.9 percent; and in 1958, 72.5 percent. During the 1940---1954 period,
when both the manufacturing and the agricultural sector were declining,
service income increased relatively and absolutely. As can be seen

from the above proportional contribution to total income, the service

sector in 1958 had an absolute increase in income but declined relative

to agriculture and manufacturing.

Apparently, the service sector income trend does not bear the same

relationship to manufacturing and agriculture as employment levels do.

This is quite conceivable if one assumes that the 7 percent per year

increase in U. S. Highway 70 traffic as compensate for the decrease in

the local demand for services. Unfortunately, figures broken down by

type of service are not available to confirm this hypothesis. However,

observation of increases in the number of gas stations and highway

restaurants, provide reasonable appeal that this is the actual case.

Unearned Income

Thus far, the county economy was analyzed by industrial sector,

in this section, the unearned income of the county will be considered.[12]

This sector of the economy must be considered since it is an alternative

income source to that of providing one's services for a given reward

(income).

Relative change. Table XIV has been constructed to illustrate the

changes which have occurred in this sector.

---

[12]

Transfer payments which are not for past services will be con-
sidered as unearned income (old age assistance, assistance to depen-
dent children, etc.).

TABLE XIV

Unearned Income for Choctaw County, 1940—1958

ITEM	1940	1950	1954	1958
Number Receiving Payments[a]	2,268	4,716	3,847	4,041
Percent of Population	7.9	23.2	23.3	22.5
Total Income	$514,000	$1,671,000	$1,657,000	$1,854,000

Source: Oklahoma Department of Public Welfare, Annual Report,1940--1959, (Oklahoma City, Oklahoma, 1940—1959).

[a]It is assumed throughout that recipients of unearned income receive no other earned income. Income figures deflated by the Consumer Price Index, 1947—1949 = 100, all items.

From the above Table, it can be seen that a large proportion of the county's population received unearned income payments. In the decade 1940—1950, there was both a relative and an absolute increase in the number of recipients. The proportion of the population dependent on these payments were 23.2 percent in 1950. By 1954, there was an absolute decrease in numbers but a 0.1 percent increase in relative proportion of the population dependent on these payments decreased 0.8 percent. The decrease in proportional dependence was due to a larger population and greater number gainfully employed than in 1954.

The importance of this income source to total income can be seen by referring to Table XII. In the 1940—1950 decade, unearned income increased its contribution to total county income from 5.28 percent in 1940 to 17.4 percent in 1950. Although there has been a slight decrease in its proportion of total county income, 1958 unearned income was the largest in the county's history.

The most significant fact about unearned income in Choctaw County, is that it is the second largest single income source in terms of recipients and second largest in terms of income received. Local industrialization has not yet affected any decrease.

Economic Welfare

In the preceding sections, the analysis was concerned with the trends which have occurred in Choctaw County's economy for the period, 1940--1958. The remainder of this chapter is concerned with the determination of whether or not there has been an improvement in economic welfare.

The analysis will emphasize the 1954--1958 period, the era of limited industrialization for Choctaw County. This study was made to determine the effects of this industrialization, particularly on the agricultural sector.

The measure of economic welfare used, is income per worker. Computations of economic welfare may be found in Appendix Table XI. Table XV, has been constructed from Table XII for ease of analysis.

Total economic welfare. The most logical starting point is to first determine whether an increase in "total economic welfare" has occurred.

From Appendix Table IX, it was determined that there has been an increase of $197 in income per worker in the 1954--1958 period. Under the assumption that an increase in income per worker does signify an increase in economic welfare, Choctaw County experienced a 16.57 percent relative increase in economic welfare.

The preceding Table shows the composition of this change. Of the 16.57 percent increase; 15.27 percent (92.15% of the total) of the increase is attributable to relative economic growth, 1.08 percent to

TABLE XV

RELATIVE ECONOMIC DEVELOPMENT BY SECTORS IN CHOCTAW COUNTY, 1950-1958[a]

Item	1950-1954				1954-1958			
	Welfare	Growth	Employment	Interaction	Welfare	Growth	Employment	Interaction
Total	28.96	11.15	16.05	1.79	16.57	15.27	1.08	0.17
Agriculture	-24.66	-34.38	14.80	-5.09	36.65	6.16	28.83	1.78
Manufacture	58.94	- 0.51	59.77	-0.31	-46.68	89.31	-71.29	-63.65
Services	29.66	22.88	5.50	1.26	9.73	13.14	- 3.03	- 0.40
Unearned Income	21.75	- 0.84	22.59	-0.19	6.50	11.89	- 4.80	- 0.31

Source: Appendix Table XII.

[a]The formula used in determining economic welfare: $\frac{\Delta W}{W} = \frac{\Delta Y}{Y} - \frac{\Delta P}{\Delta P + P} - (\frac{\Delta Y}{Y} \cdot \frac{\Delta P}{\Delta P + P})$.

Where: "W" = average income per worker in a sector.
"Y" = total sector income.
"P" = employed persons in a sector.

[b]Relative Development is defined as $\frac{\Delta W}{W}$.

[c]Relative growth is defined as $\frac{\Delta Y}{Y}$.

[d]Relative employment change is determined by $\frac{\Delta P}{\Delta P + P}$.

[e]Interaction of employment and growth by $(\frac{\Delta Y}{Y} \cdot \frac{\Delta P}{\Delta P + P})$.

relative change (decrease) in the number employed, and 0.17 percent due to interaction of growth and the number employed.

Although Choctaw County has shown increased economic welfare from 1954 to 1958, the 1958 enumeration indicates that 92.15 percent of the change was due to relative growth, the major contribution being attributable to decreased employment (Figure V). As seen in Table XII economic welfare decreased in the 1940--1950 decade.

Agriculture's contributions to economic welfare. In a preceding section, agriculture was discussed in terms of a declining industry. This section will attempt to determine the contribution of this decline to sector and total economic welfare.

For the period 1954--1958, agriculture registered a 36.65 percent increase in economic welfare (Table XV). In examining the source of this increase, 28.83 percent (78.66 percent of the total) can be attributed to a decrease in the number of farm workers and only 6.16 percent (21.34 percent of the total) to relative economic growth.

This growth seems small relative to the large decrease in farm workers. Referring to Figure V, it is noted that this is a reversal of the downward trend which characterized the county's agriculture for the preceding years (Figure V).

In order to gain insight into some of the factors contributing to the agricultural situation, refer back to the analysis of agricultural production change as outlined in Table IX. The analysis illustrated an expanding livestock industry (cattle) and declining row-crop industry.

The change-over from cropping to livestock production requires time. Therefore, a declining agricultural income is not inconsistent with the production changes which have occurred. In 1958, there was only an 8.5 percent increase in livestock numbers which may be

TABLE V

INCOME AND EMPLOYMENT TRENDS by SECTOR for CHOCTAW COUNTY, 1940-1958
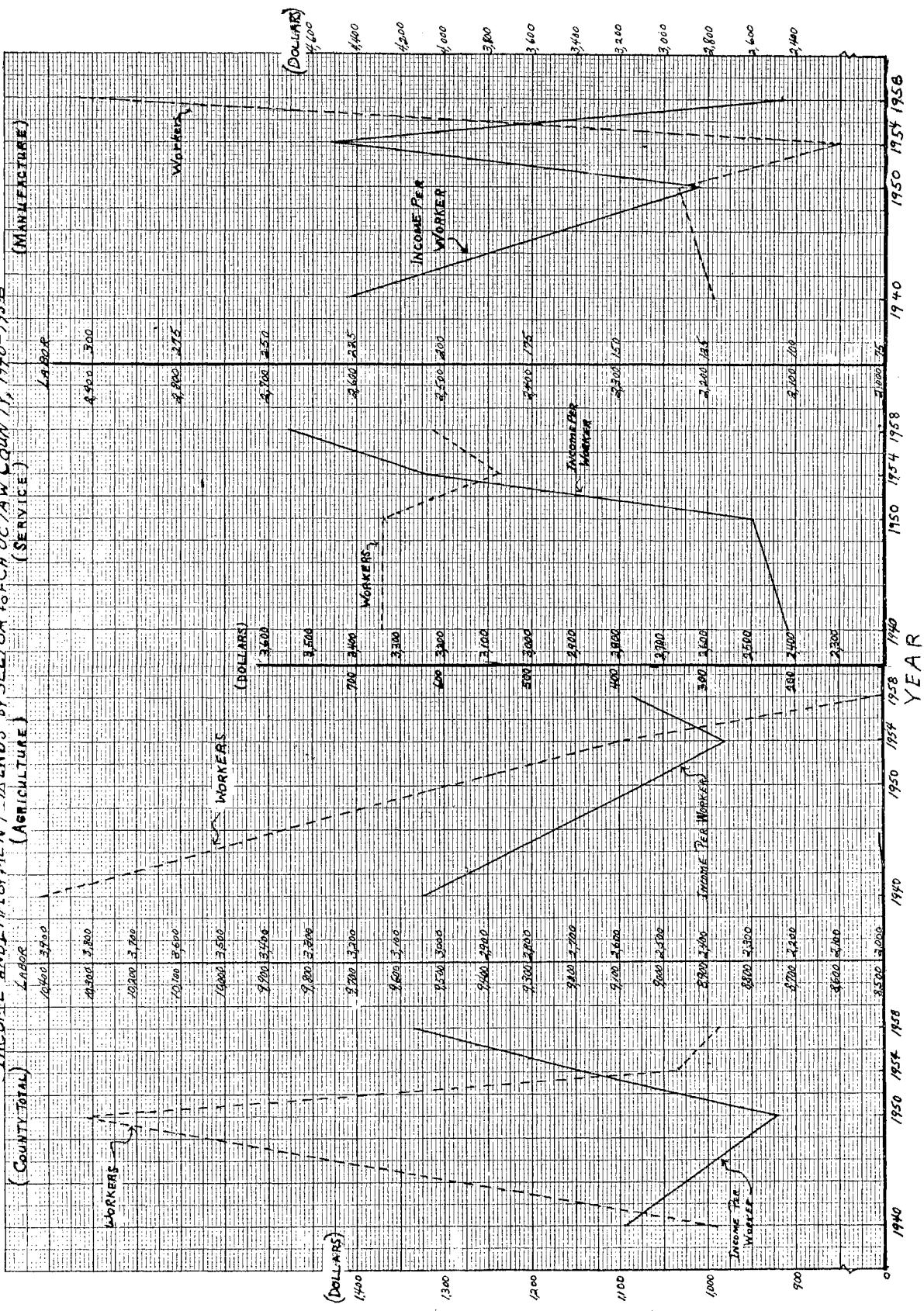
indicative of well-stocked pastures and the marketing of larger numbers of cattle. With the favorable cattle price of 1958, this would un-doubtedly contribute greatly to an increased farm income.

The question may be raised as to what part climatic conditions have played in the 1954—1958 increase in farm income. During the 1954—1957 period, the state's pastures and ranges were classified as being in bad to fair condition. Cattle numbers in the state decreased from 3,344,000 in 1954 to 3,018,000 in 1957, or a decrease of 9.75 percent. Choctaw County, however, increased its cattle numbers from 35,000 in 1954, to 37,000 in 1957, a 0.57 percent increase.[13] This infers that pastures and ranges of the county were in better condition than those of the state in general and that cattle inventories were not being re-duced at the drought lowered prices. Cattle prices had cropped from $22.00 per-hundred-weight in 1950 to a low of $13.30 in 1956. Prices began to recover in 1957, the six-month average January to June, 1958 was $21.08 per-hundred-weight.[14] In 1958, pasture and range con-ditions were rated "good" and cattle numbers in both the state and county increased. It therefore can be stated that climatic conditions affected Choctaw County cattle production to a much lesser degree than was true for the state as a whole.

---

[13] Oklahoma Crop and Livestock Reporting Service, United States Department of Agriculture, Agricultural Marketing Service, (Oklahoma City, Oklahoma, 1955—1958).

[14] Ibid.

In 1958, for the first period since 1940, economic welfare in agri-
culture had increased, although only by 2.37 percent over 1954.

The increase in economic welfare is reflected in an increase in the
level of bank deposits. Local banks have stated that bank deposits were
400 percent higher in 1958 than in 1940.[15] Theoretically, higher bank
deposits mean more capital is now available for investment by the agri-
cultural sector of the county. The 1958 survey, however, discovered
that the sampled farms although increasing acreage by 8.8 percent, had
a net debt   reduction of 3.3 percent (Appendix Table XII). The 1955
study determined that the average farmer planned to borrow $414 for
other than land investments but the 1958 study shows that this class of
debt had the highest reduction, 25.08 percent.

The above facts lead to the inference that while capital is avail-
able for investment by local agriculture, farmers are not taking ad-
vantage of it. Therefore, although agriculture's economic welfare and
its contribution to total economic welfare have shown an increase be-
tween 1954 and 1958, lack of additional capital investment in agri-
culture, has acted as a deterent to still higher levels of economic
welfare in farming.

Manufacturing's contribution to economic welfare. Manufacturing
had shown an increase in economic welfare in 1954 but a decrease in
1958 (Table XV). Upon examination of the composition of this increase
and decrease, the actual contribution to total economic welfare is the

---

[15]The figure was estimated by Choctaw County bankers in the 1958
industrial survey.

reverse of the economic welfare for this sector. Total income from manufacturing decreased in 1954 but increased in 1958 (Table XII).

The decreased income per worker in 1958 occurred in spite of an 89.31 percent increase in income. Counter balancing this increase, employment increased by 348.28 percent (Figure V).

The analysis of job opportunities in manufacturing determined that there were insufficient new job opportunities to absorb those workers released from agriculture. However, the industrialization after 1954 did provide 216 new job opportunities in manufacturing and indirectly contributed to some of 76 additional opportunities in the service sector.

Although there was a decrease of 582 farm jobs recorded in 1958, there was only a decrease of 497 jobs in the entire county; it can therefore be assumed that 85 farm workers found employment in manufacturing or that portion of the service sector affected by manufacturing.

A contributing factor to the decreased income per worker in manufacturing is the type of new industry in Choctaw County. In 1954, the high product per worker can be attributed to non-labor intensive manufacturing (beverage bottling, canning plant, saw mills, etc.). In 1958, the manufacturing industry has become more labor intensive, requiring a great deal of hand work of a semi-skilled nature (glove factory, box-spring frames, etc.).

Irrespective of the decrease in economic welfare in manufacturing, 1954--1958, the contribution to total economic welfare is positive. This is due partly to an increased number of farm and non-farm workers receiving a greater renumeration in manufacturing than they could obtain in agriculture or as a recipient of unearned income.

Service's contribution to total economic welfare. The service sector has had an increasing total income and income per worker throughout the 1940--1958 study period.

In the 1950--1954 period, the service sector showed a relative increase in economic welfare of 29.66 percent, 22.88 percent due to economic growth, and 5.50 percent attributable to a decline in the number employed (Figure V).

The increase in economic welfare in the 1954--1958 period was only 9.73 percent. A 13.14 percent relative economic growth was recorded but due to an increase of 3.03 percent in employment, the total contribution to sector economic welfare was decreased (Table XV). Contributing to the increased employment in the service sector was the increase in manufacturing, an increase in the economic welfare of the agricultural sector and as previously discussed, the increased use of U. S. Highway 70 as a southern transcontinental tourist route.

Increased employment of 76 persons in the service sector can be assumed to have included members of the surplus farm work force. Under this assumption, the renumerations received exceeded that attainable in agriculture, manufacturing, or as a recipient of unearned income.

Unearned incomes' contribution to total economic welfare. Prior to 1954, income per unearned income recipient was less than the income per worker in the other sectors of the county's economy. Although income per recipient increased between 1940 and 1950, the level of renumeration was lower than for any other sector.

The 1954 enumeration indicates a 21.75 percent improvement in the economic welfare of this sector (Table XV). This was the first time in the study period that income per worker in agriculture was less than

income per unearned income recipient.

In 1958, there was a 6.50 percent increase in economic welfare. Although this increase was smaller than that of agriculture, the income per unearned income recipient was still greater than that of agriculture. Assuming that the increase of 194 persons to the unearned income sector all came from agriculture, there would still be an increase in the total economic welfare of the county and a 16.64 percent increases in the economic welfare of these individuals.

Synthesis

As we have passed from sector to sector, the analysis had unearthed some important components of what, in effect, has been limited industrialization and consequent economic development. The time has now come to put the parts together into the complex whole. The data of Table XII can be summarized as follows:

Choctaw County has experienced industrialization of a limited kind in the 1954--1958 period. Decreases in capital intensive firms have been matched by increases in labor intensive firms. Income from manufacturing almost doubled. But workers in manufacturing multiplied $3\frac{1}{2}$ times, so that income per worker in manufacturing actually decreased. Now this is probably exactly what was needed for the county in its present state of economic development. For, at least, total per worker income increased perhaps even as a result of this increased income from manufacturing.

The effects of these changes on agriculture have been marked even though not as marked as might be hoped. Industrialization has been accompanied by an increase of capital in bank deposits presumably

available to farmers, but farmers' attitudes toward borrowing have not
yet improved. Farm product markets had, by 1958, adjusted to the change
in the composition of agriculture sufficiently to satisfy most farmers.
This reorganization of farm output had by 1958, at least, begun local
agriculture on the road to improved total income. Then, industria-
lization was exactly of the type needed to provide some outlet for the
surplus labor in agriculture although, not yet to the degree needed to
satisfy the stated desires of farmers for more off-farm work and,
certainly, not nearly to the degree needed to equalize returns to labor
in agriculture with those in the lowest of the other sectors of the
local economy. Finally, farmers are not yet convinced, according to
the 1958 rural survey, that the large sums of money provided by the
business people of the urban community for the attraction of industry
have had any effect in improving their lot. This does not augur well
for planners hoping to enlist the help of the rural people in the local
"operation bootstrap." And yet, this study shows that such help is
deserved of farmers even if only in their own self-interest. The follow-
ing statement will summarize the arguments.

There was a decrease of 96 in the total workforce from 1954-58
when the labor-intensive industrialization occurred. This decrease was
not nearly as large as the 1,440 of the previous four years. The County
had stopped the wage earners loss that is so disturbing to businessmen
in the service sector. Although there must have been considerable inter-
sector employment changes, it is helpful to assume that this 96 decrease
in workforce was a result of out-of-county migration from agriculture.[16]

---

[16]If not from agriculture, at least, from one sector or another, the
difference being supplied from agriculture, the only sector whose work-
force decreased. The 96 county out-migrants would likely find an increase
in economic welfare by moving from one of the lowest income counties of
the region. The analysis abstracts from natural increases.

But there were 582 workers who left farming, leaving 486 to find jobs

in other sectors. They left a sector where income per worker had been

only $281 in 1954 and would be after they had left only $384 per

worker, including the increased total income of agriculture accruing

to the reduced workforce.

These 486 farm workers had three alternatives of employment, each

one better than what they had left; manufacturing employment, service

employment, or no employment. First remember that if they had stayed

in farming they would have divided with 2,019 others little more than

$776,000 of farm income, for a per-worker average of $310. It is con-

ceivable that 216 out-migrating farm workers could have found employment

in manufacturing at an average of $2,455 per worker with the increased

job opportunities in the newly established, labor-intensive factories.

Even assuming that the 216 did not equally share the total manufactur-

ing income, but divided the remainder left after the former workers

had been paid their former income, they would have a per worker income

of $1,625. This amounts roughly to 200 days at minimum wages, a fact

confirmed by interviews with plant managers of the factories involved;

namely, that most of their workforce was from off the farm and that

they were paid unskilled rates for nearly year-round work. The re-

organization amounts to a "Pareto--better" situation without compen-

sation, where some are better-off and none are worse off.

In addition, 76 workers from the remaining 270 could have worked in

the service sector from an average income of $3,554. Under the same as-

sumptions as in the preceding paragraph, these 76 workers could have

divided the 1954-58 increase in service income of $1,037,000 for a per

worker income of $1,364; the residual 194 workers could have found their

way to the county welfare rolls, and there averaged $459.[17] In all cases,

therefore, the 1954-58 reorganization improved the economic welfare of

workers moving from agriculture without reducing the economic welfare of

other workers.

Choctaw County has been faced, in the last 18 years, with not only

a local agriculture declining in terms of workforce proportion and de-

clining in income per worker but also declining rapidly in terms of the

total income received. In the period 1954-1958 agriculture has at last

showed some signs of recovery. This recovery has been mainly due to the

reduction in the workforce. The reduction has been made easy through the

provision of local jobs in the newly established manufacturing sector.

The industrialization has not resulted in increased returns for workers

in manufacturing but has resulted in improved total welfare in the county

and especially through providing jobs for workers from the depressed farm-

ing area. Such improvements have been also reflected in part of the in-

creased income and employment in the semi-dependent service sector.

---

[17] It can no longer be assumed that the new welfare recipients would
divide the welfare payments increase since these are usually distributed
equally. In any case, welfare payments have gradually out-stripped farm
worker incomes in the county over the period studied.

CHAPTER V

SUMMARY AND CONCLUSIONS

Choctaw County, Oklahoma was selected for this study of economic
development in an underdeveloped small area. A major objective was to
determine the effects of local industrialization on the county's economic
sectors, with special emphasis on the agricultural sector.

In this study, changes in real income per capita (a measure of econ-
omic development), changes in real income (a measure of economic growth),
changes in income per worker (a measure of economic development within
sectors of the economy), and levels of employment were the four major
factors examined. Four broad objectives were presented and analyzed,
each of which is concerned with the varied impacts of economic develop-
ment in an underdeveloped rural county: to identify and describe the
gross economic changes which have occurred in Choctaw's economy from 1940
to 1958; to analyze the composition of these changes by population and
industrial sector; to assess the effects of structural change in the local
economy on welfare in local agriculture; and to provide data and analysis
for use by planning groups and researchers.

Conclusions

Choctaw County has experienced considerable economic development,
relatively and absolutely, in the 18 years covered by this study, 95.9
percent, or 5.3 percent per year. This is slightly less than the econ-
omic development experienced by the state, 5.7 percent per year. There-
fore, on the basis of yearly increases and the low level of income per

capita as compared with Oklahoma's average in 1940, Choctaw County was in a relatively greater state of underdevelopment in 1958 than in 1940.

The hypothesis as to population change being the important component of recent economic development must be rejected in the light of the 1954-1958 analysis, but accepted on the findings of the 1940-1954 findings. The analysis of component contribution to the county's economic development revealed that, for the first time in 14 years, economic development occurred in spite of a population increase. This can be termed true economic progress (defined as an increase in economic growth greater than the increase in population). Economic growth (increase in total county income) was actually proportionally greater for the county than for the state, but due to a proportionally larger population increase, the county had a lower rate of economic development.

The county, which has historically been classified as a rural county, still remains largely rural. Although population decreases were great in the rural sectors, rural farm population in 1958 was approximately the same proportion of total population as existed for the state in 1940.

Choctaw County lost all of its natural population increase plus an additional 36.8 percent of the 1940 population. The rural farm population contributed the largest number to the out-migration, the rural non-farm sector the second largest, while the urban sector actually had a substantial absolute increase but a relative decrease (the increase was less than the expected natural population increase). The out-migration which occurred was selective both as to age and sex; the prodictive age group and greater numbers of males than females made the exodus. This out-migration resulted in an older population with less productive potential.

As economic development occurred in the county, the agricultural sector declined. The number of persons employed in agriculture declined as did agricultural income per firm and the proportion of agricultural income to total county income, 1940-1954. From 1954 to 1958, the total number employed continued to decrease but income per firm and income per worker increased but the proportion of agricultural income to total county income decreased.

The agricultural decline, as effected by local development, was reflected not only in a decreasing work force in agriculture, but also in increasing farm size and changing agricultural production trends. Farm size increased throughout the study period. Agricultural production changed from row-crop to livestock production. This change in production from row-crop to livestock required time to accomplish and thus would be consistent with declining agricultural income. The analysis of production change, demonstrated that 1954-1958 increase in livestock numbers was the smallest of the study period; which is indicative of well stocked pastures and the sale of larger numbers of livestock. Larger livestock sales, with the favorable prices in recent years would be a partial explanation of the higher agricultural income registered in this period. The trend toward livestock production was aided by changes in the market structure. Markets for row-crops declined and have become less competitive, while those for livestock improved, both in facilities and competitive prices paid.

Although the number of local manufacturing firms remained rather constant, the 1954-1958 period was characterized by local industrialization in the form of larger firms replacing the smaller ones and in the type of

manufacturing done. Whereas, prior to 1954, manufacturing was capital intensive and needed little labor, the 1958 figures illustrate an increase in labor using enterprises. The local industrialization after 1954 is characterized by higher levels of employment and greater income contributed to total county income than in any preceding period. The increase in employment, however, was not sufficient to absorb the surplus farm labor plus the natural increase expected in the labor force of the county.

The hypothesis, that the service sector has increased as development of supporting industry took place, cannot be tested vigorously without considering the contribution of increased tourist travel on U. S. Highway 70. The service sector has shown a constantly increasing trend in its real income contribution to total income for the county. This has occurred in spite of considerable variation in the income derived from manufacturing and agriculture in the county. U. S. Highway 70 trade appeared to have contributed to the steadily increasing amount of service income. However, it may be interpreted that a portion of the recent increase in the number of service firms and employment is a result of recently increased income from manufacturing and agriculture.

The contribution of unearned income to total county income has increased over the 18 years of this study, while the proportion of the county "workforce" dependent upon these payments has remained rather constant since 1950. Therefore, the hypothesis that the county's dependence on unearned transfer payments decreased as general economic development has occurred, is not consistent with the observed facts.

It has previously been concluded that considerable economic development has occurred in Choctaw County and that, prior to 1954, development

was due to population decreases. The analysis of economic welfare (income per worker) corroborates these conclusions. Total economic welfare increased between 1954 and 1958 but was due to actual economic growth (increase in total income) in the county.

In the 1954-58 period, for the first time in 18 years, agriculture's economic welfare increased. This increase was mostly due to a further decrease in the farm labor force, but there was some economic growth registered. Deterrent to an even greater economic welfare for agriculture is the fact that many persons are still underemployed, as reflected in farmers desires for off-farm employment and the low per worker incomes in farming. The local industrialization has not provided sufficient employment opportunities for those farm workers who do not wish to leave the county, but do desire supplemental employment or to leave agriculture entirely. Another factor affecting economic welfare of agriculture (through lower levels of economic growth) is the fact that the farmers still remaining in the county have not taken advantage of the increased capital available in the county for local agricultural investment.

Economic welfare in the manufacturing sector has declined since the 1954 enumeration but due to a higher level of employment, manufacturing's contribution to total economic welfare has increased. Some portion of this added employment came from agriculture and other employment. This new employment provides greater renumeration to the individual than he previously received, thus increasing the individuals economic welfare and total economic welfare for the county.

Economic welfare in the service sector has increased consistently throughout the study period. The additional employment in the 1954-1958

period, can also be assumed to have included members of the workforce leaving agriculture. The renumeration they received in the service sector increased personal economic welfare and contributed to a higher total county economic welfare.

The contribution of unearned income to total economic welfare was less than that from any other sector prior to 1954. After 1954, agriculture for 1958, the economic welfare in the unearned income sector was still greater. If it is assumed that those farm workers leaving agriculture but not leaving the county were not employed in the other sectors and therefore unearned income recipients, their personal economic welfare increased as did total county economic welfare.

In conclusion, Choctaw County while experiencing local industrialization and economic growth and development is, nevertheless, in a greater state of comparative underdevelopment in 1958 than in 1940. However, in the 1954-1958 period, the county had a greater rate of development than did the state. A later study of the county will be able to determine whether or not this is the beginning of a new trend toward decreasing the income disparity between Choctaw County and the state.

Two of the findings of the study may be helpful to those who are charged with the responsibility of planning local development programs in low income rural areas. First, the addition of a low-skill, labor intensive, plant in such an area, although it reduced average labor returns in local industry, did create sufficient local purchasing power to improve both total real income immediately and later, presumably through a multiplier effect, increased income considerably in the service sector of the economy. The more supplies that are used by the local service

sector, and locally produced, the more multiplication of the added income
will accrue.[18] At an early stage of development, until the local demand
for jobs is sated, the labor intensive industry, especially if it fills
a local product demand, appears to add more to the economy than its value
added by manufacture.

Secondly, local industrialization and increased bank deposits were
a concomitant trend in the county. Assuredly, the ability of the commun-
ity to invest increased. Whether this means that more loans would be
available to farmers, or that returns to added capital in farming warrant
the risk of farm loans, was not examined. But what was established was
that even if more capital were available to farmers they either were not
aware of it, or were unwilling to use these funds. Farmers' capital
position had declined significantly during the period of increased local
bank deposits. Farm income increased slightly after a rapid downward
trend before industrialization. These results imply a need for promoting
a better understanding among farmers of the potential benefits of local
industrialization, especially with respect to the capital market. Farmers,
on the whole, do not seem to recognize any beneficial effects of the local
development except an implied appreciation of more local job opportunities.
Yet, in rural areas such as Choctaw County, a prosperous, even though
small, sector of commercial farmers can aid local development as much as
any sector; for their output is mostly sold outside the county and as much
of their farm and home consumption as is locally available is primarily
locally purchased.

_____

[18]This analysis is based on an oral presentation by Dr. W. B. Back
at Tahlequah, Oklahoma, 1959.

SELECTED BIBLIOGRAPHY

Back, W. B., Perpetuation of Low Farm Income Areas, Farm Policy Forum, Vol. 8, No. 4, (Iowa State College Press, Ames, Iowa, Spring, 1956), pp. 19 - 24.

Cochrane, W. W., The Nature of the Farm Price Problem, Contemporary Readings in Agricultural Economics, Edited by H. G. Halcrow, (Prentice-Hall, Inc., New York, 1955), pp. 92 - 108.

Clark, Colin, The Conditions of Economic Progress, (Macmillan and Company Ltd., New York, 1957), p. 492.

Engel, Erst, Engel's Laws, 1800, quoted in Heflebower and Norman's Economics with Application to Agriculture, (McGraw-Hill Book Co., Inc., New York, 1950), p. 204.

Galbraith, J. K., Inequality in Agriculture - Problem and Program, (Unpublished lecture, Ontario College, Guelph, Canada, November 16, 1956).

Heady, E. O. and Ackerman, J., The Income and Resource Problem, Agricultural Adjustment Problems in a Growing Economy, edited by Heady, Drisslin, Jensen and Johnson, (Iowa State College Press, Ames, Iowa, 1958), pp. 3 - 18.

Hendrix, W. E., The Problem of Low-Income Farms, in B. Aly and E. A. Rogge, ed. American Farm Policy, Vol. 1, (National University Extension Association Discussion and Debate Manual No. 30, Columbus, Missouri, 1956), p. 211.

Kindleberger, C. P., Economic Development, (McGraw-Hill Book Company, Inc., New York, 1958), pp. 10 - 12.

Kuznets, S., National Income: A Summary of Findings, (National Bureau of Economic Research, Inc., New York, 1946), pp. 124 and 136.

Nicholls, W. H., The South's Low-Income Problem, Farm Policy Forum, Vol. 8, No. 4, (Ames, Iowa College Press, Spring, 1956), pp. 13 - 19.

Oklahoma Business Bulletin, Vol. 26, No. 1, (Bureau of Business Research, University of Oklahoma, Norman, Oklahoma, 1959).

Oklahoma Department of Public Welfare, Annual Report, 1940—1959, (Oklahoma City, Oklahoma, 1940—1959).

Schultz, T. W., The Economic Organization of Agriculture, (McGraw-Hill Book Company, Inc., New York, 1953). pp. 256 - 320.

Statistical Abstract of Oklahoma, 1956—1959, Bureau of Business
      Research, University of Oklahoma, Norman, Oklahoma, 1956—1958).

Tarver, J. D., Population Change and Migration in Oklahoma, 1940—1950,
      Bulletin No. B-485, (Oklahoma State University, 1957).

United States Department of Commerce, Bureau of Census, Characteristics
      of the Population, 1939—1949, (Washington, D. C., 1939—1949).

_____, United States Census of Agriculture,
      1929—1954, (Washington, D. C., 1939—1954).

_____, United States Census of Manu-
      factures, 1939—1954, (Washington, D. C., 1939—1954).

_____, United States Census of Mining,
      1939—1954, (Washington, D. C., 1939—1954).

_____, United States Census of Retail
      Trade, 1939—1949, (Washington, D. C., 1939—1949).

_____, United States Census of Wholesale
      Trade, 1939—1949, (Washington, D. C., 1939—1949).

_____, Survey of Current Business,
      (Washington, D. C., July, 1958 and January, 1959).

_____, Personal Income by States Since
      1929, A Supplement to the Survey of Current Business, (Washington,
      D. C., 1956).

APPENDIX

APPENDIX TABLE I

NET POPULATION CHANGE - CHOCTAW COUNTY 1940-58

Net Change in Population of Choctaw County, 1940-50[1]

1.	Population (1940)	28,212
2.	Births (1940-1950)	6,150
3.	Deaths (1940-1950)	2,173
4.	Natural Increase, 1940-50 (columns 2-3)	3,977
5.	Expected Population 1950 (1 + 4)	32,189
6.	Enumerated Population (1950)	20,405
7.	Net Migration (number) 1940-50 (6 - 5)	-11,784
8.	Net Migration (percent) 1940-50 (7 ÷ 5)	-36.6 percent

Net Change in Population of Choctaw County, 1950-58[2]

1.	Population (1950)	20,405
2.	Births (1950-1958)	2,689
3.	Deaths (1950-1958)	1,452
4.	Natural Increase, 1950-1958 (columns 2 - 3)	1,237
5.	Expected Population 1958 (1 + 4)	21,642
6.	Enumerated Population, 1958	17,922
7.	Net Migration (number) 1950-58 (6 - 5)	3,720
8.	Net Migration (percent) 1950-58 (7 ÷ 5)	-18.2 percent

[1] James D. Tarver, *Population Change and Migration in Oklahoma, 1940-50*, Oklahoma State University, Bulletin No. B-485, January, 1957.

[2] Estimated from birth and death rates from 1952 and 1956; figures published by Oklahoma Department of Health.

APPENDIX TABLE II

SUMMARY OF POPULATION CHANGE, UNITED STATES, OKLAHOMA
AND CHOCTAW COUNTY, 1930-1958

	1930	1940	1950	1954	1958
United States	122,775,046	131,669,275	151,132,000	162,780	173,888,000
State	2,336,040	2,334,437	2,233,351	2,340,344	2,399,603
Choctaw County	24,142	28,358	20,406	16,501	17,922[b]
Within the County:					
Urban	5,272	5,909	6,084	a	7,013
Non-farm Rural	3,282	6,240	5,208	a	4,280
Farm Rural	15,588	16,209	9,113	a	6,642

Source: United States Department of Commerce, Bureau of the Census, Characteristics of the Population, 1929-1949, (Washington, D. C., 1939-1949).

Statistical Abstract of Oklahoma, 1956-1959, Bureau of Business Research, (University of Oklahoma, Norman, Oklahoma, 1956-1959).

1958 Choctaw County Survey.

[a]Data unavailable.

[b]1958 county figures estimated from the number of gas and electric meters.

APPENDIX TABLE III

SUMMARY OF POPULATION CHARACTERISTICS, OKLAHOMA AND CHOCTAW
COUNTY, 1940 AND 1950

| | 1940 | | 1950 | |
	State	County	State	County
Total Population				
Number	2,336,434	28,358	2,233,351	20,405
Percent Increase 1930-40, 1940-50	-2.5	15	-4.4	-28.0
Percent by Residence				
Urban	37.6	20.9	51.0	29.3
Rural Non-farm	22.7	22.0	24.2	26.0
Rural Farm	39.7	57.1	24.8	44.7
Median Age (Years)	26.2	23.5	28.9	27.7
Percent 65 Years Old and Over	6.2	5.9	8.7	10.8
Percent Non-white	9.9	22.1	9.0	22.0
Persons 14-17 Years Old Percent in School	84.2	71.9	86.6	85.9
Persons 25 Years Old and Over Median School Years Completed	8.7	7.3	9.1	8.0
Persons 14 Years Old and Over				
Number in Labor Force	804,582	8,804	796,670	5,877
Male Percent in Labor Force	75.3	76.2	74.4	68.1
Female Percent in Labor Force	18.6	3.1	23.8	15.6
Employed Percent Engaged in Manufacturing	4.0	1.86	9.8	6.6

Source: United States Department of Commerce, Bureau of the Census,
        Characteristics of the Population, 1939-1949, (Washington, D. C.,
        1939-1949).

APPENDIX IV
CHOCTAW COUNTY POPULATION (1940)

Choctaw County
Male Female

Age	Male	Female
65 and over	944 / 3.33%	744 / 2.62%
55-64	1,002 / 3.53%	837 / 2.95%
40-54	2,030 / 7.16%	1,967 / 6.94%
25-39	2,855 / 10.07%	2,974 / 10.49%
15-24	2,656 / 9.37%	2,686 / 9.47%
5-14	3,299 / 11.63%	3,242 / 11.43%
Under 5	1,586 / 5.59%	1,536 / 5.42%

25,358 Persons

Choctaw Co. Rural Farm
Male Female

Age	Male	Female
65 and over	494 / 3.05%	291 / 1.79%
55-64	559 / 3.45%	410 / 2.53%
40-54	1,157 / 7.14%	1,040 / 6.41%
25-39	1,524 / 9.40%	1,492 / 9.21%
15-24	1,686 / 10.40%	1,491 / 9.20%
5-14	2,098 / 12.94%	2,040 / 12.59%
Under 5	999 / 6.16%	928 / 5.73%

16,209 Persons

Choctaw Co. Rural Non-Farm

Age	Male	Female
65 and over	239 / 3.83%	234 / 3.75%
55-64	210 / 3.36%	197 / 3.16%
40-54	425 / 6.81%	396 / 6.35%
25-39	634 / 10.16%	678 / 10.87%
15-24	503 / 8.06%	588 / 9.42%
5-14	683 / 10.99%	689 / 11.04%
Under 5	379 / 6.08%	382 / 6.12%

6,240 Persons

Choctaw Co. Urban

Age	Male	Female
65 and over	211 / 3.5%	219 / 3.73%
55-64	233 / 3.96%	230 / 3.91%
40-54	448 / 7.62%	531 / 9.03%
25-39	667 / 11.35%	804 / 13.68%
15-24	467 / 7.94%	607 / 10.32%
5-14	515 / 8.76%	513 / 8.73%
Under 5	208 / 3.64%	226 / 3.78%

5,879 Persons

APPENDIX V
CHOCTAW COUNTY POPULATION (1950)

Choctaw County

	Male	Female
65 and over	1,166 5.70%	1,087 5.69%
55-64	939 4.59%	944 4.62%
40-54	1,621 7.92%	1,655 8.09%
25-39	1,593 7.79%	1,836 8.98%
15-24	1,483 7.25%	1,484 7.25%
5-14	2,270 11.10%	2,045 10.00%
Under 5	1,169 5.71%	1,163 5.69%

20,455 Persons

Choctaw Rural Farm

	Male	Female
65 and over	394 4.37%	253 2.80%
55-64	462 5.13%	342 3.79%
40-54	773 8.58%	616 6.83%
25-39	714 7.92%	755 8.38%
15-24	750 8.32%	679 7.54%
5-14	1,180 13.09%	1,009 11.19%
Under 5	544 6.04%	543 6.02%

9,013 Persons

Choctaw Co. Rural Non-Farm

	Male	Female
65 and over	383 7.22%	379 7.14%
55-64	224 4.22%	266 5.01%
40-54	379 7.16%	409 7.71%
25-39	354 6.67%	415 7.81%
15-24	352 6.63%	394 7.42%
5-14	569 10.72%	556 10.47%
Under 5	305 5.75%	323 6.08%

5,308 Persons

Choctaw Co. Urban

	Male	Female
65 and over	389 6.50%	406 6.79%
55-64	253 4.23%	336 5.61%
40-54	469 7.84%	530 8.86%
25-39	525 8.77%	666 11.12%
15-24	381 6.37%	441 6.87%
5-14	521 8.71%	480 8.02%
Under 5	320 5.35%	297 4.96%

5,984 Persons

APPENDIX TABLE VI

PARTIAL SUMMARY OF AGRICULTURAL DATA FOR CHOCTAW COUNTY 1930-1958

Subject and Unit	1930	1940	1950	1954	1958
Total Number of Acres	501,760	501,760	501,760	501,760	501,760
Acres in Farms	266,713	315,371	322,467	337,160	348,910[a]
Number of Farms	3,159	3,042	2,133	1,626	1,270[b]
Average Size of Farms	84.4	103.7	151.2	208.5	274.7
Percent Tenancy	73.1	63.8	28.1	16.2	11.4
Acres in Crops	144,914	95,175	99,369	74,345	56,757[c]
Acres in Corn	49,373	40,889	21,864	5,200	6,000[c]
Acres in Cotton	53,466	18,652	10,132	3,912	500[c]
Acres in Peanuts	2,732	4,278	3,630	2,262	2,300[c]
Acres in Hay	3,606	10,392	12,703	13,985	17,600[c]
Acres of Pasture	100,738	199,135	231,414	283,957	286,797[a]
Number of Tractors	18	55	457	691	[d]
Number of Horses and Mules	9,929	8,103	5,484	2,742	[d]
Number of Cattle	12,802	21,152	24,188	34,711	37,700[d]
Number of Hogs	16,911	11,799	12,053	4,912	3,900[c]
Number of Sheep	Negligible	1,005	255	272	1,000[c]

Source: United States Department of Commerce, United States Census of Agriculture 1929-1954, (Washington, D. C., 1929-1954) 1958 Choctaw Survey.

[a]Projection of the preceding 14 year trend.

[b]Estimated by county extension personnel.

[c]Agricultural Marketing Service Estimates.

[d]Data Unavailable.

APPENDIX TABLE VII

SPECIFIED FARM EXPENDITURES FOR CHOCTAW COUNTY; 1940-1954

	1940	1950	1954
Expenditures for labor	$69,662	$188,285	$162,185
Feed for animals	67,112	362,860	605,732
Gasoline and oil	18,010	119,320	103,081
Fertilizer	5,692	a	12,814
Machine Hire	a	83,910	74,436

SPECIFIED FARM EXPENDITURES FOR CHOCTAW COUNTY DEFLATED BY CONSUMER PRICE
INDEX (1947-1949 = 100)

	1940	1950	1954
Expenditures for labor	$118,674	$177,293	$137,795
Feed for animals	114,330	341,676	514,640
Gasoline and oil	30,681	112,354	87,579
Fertilizer	9,697	a	10,887
Machine hire	a	79,011	63,242
Consumer price index[b]	58.7	106.2	117.7

FARMS BY CLASS OF WORK POWER FOR CHOCTAW COUNTY;
1940-1954

	1940	1950	1954
Horses or mules, no tractor	a	288	392
No tractor, horses, or mules	a	169	193
No tractor and 2 or more horses or mules	a	1,298	482
Tractor and horses or mules	a	259	348
Tractor and no horses or mules	a	119	211
Number of farms reporting tractors	55	457	691
Number of farms reporting horses and/or mules	2,667	1,757	1,060
Number of work animals	8,103	5,484	2,742

Source: United States Department of Commerce, United States Census
of Agriculture, 1939-1954, (Washington, D. C., 1939-1954).

[a] Figures unavailable.

[b] United States Department of Commerce, Consumer Price Index 1947-1949 =
100, all items (Washington, D. C., 1959).

APPENDIX TABLE VIII

INDUSTRIAL COMPOSITION FOR CHOCTAW COUNTY, 1940-1958

Year	Number of Firms	Food and Kindred Products	Apparel and Related Products	Lumber and Wood Products	Printing and Publishing	Chemicals and Allied Products	Transportation Equipment	Miscellaneous Manufacturing
1940	13	7	-	3	2	-	1	-
1947	12	5	-	3	1	1	1	1
1954	13	5	1	3	3	1	-	-
1958	14	5	1	4	3	1	-	-

Source: United States Department of Commerce, United States Census of Manufactures, 1939-1954 (Washington, D. C. 1939-1954).

1958 Choctaw Survey.

APPENDIX TABLE IX

PRODUCTIVITY OF AGRICULTURAL WORKERS FOR CHOCTAW COUNTY, 1940-1958

1940-	Net Farm Income[a]	- $1,440,040.00	($2,453,219.77)[b]
	Farm Workers[c]	- 3954.6 on 3042 farms	
	AP/worker[d]	- $364.10	($620.27)[b]
	Income/farm firm	- $473.40	($806.47)[b]
1950-	Net Farm Income	- $1,182,800.00	($1,113,747.65)[b]
	Farm Workers[c]	- 2986.2 on 2133 farms	
	AP/worker[d]	- $396.11	($373.00)[b]
	Income/farm firm	- $554.50	($522.13)[b]
1954-	Net Farm Income	- $859,980.00	($730,654.21)[b]
	Farm Workers[c]	- 2601.6 on 1626 farms	
	AP/worker[d]	- $330.50	($280.80)[b]
	Income/farm firm	- $531.70	($451.74)[b]
1958-	Net Farm Income	- $959,108.00	($775,350.00)[b]
	Farm Workers[c]	- 2019.3 on 1270 farms	
	AP/worker[d]	- $474.80	($391.92)[b]
	Income/farm firm	- $763.07	($616.87)[b]

Source: Table XII.

[a] Net farm income figures were obtained by applying the gross to net proportion of farm income from agriculture for the state, to the county's gross farm income from agriculture.

[b] Figures deflated by the Consumer Price Index, 1947-1949 = 100, all items.

[c] Doesn't include non-family hired labor because farm income is a net figure.

[d] Average product per worker is total net farm income divided by farm workers.

APPENDIX TABLE X

GROSS FARM INCOME DISTRIBUTION FOR OKLAHOMA AND CHOCTAW COUNTY, 1954

Dollars	Oklahoma (all farmers)		Choctaw County (all farmers)	
		Percent		Percent
0-249	24,988	20.95	527	32.41
250-1,199	32,720	27.44	706	43.42
1,200-2,499	17,973	15.07	187	11.50
2,500-4,999	18,955	13.89	132	8.12
5,000-9,999	15,061	12.63	53	3.26
10,000-24,999	8,038	6.74	21	1.29
25,000 up	1,526	1.28	0	0.00
Total	119,261	100.00	1,626	100.00

	Oklahoma	Choctaw County
Q_1	$ 390.16	$ 192.84
Q_2	1,339.06	634.84
Q_3	4,315.45	1,181.83
$\bar{X}$	3,441.00	1,031.43

Percent Below

	Oklahoma	Choctaw County
$\bar{X}$	69.40 percent	68.08 percent
K	$2,352.80	$ 687.34
QD	$1,962.64	$ 494.50

50 Percent Range $390.16 - $4,315.45 $192.84 - $1,181.83

Code:[a]

K = Centroid of the distribution
QD = Quartile deviation
K = QD = 50 percent of the population
Q_1 = first quartile
Q_2 = second quartile = median (Md)
Q_3 = third quartile
$\bar{X}$ = mean of the distribution

Source: United States Department of Commerce, United States Census of Agriculture, 1954, (Washington, D. C., 1954).

[a]The measure of variability used in this analysis is Quartile Deviation. The QD represents the mean amount by which the upper and lower quartiles deviate from the median $[(Md. - Q_1) + (Q_3 - Md)] \div 2$.

APPENDIX XI

EXAMPLE OF COMPUTATIONS OF ECONOMIC WELFARE FOR CHOCTAW COUNTY,
1950-1954

Economic Welfare: $\dfrac{\Delta W}{W} = \dfrac{\Delta Y}{Y} - \dfrac{\Delta P}{P + \Delta P} - \dfrac{\Delta Y}{Y} \cdot \dfrac{\Delta P}{P + \Delta P}$

where $28.98 = 11.14 + 16.05 + 1.79$

Total:

$\dfrac{\Delta W}{W} = (\dfrac{\$1189.50 - \$922.20}{\$922.20}) \ 100 = 28.98$ percent

where $W = Y \div P$

Growth:

$\dfrac{\Delta Y}{Y} = (\dfrac{\$10,671,000 - \$9,601,000}{\$9,601,000}) \ 100 = 11.14$ percent

where $Y =$ total real personal income

Employment:

$\dfrac{\Delta P}{P + \Delta P} = (\dfrac{8,971 - 10,411}{8,971}) \ 100 = -16.05$ percent

Interaction:

$\dfrac{\Delta Y}{Y} \cdot \dfrac{\Delta P}{P + \Delta P} = (0.1115) \ (-0.1605) \ 100 = 1.79$ percent.

Source: Figures were taken from Table XII.

APPENDIX TABLE XII

FARM INDEBTEDNESS, CHOCTAW COUNTY, 1955 and 1958

Item	1955	1958
Land Mortgage (Actual)	$446,000.00	$96,730.00
Per Bonafide farmer	4,168.00	4,030.00
Per household	1,610.00	3,224.00
Per acre	11.12	9.90
Percent change per farm		-3.3 percent
Non-Land Mortgage	128,000.00	21,500.00
Per Bonafide farmer	1,196.00	896.00
Per household	462.00	717.00
Percent change per farm		-25.08 percent
Expected Increase in Land Indebtedness/Farm[a]		362.00
Expected Total Land Indebtedness/Farm[b]		4,530.00 (4.17 percent)
Rate of Debt Reduction/Year[c]		189.00
Expected Increase in Non-Land Indebtedness/Farm[d]		414.00
Expected Total Non-Land Indebtedness[e]		1,610.00 (14.66 percent)
Rate of Debt Reduction/Year[f]		236.00

Source: 1955 Choctaw County Rural Survey.
1958 Choctaw County Rural Survey.

[a] Expected increase in land debt was obtained by multiplying the 1955 debt per acre by the 1958 increase in acreage.

[b] The 1955 indebtedness per farm plus the expected increase.

[c] The actual debt subtracted from the expected, divided by time span (3 years).

[d] This is the 1955 average debt increase planned per farm (obtained from the 1955 survey).

[e] The 1955 non-land indebtedness plus the expected planned increase.

[f] The actual debt subtracted from the expected, divided by time span (3 years).

VITA

William Edward Klein, Jr.

Candidate for the Degree of

Master of Science

Thesis: THE EFFECTS OF LOCAL INDUSTRIALIZATION IN A RURAL, LOW-INCOME
COUNTY

Major Field: Agricultural Economics

Biographical:

Personal Data: Born in Scranton, Pennsylvania, November 13, 1931,
the son of William M. and Monica M. Klein.

Education: Attended grade school at P. S. 26 Scranton, Pennsylvania,
high school at Technical High, Scranton, Pennsylvania; graduated
from Technical High in 1950; received the Bachelor of Science
Degree from Pennsylvania State University, State College, Penn-
sylvania, with a major in Animal Husbandry, in May, 1954; com-
pleted requirements for the Master of Science Degree in May, 1959.

Professional Experience: Served in the United States Airforce as a
commissioned officer from December, 1954 to November, 1957.
Research Assistant, Oklahoma State University, January, 1958 to
August, 1959