

FACTORS AFFECTING FARM LIVING LEVELS

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**Thesis submitted to the Faculty of the Graduate School
of the University of Maryland in partial
fulfillment of the requirements for the
degree of Doctor of Philosophy**

1949

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ACKNOWLEDGMENTS

The author wishes to express his appreciation to certain members of the Department of Agricultural Economics and Marketing of the University of Maryland for their valuable assistance in the preparation of this report. These men are: Dr. S. H. DeVault, Head; Messrs. Arthur B. Hamilton and W. Paul Walker, Associate Professors of Agricultural Economics.

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FACTORS AFFECTING FARM LIVING LEVELS

CHAPTER I

PURPOSE OF STUDY

There are a number of explanations current today concerning the causes of the rural poverty found in some areas of the United States. One purpose of this inquiry is to test by statistical methods some of these explanations to find out what degree of truth lies in them. Another purpose is to suggest ways to improve farmers' productivities.

Variety of Explanations

- (1) Low Productivity per Farmer. Orthodox economists have been teaching for nearly two centuries that, in a private enterprise system, each individual's share in the national output (his material level of living) would be determined by the extent to which he contributed towards the production of that national output. As applied to farmers, this would mean that their material levels of living would correspond with their productivities. This line of thought suggests that to remove poverty in a given area, production per worker should be increased by some means.
- (2) Exploitation. Over the past century and a half, there has persisted another important line of thought which has pointed to exploitation as the chief cause of poverty in the world. Expressed somewhat differently over time and under varying circumstances, this school of thought has held that an unfair distribution of the national output, not the level of productivity, was the trouble-spot. Why was the slave on the American cotton plantation so poor? Why was the serf on the feudal

estate of the Middle Ages so poor? Why have not our modern wage earners been more prosperous? According to this school of thought, it has been because their production, except for a bare subsistence, went for the benefit of the property owner.

Along this same vein, some people today believe that the share-cropping system in our South keeps the tenant poor because so much of the farm output goes to the landlord. It is commonly felt among farm people in this nation that "no farm can support two families well, the tenant's and the landlord's". Marx held that the capitalistic system, wherein land and capital were privately owned, constituted a method of channeling the national output, except for a subsistence for laborers, into the hands of the property owners.

If exploitation is the main (or an important) cause of poverty in our rural areas, the remedies to be applied would be quite different from that suggested under the above point (the elevation of productivity per worker). Perhaps a primary objective of farm policy should be the elimination of farm tenancy.

(3) Unavailability of Electricity. It is pointed out that many of the modern home conveniences depend on the availability of low cost electricity. It can be shown that, in states where a large percentage of farm homes lie within a hook-up range of an electric distribution line, farm homes are rather well equipped with modern facilities. Hence, it is suggested that to improve rural living standards, electric distribution lines should be placed close to all (or nearly all) farmers.

(4) Quality of Soils. It seems a matter of elementary observation, as one drives about a rural area (for example, within a single county), that on the good soils will be found fine farm homes with a nice automobile parked alongside. On the hilly areas where soils are thin, or

rocks protrude, or on the leached sandy soils (in other words, sub-marginal lands), will be found farms which do not afford families a good living. Their automobiles are old and worn, their homes are small, often unpainted and dilapidated. Furthermore, if one examines a map showing the soil resources of the United States, it will be found that the South (where the largest concentration of rural poverty is found) has relatively poorer soils than does the North. One will find also that the Great Lakes "out-over" region (where rural living conditions are not good) has poorer soil resources than do the regions to the south, the "dairy belt" and the "corn belt", where farm living conditions are better. These sundry observations seem to indicate that rural living levels in the United States follow the quality of the soils. This line of thought suggests that to remedy rural poverty we need to improve soils by methods of soil science and conservation, and resettle some farmers on better lands.

(5) Livestock Farming. Some people feel that in farming areas in which most of the efforts are directed to the production of livestock and livestock products, prosperous farmers will be found. Hence, to remove rural poverty (such as in our cotton and tobacco areas), diversified agriculture with more attention to the production of livestock and livestock products should be followed.

Task of the Agricultural Economist

It is the task of the agricultural economist to test these various explanations by empirical methods. This needs to be done because:

(1) It is necessary to have a guide for shaping farm policy, because in order to improve farm living standards the causative factor or factors involved should be known in order to get the results desired; (2) we

need to check on the validity of the economic doctrines being commonly taught. For example, the following is an important economic doctrine which needs to be checked:

And to what extent does each producer share in the distribution of these goods, which in a given country may quite properly be called the national income? In general, to the extent of his importance in the task of producing the national income. For each depositor will insist on having as his share of the goods an amount no smaller than would be lost if he withheld his productive efforts. And if competition exists, there is no reason to suppose that he need take less.¹

The classical and neo-classical doctrines (such as the one just mentioned) were developed by deductive reasoning from certain premises. Everyone knows that our economic world does not exactly fit these assumed premises. The question is, "Are these doctrines applicable to the real-world, or are they largely unreliable?" By subjecting these doctrines to statistical checking, we can find out their reliability or applicability to the real-world situation.

¹Paul F. Gemill and Ralph H. Blodgett, Economics: Principles and Problems, New York, Harper and Brothers Publishers, 1942, Volume 1, p. 321.

CHAPTER II

METHOD OF INQUIRY

In this study, various factors are correlated with farm living levels in the endeavor to find those which cause farm living levels to be what they are. Correlation analysis is a tool of research commonly used for this purpose. Of course, a high degree of correlation between two series does not indicate which factor is causative, or that any causal relationship exists between them at all. Nevertheless, indices of correlation constitute valuable supporting evidence. In the social sciences, it is very difficult to "prove" that a certain factor causes definite results because controlled experiments cannot be run with the subject matter, society. What social scientists actually do, in order to demonstrate that a certain factor (or factors) is causative is to present a logical explanation (bolstered by as much supporting evidence as possible) in terms of just this factor (or factors) which makes it unnecessary to resort to other factors. If other students of the problem agree with this explanation, it becomes accepted as the truth. However, it has not been proved in the sense that things can be proved in the physical science laboratories.

Use of Aggregates

The data used thruout this study consist of averages or medians (measures of central tendency). For example, state average farm operators' outputs are correlated with farm living levels. Why not work with individual cases instead of aggregates? In the first place, it should be kept in mind that this is a study of farm conditions all over the United

States; hence, there are six million individual cases (the number of farms). It would be impossible for any investigator to gather data, tabulate it, and correlate it using six million cases. There is only one agency that can handle the job of collecting data on all of the six million American farms, namely, the Bureau of the Census. Census data constitute the chief source of information on which this study is based.

In the second place, in statistical analysis and presentation, it is very common to make use of averages and other abstractions based on the original data. The use of averages concentrates a great mass of incomprehensible data into meaningful figures; it also brings data into manageable quantities for analysis purposes. In this study, by concentrating the data on six million farms into state average figures, it becomes feasible to apply the laborious mathematical process of multiple correlation.

Why not work with a "sample survey"? This would permit working with individual cases. In reply to this, it should be noted that there are good reasons for not adopting the sample survey method. In the first place, a sample of only one percent of America's farms would mean 60,000 cases. It would be extremely difficult (more probably, impossible) for one investigator to gather data and analyze them for that number of cases located all over the United States. Furthermore, how could a one percent sample be selected that would represent accurately all the United States farms for the purpose of this problem?

Why not study a small area (such as a township) intensively? Would not the results of such a study apply to the entire United States situation? The answer is "no". Local studies aimed at finding causes of prosperity among farm operators often arrive at conclusions which cannot

be applied to the entire United States situation. For example:

(1) Quality of Soils. Commonly, it will be found that on looking over a small area such as a county that the lowest income farm people are found on the sub-marginal lands. Yet, for the United States as a whole, is it found that rural living conditions vary according to the natural agricultural resources of each state or region? Definitely not. Some of the worst rural poverty of the United States is found on some of the best soils. However, as pointed out on page 2, in small areas such as a county, one may sometimes observe an association between quality of resources and living conditions. (This subject is discussed in more detail on pages 40-2.)

(2) Individual Incentives. Some local studies have pointed out the importance of personal incentives as an explanation of differences in the prosperity of farmers.¹ Yet can this insight be applied to the whole United States? That is, are the differences in prosperity of farm operators in Massachusetts as compared with those in Tennessee to be explained largely by differences in personal factors? Probably not.

(3) Inherent Abilities of Men. It has been observed that men differ in their inherent abilities when subjected to intelligence tests, or when their farming results are seen.² Projecting this insight, could

¹See, for example, W. W. Wilcox and O. G. Lloyd, "The Human Factor in the Management of Indiana Farms", Purdue University Agricultural Experiment Station Bulletin No. 369, 1932. In this bulletin it is demonstrated that there are great differences in the labor incomes of Indiana farmers, and these differences are related to personal factors. The most important of these personal and environmental factors that could be measured were: (1) Help and stimulation received from the wives; (2) ambition; (3) interest in farming as an occupation; (4) possession of agricultural information.

²See Henry C. Taylor, "Two Dimensions of Productivity", American Economic Review Supplement, Volume VII, No. 1, March 1917. The data and argument of this article demonstrate that there are great differences in the efficiency and capacity of men; these differences are related to their incomes.

it be said that the principal reason for the better farming results in the North, as compared with those of the South, is that farmers in the North are inherently superior people? It is to be doubted very much that this is the case.

(4) Importance of Non-Farm Employment. A local study will be very apt to miss the importance on agriculture of non-farm employment opportunities. It will be shown later that, viewing the United States as a whole, it is very apparent that productivities and living levels of farm operators are higher where non-farm employments exist nearby.

(5) Economic Evolution. There are stages in economic evolution. The regions of the United States have not all evolved at equal speeds. A local study will be very apt to overlook the stage of economic evolution in which the area lies.

(6) Ethnic Influences. Cultural influences arising from different ethnic backgrounds may account for some of the differences found between farmers' productivities and living levels in various parts of this nation. A local study, conducted within the confines of one rural cultural group, may easily overlook these influences.

In summary, the local survey method is not a reliable method to use when studying the causes of differences in farmers' living levels over the United States. It is recognized, however, that for certain problems, the local study method is an excellent tool of research.

Use of Farm Living Levels

The improvement of farmers' material living levels is the major objective of the farm programs in this nation. For example, money is appropriated for research in agriculture, not for the purpose of seeking

truth for truth's sake, but mainly in order to help farmers increase their incomes and thereby improve living levels. There are programs for "parity", soil conservation, agricultural exports, farm credit-- all of which have as their chief purpose the safeguarding of, and the elevation of, farmers' standards of living.

Consequently, if the level of living is the central thing aimed at in the farm programs, it should be known which factor (or factors) is chiefly responsible for farm living levels being what they are. To find that factor (or factors) is the chief purpose of this inquiry.

The question may arise, "Why not seek the factors that make for high dollar incomes? The use of dollar incomes would be less cumbersome in statistical analysis than the use of various measurements of living levels. After all, will not farmers' living levels parallel their net incomes?" The reason why dollar net incomes have not been used is that many people feel that dollars are not as meaningful in rural life as in city life. It is said that farmers can live well without having much money income since so much of the living can be produced on the farm itself. Furthermore, it is frequently believed that money goes much farther in some parts of the United States than in other parts. In view of these objections to the use of dollar incomes, an attempt has been made in this inquiry to use only "real items to express rural living levels.

Measurement of Living Levels

Census data are used in this study as the basis for expressing farm living levels. The 1940 Census of Housing, in addition to some material found in the 1940 Census of Agriculture, provide most of the information available. From these sources, the following have been taken for purposes

of this inquiry:

Percentage of farm operators possessing automobiles.
 Percentage of farm homes lighted by electricity.
 Percentage of farm homes with running water.
 Percentage of farm homes with bath or shower.
 Percentage of farm homes with mechanical refrigerator.
 Monthly rental value of farm homes.

An attempt has been made by M. J. Hagood to construct a single index series representing living levels of farmers in all the counties of the United States.³ This index was constructed by combining five factors and weighting them. Although this index series, or any other series which would represent accurately farm living levels for each of the 48 states, would be very convenient to use for the purposes of this study, it has not been used.⁴ In this study, one item in the farm living level has been correlated at a time, and no attempt has been made to weight the importance of these different items. Do the series employed in this study adequately represent farm living conditions? Certainly they do not

³Margaret Jarman Hagood, Rural Level of Living Indexes for Counties of the United States, 1940, United States Department of Agriculture, Bureau of Agricultural Economics, October 1943, Mimeographed.

⁴Hagood's index combined these five factors:
 Percent of occupied dwelling units with fewer than 1.51 persons per room.
 Percent of dwelling units with radios.
 Percent of farms with gross incomes of more than \$600.
 Percent of farms reporting autos of 1936 or later models.
 Median grade of school completed by persons 25 years of age and over.

The weights used for combining these series "were determined by the principal component solution of the matrix of their intercorrelations for a series of 200 sample counties." The greatest objection to this series is the matter of weights. Can any statistical method yield proper weights for these factors? Is not one really in the field of value judgments when one tries to state the relative importance of, let us say, "median grade of school completed" versus the "percent of farms with late model automobiles"?

Other weaknesses of this combined index are that: (1) The only home convenience used as a component is the radio, which is not very representative of the possession of other home conveniences; (2) the quality of housing is not considered in the factor used as the housing component.

represent conditions perfectly. Yet, would it not be agreed that they are important segments of rural living standards?

Data Pertaining to Farm Operators

This study is confined mostly to the farm operator. This is due to the lack of important data concerning hired laborers in agriculture.

CHAPTER III

FARM LIVING STANDARDS IN THE UNITED STATES

How well do farmers live in the United States? Available evidence indicates that there are great differences in the material levels of living between regions of this nation (see Table 3), and between counties within one state (see Table 16). In the following table is a comparison of three states in the year 1940, one state being representative of the best, one of the worst, and one of average farm living conditions.

**Table 1. Farm Home Facilities and Rental Values
in Three Selected States, 1940**

| Item | Connect- icut | Iowa | Arkan- sas |
|-----------------------------|------------------|---------|---------------|
| Percent of farm homes with: | | | |
| Electric lights | 83 | 41 | 11 |
| Running water | 68 | 22 | 3 |
| Flush toilet | 55 | 15 | 2 |
| Bath or shower | 53 | 15 | 2 |
| Mechanical refrigerator | 53 | 16 | 5 |
| Monthly rental value of | | | |
| farm homes | \$28.82 | \$12.67 | \$5.21 |
| Median number of rooms in | | | |
| farm homes | 6.93 | 6.64 | 3.60 |
| Percent of farm operators | | | |
| possessing automobiles | 67 | 90 | 21 |

Source of data: Tables 3 and 6.

Notice how relatively meager were the home facilities in Iowa, a state of fabulous agricultural resources. The best state-wide farm

living conditions are found in the New England and Middle Atlantic States (excepting Maine and Pennsylvania), and the Pacific Coast States. The worst conditions are found in the East South Central, West South Central and South Atlantic States (excepting Maryland and Delaware).

Within the State of Maryland, the following contrast in farm living levels existed in 1940 between two counties only about 40 miles apart.

Table 2. Contrast in Farm Home Facilities and Rental Values in Two Maryland Counties, 1940

| Item | Baltimore County | Calvert County |
|--|------------------|----------------|
| Percent of farm homes with: | | |
| Electric lights | 78 | 14 |
| Running water | 55 | 11 |
| Flush toilet | 43 | 10 |
| Bath or shower | 43 | 10 |
| Mechanical refrigerator | 42 | 15 |
| Monthly rental value of farm homes | \$23.45 | \$9.78 |
| Median number of rooms in farm homes | 5.8 | 4.3 |
| Percent of farm operators possessing automobiles | 74 | 60 |

Source of data: 1940 Census of Agriculture, Volume I, Part 3, p. 64
1940 Census of Housing, Volume II, Part 3, Maryland.
Table 16.

Table 3. Facilities and Rental Values of Farm Homes
in the United States, by States, 1940

| States | Percent of Farm Homes Having Certain Facilities | | | | | Rental Value per Month | No. of Rooms in Homes |
|---------|---|-----------------------|----------------------|----------------------|----------------------------|------------------------|-----------------------|
| | Elec- tric Lights | Run- ning Water | Flush Toi- let | Bath or Shower | Mechan- ical Refrig. | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Me. | 54 | 33 | 20 | 17 | 15 | \$12.09 | 6.85 |
| N. H. | 68 | 57 | 37 | 35 | 28 | 17.56 | 7.26 |
| Vt. | 55 | 73 | 40 | 35 | 21 | 13.76 | 7.67 |
| Mass. | 84 | 72 | 56 | 63 | 42 | 24.33 | 6.89 |
| R. I. | 83 | 57 | 43 | 40 | 42 | 23.59 | 7.10 |
| Conn. | 83 | 68 | 55 | 53 | 53 | 28.82 | 6.93 |
| N. Y. | 70 | 44 | 32 | 30 | 30 | 17.61 | 7.69 |
| N. J. | 84 | 61 | 47 | 46 | 47 | 23.23 | 6.57 |
| Penna. | 59 | 38 | 22 | 22 | 24 | 14.40 | 6.82 |
| Ohio | 61 | 23 | 17 | 17 | 25 | 13.00 | 6.53 |
| Ind. | 52 | 18 | 12 | 12 | 20 | 10.56 | 5.90 |
| Ill. | 41 | 16 | 13 | 13 | 20 | 10.74 | 5.96 |
| Mich. | 71 | 28 | 17 | 16 | 24 | 11.86 | 6.40 |
| Wis. | 51 | 19 | 11 | 12 | 14 | 12.19 | 6.56 |
| Minn. | 30 | 12 | 8 | 8 | 10 | 11.57 | 5.86 |
| Ia. | 41 | 22 | 15 | 15 | 16 | 12.67 | 6.64 |
| Mo. | 18 | 6 | 5 | 5 | 9 | 5.74 | 4.44 |
| W. D. | 16 | 6 | 3 | 3 | 2 | 7.28 | 5.10 |
| S. D. | 18 | 12 | 5 | 5 | 5 | 6.66 | 5.66 |
| Neb. | 29 | 22 | 12 | 14 | 12 | 8.05 | 5.85 |
| Kan. | 27 | 16 | 10 | 12 | 17 | 7.46 | 5.57 |
| Dela. | 41 | 25 | 18 | 18 | 20 | 12.51 | 6.20 |
| Md. | 44 | 30 | 22 | 22 | 24 | 12.60 | 6.17 |
| Va. | 25 | 12 | 9 | 9 | 14 | 5.81 | 5.08 |
| W. Va. | 27 | 11 | 6 | 6 | 12 | 5.88 | 4.98 |
| N. Car. | 26 | 7 | 4 | 4 | 12 | 4.53 | 4.49 |
| S. Car. | 21 | 5 | 4 | 4 | 10 | 3.34 | 4.12 |
| Ga. | 20 | 5 | 3 | 3 | 7 | 3.40 | 3.95 |
| Fla. | 27 | 19 | 15 | 15 | 14 | 4.57 | 4.13 |
| Ky. | 17 | 4 | 3 | 3 | 9 | 4.02 | 4.11 |
| Tenn. | 16 | 6 | 4 | 4 | 9 | 3.83 | 3.91 |
| Ala. | 15 | 3 | 2 | 2 | 7 | 2.89 | 3.66 |
| Miss. | 9 | 3 | 2 | 2 | 5 | 3.33 | 3.60 |

(Continued on next page)

(Continued)

Table 3. Facilities and Rental Values of Farm Homes
in the United States, by States, 1940

| States | Percent of Farm Homes Having Certain Facilities | | | | | Rental Value per Month | No. of Rooms in Homes |
|--------|---|-----------------------|----------------------|----------------------|----------------------------|------------------------|-----------------------|
| | Elec- tric Lights | Run- ning Water | Flush Toi- let | Bath or Shower | Mechan- ical Refrig. | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Ark. | 11 | 3 | 2 | 2 | 5 | \$3.21 | 3.60 |
| La. | 12 | 6 | 4 | 5 | 7 | 3.40 | 3.64 |
| Okla. | 16 | 8 | 4 | 5 | 10 | 4.39 | 3.71 |
| Tex. | 22 | 20 | 7 | 11 | 13 | 4.49 | 3.89 |
| Mont. | 28 | 15 | 8 | 9 | 13 | 6.09 | 3.86 |
| Ida. | 60 | 31 | 17 | 18 | 30 | 8.50 | 4.15 |
| Wyo. | 35 | 16 | 10 | 10 | 13 | 6.40 | 3.59 |
| Colo. | 38 | 21 | 11 | 12 | 15 | 6.72 | 4.12 |
| N. M. | 19 | 14 | 8 | 9 | 11 | 3.07 | 2.95 |
| Aris. | 33 | 27 | 17 | 19 | 23 | 3.77 | 1.93 |
| Utah | 70 | 51 | 30 | 30 | 35 | 10.29 | 4.09 |
| Nev. | 50 | 43 | 26 | 29 | 28 | 10.62 | 4.06 |
| Wash. | 74 | 56 | 34 | 36 | 26 | 10.67 | 4.70 |
| Ore. | 60 | 51 | 29 | 34 | 25 | 8.66 | 4.82 |
| Cal. | 83 | 77 | 55 | 60 | 51 | 12.95 | 4.43 |

Source of data: Column 1 - 1940 Census of Agriculture, Volume III,
p. 541
Columns 2 thru 7 - 1940 Census of Housing,
Volume II, Part 1.

CHAPTER IV

TESTING FACTORS BELIEVED TO AFFECT FARM LIVING LEVELS

In this chapter, three factors are tested by correlation analysis to find out to what extent they are associated with farm living levels. These three factors are: (1) Factor 1, farm operators' farm outputs; (2) Factor 2, farm operators' non-farm outputs; (3) Factor 3, the availability of electricity. The underlying objective is to find which factor (or factors) causes high living levels. It will be shown that there is a rather close correlation between farmers' living levels and their total productivities (a combination of Factors 1 and 2). Data will also be presented which indicate that the availability of electricity is of only minor importance as a determinant of farm living levels. In a later chapter, the influence of tenancy on farm living levels is discussed.

Method of Correlation

The results to be discussed shortly were secured by correlating series made up of 48 state averages. For example, a series representing the percent of farm homes with running water (a percentage figure for each state) is correlated with an index series representing farm operators' gross farm outputs (an index number for each state). The correlation method employed is the usual one, the "least squares" method.

The Coefficient Mentioned. The correlation results of this study are expressed in terms of the "coefficient of determination". Most people

are more familiar with the "coefficient of correlation". Actually, these two concepts are closely related. The coefficient of correlation is "r"; this item squared (r^2) is the coefficient of determination. The coefficient of multiple correlation is "R"; this item squared (R^2) is the coefficient of multiple determination. According to the statisticians, Croxton and Cowden, the coefficient of determination is a more useful concept than is the coefficient of correlation.¹ The coefficient of determination tells the proportion of the total variance which has been "explained" by the factor being tested.²

Home Facilities and Productivity

In this section, evidence is presented to show that farm home living levels in the United States are closely associated with farm operators' productivities. This supports the main hypothesis of this inquiry, namely, that farm living levels are primarily determined by farmers' productivities.

Measurement of Farm Operators' Productivities. First of all, it should

¹Frederick E. Croxton and Dudley J. Cowden, Applied Statistics, New York, Prentice Hall, Inc., 1940, p. 663-4.

²A coefficient of correlation of .5 means that the coefficient of determination is .25. In other words, only 25 percent of the variation in the dependent factor (Y factor) has been "explained" by the independent factor (X factor) which has been tested. If another factor is used, and "r" is found to be .9 (r^2 now .81), 81 percent of the variance in the Y factor is "explained" by the X factor. Note that while "r" went up 80 percent (from .5 to .9), " r^2 " went up 224% (from .25 to .81). The coefficient of determination more truthfully tells the value of the factor being tested.

When there isn't much covariance between two series, the coefficient of correlation tends to be large. As a perfect correlation (1) is being approached, the coefficient of correlation rises very slowly. The coefficient of determination does not have these defects.

be noted that farm operators' productivities comprise two components: (1) Farm outputs, and (2) non-farm outputs. A detailed discussion of the measurement of farm operators' productivities is presented in Appendix I. It need only be mentioned here that it has not been possible to express farm operators' productivities in one series. Rather, two series have been utilized: (1) Index of Farm Operators' Gross Farm Outputs (based on gross farm incomes which have been significantly modified, as explained in Appendix I); (2) Days of Non-Farm Work Performed by Farm Operators in 1939.

As shown in the following table, when the home facilities series are correlated with the productivity series (Factors 1 and 2), the results

Table 4. Correlations of Three Factors with Facilities and Rental Values of Farm Homes, 1940

| | Simple Correlation | | | Multiple Correlation | |
|-------------------------------------|--------------------|----------------|----------------|----------------------|----------------|
| | Factor 1* | Factor 2* | Factor 3* | Factors 1,2* | Factors 1,2,3* |
| State Averages of: | r ² | r ² | r ² | R ² | R ² |
| Percent of farm homes with: | | | | | |
| Electric lights | .18 | .48 | .29 | .68 | .83 |
| Running water | .19 | .50 | .17 | .71 | .77 |
| Flush toilet | .20 | .49 | .21 | .71 | .79 |
| Bath or shower | .24 | .46 | .19 | .72 | .81 |
| Mechanical refrigerator | .25 | .43 | .24 | .69 | .82 |
| Monthly rental values of farm homes | .11 | .31 | .63** | .44 | .81** |

* Each of these three factors is a series made up of 48 state average figures.

Factor 1 - Index of Farm Operators' Gross Farm Outputs

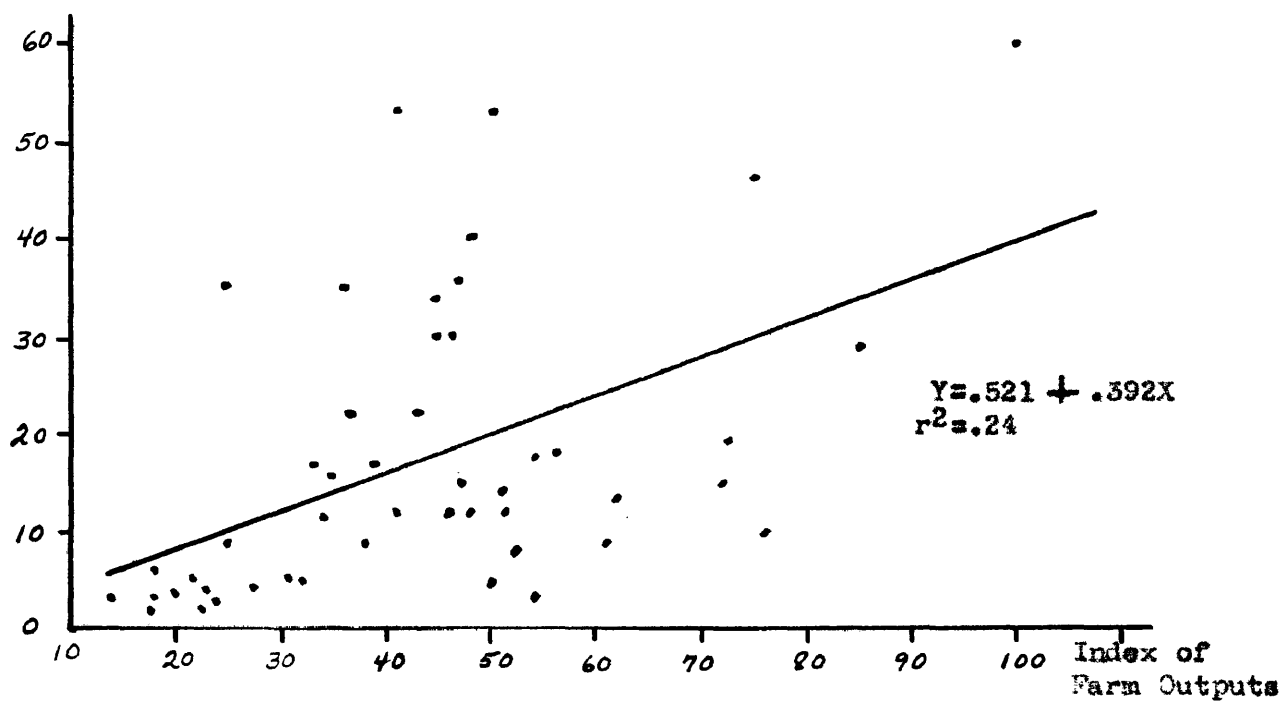
Factor 2 - Days of Non-Farm Work Performed by Farm Operators in 1939

Factor 3 - Index of the Availability of Electricity as a Limiting Factor to Farm Living Levels

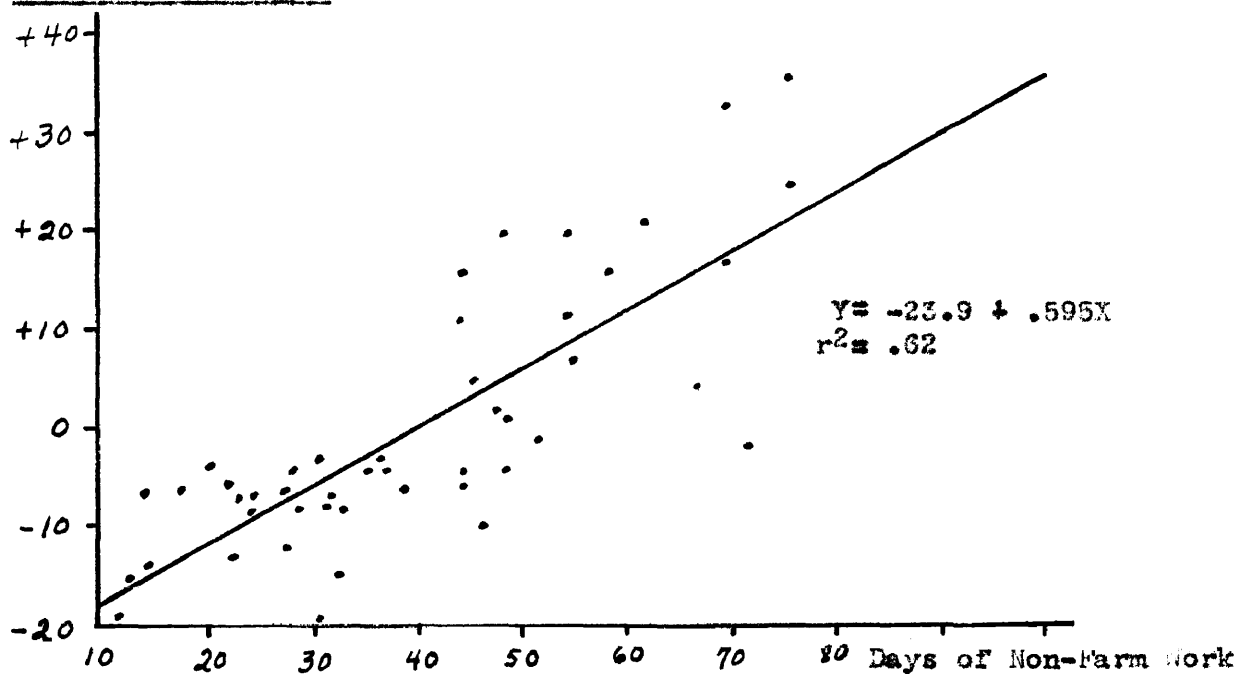
** The third factor in this instance is "Size of Farm Homes".

Figure 1. GRAPHIC MULTIPLE CORRELATION
Percent of Farm Homes with
Bath or Shower Correlated
with Three Factors

% with bath

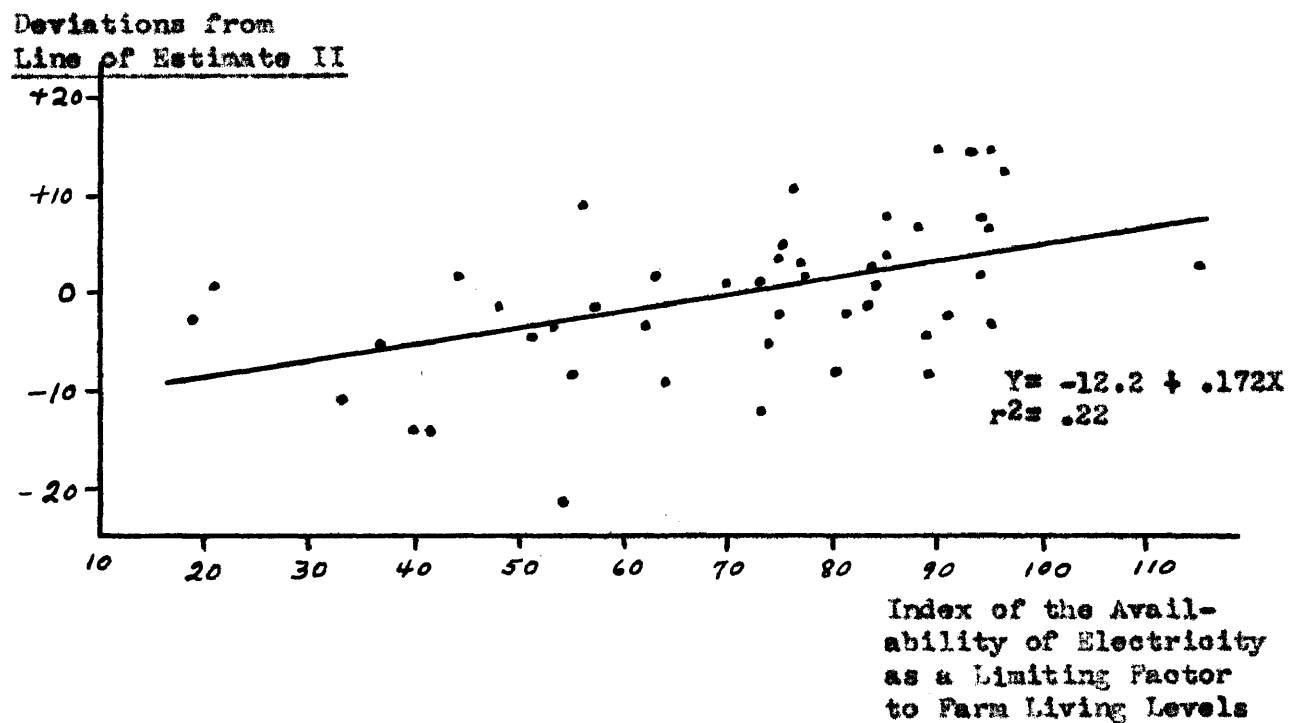


Deviations from
Line of Estimate I



(continued)

Figure 1. GRAPHIC MULTIPLE CORRELATION
 Percent of Farm Homes with
 Bath or Shower Correlated
with Three Factors



are remarkably uniform. When these home facilities series are correlated with the single Factor 1 (representing farm outputs), the coefficient of determination (r^2) is only about .2, indicating that there is not much association. In other words, farm home facilities are not associated at all closely with farm operators' farm outputs. In terms of a concrete illustration, average farm outputs in the New England States are only average, yet farm homes in that area are about the best equipped in the nation.

When farm home facilities are correlated with Factor 2 (representing farm operators' non-farm outputs), " r^2 " is around .4 or .5. In other words, in states where farmers do a considerable amount of non-farm work, noticeably more home facilities are found than in states where they do little non-farm work.³

When farm operators' outputs (farm and non-farm) are combined by the technique of multiple correlation, a much greater association is found. To be specific, " R^2 " is about .7. In other words, about 70 percent of the variation in home facilities is "explained" by these two factors. This is a rather high degree of association. It gives us evidence that productivity, more than anything else, determines farm living levels.

³It is not commonly understood how much non-farm work farm operators perform. There were 21 states in which farm operators averaged two or more months of non-farm work during the year 1939. In some states, they averaged nearly four months.

Availability of Electricity and Farm Living Levels

Is the unavailability of electricity an important reason why poor living conditions are found in some rural areas of the United States? An attempt has been made in this study to test by statistical methods the importance of the availability of electricity. As an aid in the analysis of this problem, an "Index of the Availability of Electricity as a Limiting Factor to Farm Living Levels" has been constructed.⁴ When this index (Factor 3) is correlated with series representing farm home facilities, "r²" is about .2 or slightly higher. This indicates that the availability of electricity is not a very important limiting factor to farm living levels.

This is contrary to what some might believe. One may look at states such as Massachusetts where, in 1940, 87.9 percent of the farms were within hook-up distance (one-quarter mile) from a power line, and then at Arkansas where only 27.1 percent of the farms were within hook-up distance. In Massachusetts, there are many modern conveniences in the farm homes, and in Arkansas very few. Is this difference in home facilities due to the electricity availability? However, it should be pointed out that in states like Arkansas, there was far more availability of electricity than was being made use of by farmers. In Arkansas, in 1940, only 37 percent of the farms within hook-up distance of an electric power line made use of electricity. In Georgia, in 1940, 41 percent of the farms were within hook-up distance; about 49 percent

⁴For a detailed explanation of this index, see Appendix II.

of the Georgia farmers within hook-up distance made use of electricity. Of all the farm houses in that state, about 20 percent had electric lights, and but 5 percent had running water in that year. Surely it was not the availability of electricity that was keeping the percentage with running water so low.

In Illinois, in 1940, 54 percent of the farms were within hook-up distance of an electric distribution line. Of the total number of farms in that state, 41 percent had electric lights, 16 percent had running water, 13 percent had bath-tubs (or shower), and 13 percent had flush toilets. Here again, it was not the availability of electricity that was keeping the percentage with running water and bath-tubs at such a low figure.

There are some significant differences to be noted among these states. In Massachusetts, in 1940, about 94 percent of the farms within hook-up distance from a power line had electric lights; in Arkansas, those making use of electricity who were within hook-up distance amounted to 37 percent, in Georgia 49 percent and in Illinois about 75 percent.

Although the evidence points clearly to the fact that, for the United States as a whole, the availability of electricity was not, in 1940, an important limiting factor to farm living levels, it was a minor factor. A study of the evidence indicates that unavailability of electricity was important in the Mountain States, such as Wyoming, Montana, and Colorado.

Multiple Correlation with Three Factors

When the various series representing farm home facilities were

correlated with three factors (two representing farmers' productivities, and the third, electricity), very high correlation results were secured. The coefficient of determination was about .8.

Other Correlations

The correlation results concerning "Rental value of farm homes" and "Percent of farmers with automobiles" are discussed in later chapters.

CHAPTER V

FACTORS AFFECTING FARM OUTPUTS

Livestock Agriculture. Do we find prosperity in agricultural areas which concentrate their efforts in the production of livestock and livestock products? Is livestock agriculture the key to prosperous agriculture? In this study, attempts have been made to test this idea. To represent livestock agriculture, a series was secured based on "livestock and livestock products as a percent of total farm output".¹ Next, this series was correlated with the Index of Farm Operators' Gross Farm Outputs to see if, in practice, farm operators were found to have large farm outputs in states wherein livestock and livestock products made up a large proportion of total farm outputs. The association was not very great; " r^2 " equaled .24. To show this situation in concrete terms, here are several states with very similar percentages of livestock and livestock products to total farm outputs:

Livestock and livestock
products as a percent
of total farm output

| | |
|------------|----|
| California | 36 |
| Washington | 37 |
| Kentucky | 35 |
| Tennessee | 31 |

California has the highest average farm operator outputs of any state, yet livestock and livestock products comprise but a minor part of its output. In Washington, where farm operators do a great

¹Data taken from the 1940 Census of Agriculture, Volume III, page 906 and following.

deal of non-farm work, farm outputs are only moderately high. Rural living levels are high in Washington, yet livestock agriculture is of minor significance there. In contrast, in two other states with about the same proportion of livestock and livestock products to total output, Kentucky and Tennessee, farm operators' outputs and rural living conditions are among the lowest in the nation.

Is livestock agriculture rightly portrayed by the series, "livestock and livestock products as a percent of total farm output"? What would be the results if "average value of livestock per farm" were used to represent livestock agriculture in the correlation? When the Index of Farm Operators' Gross Farm Outputs was correlated with the state average values of livestock per farm, " r^2 " was .43. This is a very noticeable degree of association. It seems safe to say that in states where the average investment per farm in livestock is high, there is a distinct tendency for farm outputs to be high. It is not entirely certain just what this means. It will be shown later that farm outputs tend to be high where investments in machinery are high, and where total investment in farm property is high. Probably, this case is just a particular instance of a broader principle, namely, that farm outputs tend to be high where the operator has many resources (land and capital) with which to work.

In any event, care must be exercised in making recommendations that, in areas with low farm outputs, livestock agriculture should be adopted. It must be asked if there is a demand for all the livestock and livestock products that would be produced if our low output areas turned to livestock agriculture. Thruout the South today, country people are being told to raise more livestock. Livestock agriculture

is being recommended for several reasons: (1) For soil conservation purposes; (2) because livestock and livestock product prices have been high in the South; (3) due to intensification of production on small acreages; (4) because incomes of livestock farmers have been above average incomes for other farmers in the past couple decades. Consequently, it may make perfectly good sense for a few county agents to recommend to farmers in their counties that they raise more livestock. However, if many county agents are advising the same thing, and if many farmers follow their advice, the result would be the production of livestock and livestock products far beyond the ability of the market to take them at a price farmers would consider reasonable.² The advice that southern farmers produce livestock is sound advice only if disregarded by most of the southern farmers!

Livestock Agriculture and Living Levels

To further explore the connection between livestock agriculture and farm living levels, a correlation was made between "livestock and livestock products as a percent of total farm output" and the "percent

²The best evidence available indicates that the demand for most of our important agricultural products in the United States is very limited. Assuming that farm technology improves slowly, and that there is full employment, high level exports and large industrial usage of farm products, it has been estimated that we shall need in 1950:

| | | | | | | | | |
|-------------------|----|-------------------------------------|---|---|---|---|---|---|
| Hogs | | 3 percent less than we had in 1943. | | | | | | |
| Cattle and calves | 7 | " more | " | " | " | " | " | " |
| Sheep and lambs | 6 | " less | " | " | " | " | " | " |
| Chickens | 18 | " less | " | " | " | " | " | " |
| Milk cows | 4 | " more | " | " | " | " | " | " |

For two minor classes of livestock, broilers and turkeys, it was estimated that we would need more than a 50 percent increase over 1943 amounts by 1950. For the source of these estimates see What Peace Can Mean to American Farmers, Miscellaneous Publication 562, United States Department of Agriculture, 1945, (pamphlet).

Table 5. Correlations of Two Factors with Items Affecting
Gross Farm Outputs and Farm Wage Rates, 1940

| | Simple | | Multiple |
|---|-------------|--------|-------------|
| | Correlation | | Correlation |
| State Averages of: | Factor | Factor | Factors |
| | 1* | 2* | 1 and 2* |
| Livestock and livestock products as a percent of total farm output | .24 | | |
| Value of livestock per farm | .43 | | |
| Value of land, buildings, imple- ments, machinery, and livestock per farm | .60 | | |
| Value of land and buildings per acre | .06 | | |
| Value of implements and machinery per farm | .70 | | |
| Agricultural employment as a percent of total employment | .08 | .60 | .69 |
| Farm birth rate | .23 | .18 | .42 |
| Farm wage rates | .62 | .27 | .81 |

* Each of these two factors is a series made up of 48 state average figures.

Factor 1 - Index of Farm Operators' Gross Farm Outputs

Factor 2 - Days of Non-Farm Work Performed by Farm Operators
in 1939.

of farm homes with running water³. The coefficient of determination was .24, indicating a rather low degree of association.

Investments in Selected Items and Productivity

In this section, the association between average farm invest-
ments in selected items and farm operators' productivities is
discussed. When the state average-per-farm investments³ in land,

³Source of data: 1940 Census of Agriculture, Volume III

buildings, implements, machinery and livestock (total investment in all of these) were correlated with Factor 1 for the year 1940, " r^2 " was .60. This is a rather high degree of association. It indicates strongly that where average investment per farm is high, farm outputs are high. Of course, this is as it ought to be. Large investment in these items per farm means that the farm operator has many resources (land, buildings, equipment, livestock) with which to work; of course, this tends to make for large outputs per worker.

When the state average-per-farm investments⁴ in land and buildings per acre were correlated with Factor 1, " r^2 " was only .06. In other words, there was hardly any association at all between average investments per acre in land and buildings and farm operators' farm outputs.

When the state average-per-farm investments⁵ in implements and machinery were correlated with Factor 1, the association was very high; " r^2 " equaled .70. Of course, this was to be expected. However, care must be exercised concerning recommendations based on this insight. Can it be advocated, as a solution for the problem of low output areas, that more machinery be utilized? Probably not, for these reasons: (1) Many of our low-output farmers operate acreages too small for the economical use of modern machinery; (2) many low-output farmers are found in hilly regions where the use of machinery is not feasible; (3) there is no adequate demand in sight for all the farm products that would be produced if all our low-output farmers were made more efficient.

^{4,5}Source of data: 1940 Census of Agriculture, Volume III

Rural Birth Rates

Generally speaking, the high birth rate countries (for example, India and China) have smaller outputs per agricultural worker than do the low birth rate countries (for example, Australia, New Zealand, Germany and England). High birth rates tend to make for population pressure on the land, resulting in too many people in proportion to the resources. This situation leads to small acreages per worker and to very low outputs per worker. This happens particularly if there are no alternative employments. Actually, such countries find it difficult to develop any non-farm employments because they can accumulate no capital. The populations of such countries can barely produce the minimum necessities of life, leaving little if any unused resources to be used for capital formation.

In the United States, are the highest birth rates found among farm people where productivity is the lowest? What degree of association is there between birth rates and productivities? When an index of rural-farm birth rates⁶ was correlated with Factor 1 (which represents farm operators' farm outputs), " r^2 " was .23 (-). This indicates that there is small tendency for farmers' outputs to be low where farm birth rates are high. When birth rates were correlated with Factor 2 (representing farm operators' non-farm outputs), " r^2 " was .18 (-). Correlating birth rates with Factors 1 and 2 (multiple correlation), " R^2 " was .42 (-). This means that there is a very noticeable tendency for birth rates to be high where farm

⁶See series on farm birth rates in Table 6.

Table 6. Comparative Data, by States, 1940

| States | Tenancy | Index of Farm Birth Rates (Utah = 100) | Percent of Farm-ers with Autos | Agrie. Jobs as Percent of all Jobs | Index of Farm Wage Rates (Cal. = 100) | Index of Farm Outputs (Cal. = 100) | Days of Non-Farm Work in 1939 |
|--------|---------|--|--------------------------------|------------------------------------|---------------------------------------|------------------------------------|-------------------------------|
| Me. | 6 | 73 | 58 | 16 | 65 | 33 | 67 |
| N. H. | 6 | 60 | 66 | 11 | 81 | 25 | 76 |
| Vt. | 10 | 71 | 64 | 30 | 69 | 36 | 55 |
| Mass. | 7 | 60 | 62 | 3 | 99 | 41 | 76 |
| R. I. | 10 | * | 71 | 2 | 94 | 48 | 62 |
| Conn. | 7 | 54 | 67 | 5 | 94 | 50 | 70 |
| N. Y. | 13 | 67 | 74 | 5 | 66 | 46 | 45 |
| N. J. | 16 | 63 | 72 | 4 | 78 | 75 | 45 |
| Penna. | 16 | 77 | 74 | 7 | 60 | 37 | 55 |
| Ohio | 26 | 73 | 81 | 13 | 57 | 39 | 49 |
| Ind. | 28 | 70 | 81 | 21 | 54 | 41 | 45 |
| Ill. | 43 | 71 | 83 | 12 | 63 | 62 | 28 |
| Mich. | 17 | 80 | 82 | 14 | 63 | 35 | 43 |
| Wis. | 23 | 83 | 84 | 30 | 62 | 46 | 25 |
| Minn. | 32 | 78 | 88 | 35 | 63 | 52 | 23 |
| Ia. | 48 | 71 | 90 | 42 | 63 | 72 | 16 |
| Mo. | 36 | 80 | 64 | 28 | 46 | 32 | 32 |
| N. D. | 45 | 87 | 83 | 61 | 62 | 54 | 12 |
| S. D. | 53 | 79 | 86 | 55 | 60 | 50 | 13 |
| Neb. | 53 | 75 | 89 | 44 | 53 | 51 | 15 |
| Kan. | 45 | 73 | 85 | 37 | 53 | 48 | 25 |
| Del. | 33 | 74 | 76 | 17 | 55 | 54 | 29 |
| Md. | 26 | 74 | 71 | 12 | 57 | 43 | 46 |
| Va. | 27 | 84 | 43 | 28 | 44 | 25 | 52 |
| W. Va. | 23 | 91 | 35 | 17 | 46 | 18 | 72 |
| N. C. | 44 | 85 | 42 | 40 | 36 | 23 | 32 |
| S. C. | 56 | 88 | 43 | 43 | 27 | 23 | 23 |
| Ga. | 60 | 85 | 33 | 40 | 26 | 24 | 24 |
| Fla. | 25 | 84 | 39 | 19 | 38 | 47 | 49 |
| Ky. | 33 | 88 | 35 | 41 | 43 | 14 | 37 |
| Tenn. | 40 | 82 | 32 | 39 | 35 | 20 | 36 |
| Ala. | 59 | 87 | 20 | 43 | 28 | 18 | 23 |
| Miss. | 66 | 84 | 18 | 61 | 30 | 18 | 18 |

* Too few cases

(continued)

Table 6. Comparative Data, by States, 1940

| States | Tenancy | Index of Birth Rates of Farm-ers with (Utah = 100) | Autos | Jobs of all | Index of Farm Wage Rates (Cal. = 100) | Index of Farm Outputs (Cal. = 100) | Days of Non-Farm Work in 1939 |
|--------|---------|--|-------|-------------|---------------------------------------|------------------------------------|-------------------------------|
| Ark. | 53 | 90 | 21 | 55 | 35 | 23 | 26 |
| La. | 59 | 89 | 21 | 56 | 33 | 22 | 21 |
| Okla. | 54 | 92 | 57 | 38 | 44 | 31 | 29 |
| Tex. | 49 | 85 | 60 | 34 | 42 | 34 | 31 |
| Mont. | 28 | 82 | 73 | 35 | 80 | 61 | 33 |
| Ida. | 26 | 83 | 75 | 40 | 78 | 56 | 37 |
| Wyo. | 24 | 78 | 73 | 33 | 78 | 76 | 31 |
| Colo. | 37 | 79 | 80 | 25 | 67 | 51 | 33 |
| N. H. | 17 | 87 | 40 | 37 | 58 | 38 | 39 |
| Aris. | 12 | 81 | 43 | 25 | 82 | 72 | 47 |
| Utah | 13 | 100 | 60 | 22 | 84 | 45 | 55 |
| Nev. | 14 | 63 | 66 | 17 | 96 | 85 | 45 |
| Wash. | 13 | 74 | 75 | 18 | 79 | 47 | 70 |
| Ore. | 18 | 71 | 79 | 21 | 78 | 45 | 59 |
| Calif. | 19 | 66 | 80 | 13 | 100 | 100 | 40 |

Sources of data:

- Column 1 - 1940 Census of Agriculture, Volume III
 2 - 1940 Census of Population, Population, Differential Fertility, 1910 and 1940. Based on data on the number of children ever born per 1000 rural-farm women aged 15-74 years.
 3 - 1940 Census of Agriculture, Volume III
 4 - 1940 Census of Population, Volume III, Parts 1, 2, 3
 5 - Farm wages per month without board, July 1, 1939. Taken from Agricultural Statistics, 1940, U. S. Department of Agriculture, p. 530-1
 6 - Index of Farm Operators' Gross Farm Outputs. Described in Appendix I.
 7 - Total days of non-farm work reported by farm operators in a state, divided by the total number of farm operators in that state. Data taken from 1940 Census of Agriculture, Volume III.

operators' total outputs are low. There are exceptions to this, especially in the case of Utah which has the highest birth rate. Rural living levels in Utah are above the United States average. How has Utah been able to escape the economic consequences of a high birth rate? There is evidence which indicates that there has been a significant out-migration from Utah; they have adopted intensive systems of agriculture which make possible fairly high productivity per worker; and they have developed non-farm employments to absorb excess rural population.

Prevalence of Non-Farm Employments

Thruout the world, the highest productivity per worker in agriculture is found in nations where most of the employment is non-agricultural; that is, where non-farm jobs compete vigorously with farms for the labor supply. Is this situation true among the states of the United States? When a series representing "agricultural employment as a percent of total employment"⁷ for each state was correlated with Factor 1, " r^2 " was .08 (-). In other words, average farm outputs showed no significant tendency to be high or low in states where most of the employment was non-agricultural. For example, the average farm outputs of farmers in Massachusetts and in Wisconsin are almost the same; yet in Massachusetts, only 3 percent of the jobs were agricultural in 1940, whereas in Wisconsin it was 30 percent. When this employment series was correlated with Factor 2, " r^2 " was

⁷This series has been developed from data in the 1940 Census of Population, Volume III, Parts 1,2,3. The data pertain to males only who were employed (except on public "relief" projects) and experienced workers seeking work.

.60 (-). This means that there is a very strong tendency for farm operators to do much non-farm work in states where there are many non-farm jobs available. When the employment series was correlated (multiple) with Factors 1 and 2, "R²" was .69 (-). What all of this amounts to is this: In states where there is a great deal of non-farm employment, farm operators have about the same size farm outputs as do those in the more agricultural states. However, in those states with much non-farm employment, farm operators do a great deal more non-farm work than do those in the agricultural states. Hence, farm operators in the non-agricultural states are more productive (farm and non-farm outputs combined), and higher rural living levels are prevalent in those areas.

Farm Wage Rates

An examination of farm wage rates prevailing over the United States in 1939 reveals a wide variation in amounts paid. Wages without board ranged from a low of \$18.25 per month in Georgia to \$69.50 in California.⁸ What is the reason for this large difference in wages paid? Are the low wages in Georgia due to weak bargaining power on the part of the workers, or are they due to low productivity of Georgia farm hands?

It would be interesting if the degree of association between productivities of hired farm workers and wages they receive could be determined by correlation analysis. Data are not available which will express the productivities of hired farm labor unless wages paid hired

⁸See series on farm wage rates in Table 6.

labor are used as a measure of productivity. Of course, wages could not be used as a measure of productivity when the problem is to discover if wage rates vary according to productivities.

It may be somewhat useful to correlate farm wage rates with Factors 1 and 2, which represent the productivities of farm operators. Correlation of an index of state average farm wage rates in 1939 with Factor 1 yielded an " r^2 " of .52. Correlated with Factor 2, " r^2 " was .27. Multiple correlation of wage rates with Factors 1 and 2 revealed an " R^2 " of .81. This indicates that farm wage rates have a very strong tendency to be high where farm operators have high productivities. Would a statistical inquiry show that hired farm laborers have high productivities in the United States where farm operators have high productivities? If so, then it could be said that farm wage rates in the United States vary with the productivities of the workers.

A Note on the Correlation Method

In all of these correlation analyses, each state was given equal weight. It is to be recognized that some states have far more farms than do others. A statistician gave his opinion that it probably would not make any difference whether or not the states were weighted in this study, in view of the fact that each analysis involved so many "cases" (48). This opinion was checked by calculating one correlation analysis using weights; that is, each state was weighted according to the number of farms in that state. The percent of farm homes having flush toilets was correlated with the usual three factors. The unweighted " R^2 " was .79; the weighted one was .82. This difference of only .03 seemed insignificant. The opinion of the statistician was confirmed.

CHAPTER VI

ACCUMULATED WEALTH OF FARM PEOPLE AND THEIR PRODUCTIVITY

In Table 7 are shown farm physical wealth and gross agricultural production per agricultural worker, by states, for 1940. By farm physical wealth is meant land, buildings, implements, machinery, and livestock. When these two series are correlated, " r^2 " is .77. This is a very high degree of association, which indicates that where the farm physical wealth per worker is high, there is a very strong tendency for productivity per agricultural worker to be high. It is also true that where productivity is high, larger wealth accumulation is possible.

Accumulation Over Generations. To some extent, at least, rural wealth is the accumulation of many generations. It passes from generation to generation by inheritance. Among the various segments of the farm labor force, it will probably be the farm operators, not the hired laborers, who possess most of the rural wealth which has passed by inheritance. It is reasonable to suppose that in states where the rural wealth per farm is high, the farm operators inherit more resources with which to work than do farm operators in states where rural wealth per farm is small. Of course, it is known that farm wealth does not always pass intact from father to son. Often there are several children, some of whom live in cities, among whom an estate is divided. This usually means that the farm is refinanced, involving a loan from some capital source. (Wealth secured from borrowed capital must be paid for out of farm production; it is possible for farmers in any part of this nation to secure the use of some capital thru borrowing.) Also, farms are sometimes sold

outright by retiring farmers, for one reason or another, and do not pass free of charge to any operator.

It seems reasonable to believe, in spite of these limitations, that in our wealthier farm states, farm operators receive more rural wealth with which to work free of charge, than do farm operators in the poorer states. To the extent that this occurs, farm operators in the wealthier states enjoy higher incomes, arising from their higher productivities, due to the accumulated wealth of previous generations.

Table 7. Farm Wealth Production and Retention
in the United States, 1940

| State | Farm Wealth per Agricultural Worker ¹ | Rank | Gross Production per Agricultural Worker ² | Rank |
|---------------|---|------|--|------|
| Nevada | \$11,475 | 1 | \$1919 | 2 |
| Iowa | 10,589 | 2 | 1820 | 4 |
| Illinois | 10,325 | 3 | 1600 | 9 |
| Wyoming | 9,273 | 4 | 1936 | 1 |
| California | 9,210 | 5 | 1754 | 6 |
| Kansas | 9,137 | 6 | 1238 | 23 |
| Connecticut | 8,824 | 7 | 1809 | 5 |
| Nebraska | 8,621 | 8 | 1314 | 18 |
| Washington | 8,368 | 9 | 1568 | 11 |
| Oregon | 8,103 | 10 | 1508 | 14 |
| Montana | 8,054 | 11 | 1549 | 12 |
| Idaho | 7,448 | 12 | 1578 | 10 |
| Indiana | 7,283 | 13 | 1206 | 26 |
| Utah | 6,974 | 14 | 1528 | 13 |
| Massachusetts | 6,918 | 15 | 1904 | 3 |
| South Dakota | 6,813 | 16 | 1098 | 28 |
| Colorado | 6,792 | 17 | 1478 | 16 |
| Ohio | 6,692 | 18 | 1145 | 27 |
| Minnesota | 6,610 | 19 | 1219 | 25 |
| Rhode Island | 6,198 | 20 | 1641 | 8 |
| North Dakota | 6,046 | 21 | 1077 | 29 |
| Arizona | 6,003 | 22 | 1301 | 19 |
| New York | 5,991 | 23 | 1298 | 20 |
| Wisconsin | 5,931 | 24 | 1016 | 31 |
| Pennsylvania | 5,866 | 25 | 1221 | 24 |
| New Jersey | 5,864 | 26 | 1645 | 7 |
| New Mexico | 5,527 | 27 | 1064 | 30 |
| Michigan | 5,479 | 28 | 980 | 32 |
| New Hampshire | 5,089 | 29 | 1486 | 15 |
| Vermont | 5,070 | 30 | 1249 | 22 |
| Texas | 4,896 | 31 | 801 | 36 |
| Maryland | 4,769 | 32 | 935 | 33 |
| Delaware | 4,727 | 33 | 1276 | 21 |
| Oklahoma | 4,668 | 34 | 810 | 35 |
| Missouri | 4,528 | 35 | 857 | 34 |
| Maine | 4,406 | 36 | 1385 | 17 |
| West Virginia | 4,053 | 37 | 685 | 38 |
| Virginia | 3,530 | 38 | 676 | 39 |
| Florida | 3,184 | 39 | 761 | 37 |

(continued on next page)

(continued)

Table 7. Farm Wealth Production and Retention
in the United States, 1940

| State | Farm Wealth per Agricultural Worker ¹ | Rank | Gross Production per Agricultural Worker ² | Rank |
|----------------|---|------|---|------|
| Kentucky | \$2,982 | 40 | \$564 | 41 |
| Tennessee | 2,601 | 41 | 502 | 43 |
| North Carolina | 2,149 | 42 | 647 | 40 |
| Arkansas | 1,881 | 43 | 550 | 42 |
| Louisiana | 1,811 | 44 | 459 | 44 |
| Georgia | 1,592 | 45 | 442 | 45 |
| South Carolina | 1,557 | 46 | 425 | 46 |
| Alabama | 1,449 | 47 | 339 | 48 |
| Mississippi | 1,426 | 48 | 379 | 47 |

¹The combined value of land, buildings, implements, machinery and livestock for each state divided by the number of people employed in agriculture in that state. The figures on the value of property were taken from the 1940 Census of Agriculture, Volume III, p. 48. The figures for people employed in agriculture were taken from the 1940 Census of Population, Volume III, The Labor Force, Parts 2, 3, 4, 5, Table 17 for each state. Wealth, as used here, does not mean equity.

²The value of all farm products sold, traded, or used by the farm households for each state divided by the number of people employed in agriculture. The production value figures were taken from the 1940 Census of Agriculture, Volume III, p. 908. The employment figures were the same as explained above.

CHAPTER VII

SOIL AREAS AND FARM LIVING LEVELS

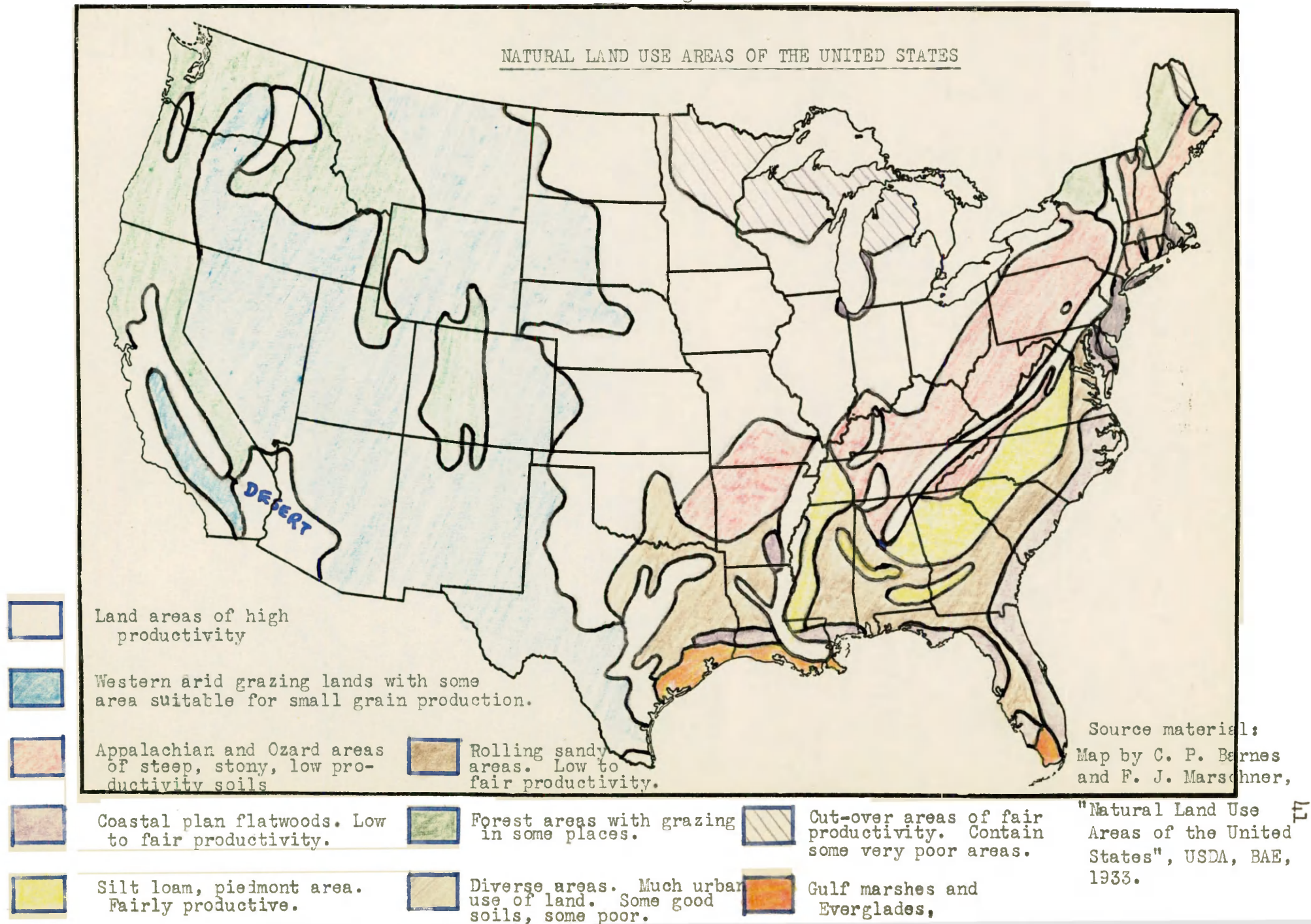
Do farm living levels in the United States follow the quality of agricultural resources (a combination of soil, climate and topography)? An examination of the map of agricultural resources on the next page shows that the great concentration of our best agricultural resources lies in the mid-continent region. It comprises the "corn belt", the western wheat region, and a small part of the northern "dairy belt". Another very productive area, though much smaller, is the Mississippi "delta" country. Other small areas of high quality are: The Shenandoah Valley, the Nashville "basin", the Texas black soil belt, the wheat area around Spokane (Wash.), the Willamette Valley, and the Central Valley of California.

Are highest farm living levels found in these areas of best agricultural resources? By and large, they are not! In the great "corn belt" and in the "wheat belt", farm living conditions are only about average for the United States. In New England and New Jersey, where agricultural resources are very meager, farm living levels are among the highest. In the Mississippi "delta", an area of tremendous agricultural resources, farm living levels are among the worst.

It has been well understood among agricultural economists that high productivity is often possible for a farm operator on poor soils if the type of farming is rightly selected. For example, sheep and cattle producers on the large ranches in the semi-arid western regions can achieve high productivity and living levels on land of low value per acre. On the other hand, even the best soils in the world cannot

Figure 2

NATURAL LAND USE AREAS OF THE UNITED STATES



furnish workers with high returns if the number of people trying to make a living from the soil is large in proportion to the area. Furthermore, when comparing the nations of the world, and the states within the United States, it is frequently found that where there is no large development of non-farm employments to compete for the labor supply, there are too many farmers in proportion to the soil resources; this results in low productivity per worker.¹

If farm living levels in the United States do not vary with the quality of agricultural resources, why is it that the poorest farms are often found on the sub-marginal lands, when farmers within a small area such as a county are compared? The answer seems to be this: Men of small financial resources find it possible to acquire the farms on the marginal and sub-marginal lands because of their low prices. When located on these farms, they tend to remain poor because the farms are inherently rather unproductive. An additional factor is personal ability. People vary in abilities. Those with less than average ability (normally, they have small savings) tend to acquire the cheap lands. The combination of low ability and poor land makes for low production and low farm living standards.

¹On this subject, a noted American economist had this to say: "It is sometimes assumed that a large product per acre is a desirable thing in itself. Such is not the case. What is really to be desired is a large product per man. It is only where the product per man is large that there is a high standard of living and a high state of well-being for the average man." Thomas Nixon Carver, Principles of Rural Economics, Boston, Ginn and Company, 1911, p. 156.

CHAPTER VIII

FACTORS AFFECTING FARM HOUSING STANDARDS

As may be seen from Table 4, there is a noticeable correlation between "rental value of farm home" and farmers' productivities. When rental value was correlated (multiple) with Factors 1 and 2 combined, " R^2 " was .44. This association is not as close as in the case of home facilities and farmers' productivities. A third important factor which appears to influence rental value of the farm home is the size of the home. When rental value was correlated with size of home, " r^2 " was .63; this is a rather high association. When rental value is correlated with three factors (Factors 1 and 2 representing farmers' productivities, and Factor 3 being median size of farm homes), there is a very high degree of association (" R^2 "=.81).

In the West, and especially in the Southwest, farm homes are smaller than farmers' incomes would justify. Farm homes in New England and the Middle Atlantic States are large, with a median size of around 7 rooms. The median size of farm homes on the Pacific Coast is about 4.7 rooms. In Arizona, the median size of farm homes is only 1.9 rooms, and in New Mexico, 2.95 rooms! Other data do not indicate that these small homes in the Southwest are necessitated by the farmers' income positions. It appears that farmers' housing customs and requirements vary over the United States.

Housing for the Dollar. One may look at the data on sizes and rental values of farm homes and come to the conclusion that the same housing costs much less in some states than in others. For example, the average size of farm homes in North Carolina is almost exactly the same as

those in California. Yet the average monthly rental value of farm homes in North Carolina is only \$4.53 as compared with \$12.95 in California. Closer examination will reveal why the farm homes in California rent for more money.

Table 8. Farm Home Rental Values and Home Facilities
in North Carolina and California, 1940

| Item | North Carolina | California |
|------------------------|-------------------|------------|
| Average monthly rental | \$4.53 | \$12.95 |
| Median number of rooms | 4.49 | 4.48 |
| Percent of homes with: | | |
| Electric lights | 26 | 83 |
| Running water | 7 | 77 |
| Flush toilet | 4 | 55 |
| Bath or shower | 4 | 60 |
| Central heating | 1 | 6 |

Sources of data: 1940 Census of Housing, Volume II, Part 1
1940 Census of Agriculture, Volume III

After comparing the facilities in farm homes in North Carolina with those of California, is it not understandable why there is an eight dollar differential in rents?

To further examine how much housing farmers get for their dollars in different parts of the United States, states have been grouped according to rental brackets for purposes of comparison. The following tables show these comparisons. In Table 9, on the next page, are found the states in which average monthly rentals of farm homes lie between \$12.00 and \$12.99. This comparison shows that the housing pattern is somewhat different in California than in the other states. Farm homes are much smaller in California than in the other states, but better equipped by far. It may be noted that Iowa and Maryland,

Table 9. Sizes and Facilities of Farm Homes in States with Average Monthly Rental Values of \$12.00-\$12.99, 1940

| Item | Calif- ornia | Iowa | Mary- land | Dela- ware | Wis- consin | Maine |
|------------------------|-----------------|---------|---------------|---------------|----------------|---------|
| Rental value | \$12.95 | \$12.67 | \$12.60 | \$12.60 | \$12.19 | \$12.09 |
| Median number of rooms | 4.48 | 6.64 | 6.17 | 6.30 | 6.56 | 6.85 |
| Percent of homes with: | | | | | | |
| Electric lights | 83 | 41 | 44 | 41 | 51 | 54 |
| Running water | 77 | 22 | 30 | 25 | 19 | 33 |
| Flush toilet | 55 | 15 | 22 | 18 | 11 | 20 |
| Bath or shower | 60 | 15 | 22 | 18 | 12 | 17 |
| Central heating | 6 | 27 | 17 | 12 | 27 | 20 |

Source of data: 1940 Census of Housing, Volume II, Part I
1940 Census of Agriculture, Volume III

separated by a thousand miles, have very similar farm home conditions. It is possible that Maine offers a little more than does Wisconsin for the housing dollar. On the whole, it seems that the data indicate no marked differences between the states in terms of value received for money spent. Possibly, California and the other Pacific Coast States offer a little more for the dollar.

Table 10. Sizes and Facilities of Farm Homes in States with Average Monthly Rental Values of \$5.50-\$6.50, 1940

| Item | Wyo- ming | Mon- tana | West Vir- ginia | Vir- ginia | Missouri |
|------------------------|--------------|--------------|-----------------------|---------------|----------|
| Rental value | \$6.40 | \$6.09 | \$5.88 | \$5.81 | \$5.74 |
| Median number of rooms | 3.59 | 3.86 | 4.98 | 5.08 | 4.44 |
| Percent of homes with: | | | | | |
| Electric lights | 35 | 28 | 27 | 25 | 18 |
| Running water | 16 | 15 | 11 | 12 | 6 |
| Flush toilet | 10 | 8 | 6 | 9 | 5 |
| Bath or shower | 10 | 9 | 6 | 9 | 5 |
| Central heating | 6 | 9 | 4 | 3 | 5 |

Source of data: 1940 Census of Housing, Volume II, Part I
1940 Census of Agriculture, Volume III

A study of the data on farm housing indicates that rental rates vary with the quality of housing. The low rental rates which exist in some states do not indicate "bargains", but rather, low quality of homes.

CHAPTER IX

AUTOMOBILES AND FARM LIVING LEVELS

The correlation between farmers' outputs and their ownership of automobiles is not as close as with home facilities.

| | <u>Simple Correlation</u> | | <u>Multiple Correlation</u> |
|--|-------------------------------|-------------|---------------------------------|
| | Factor 1 | Factor 2 | Factors 1 and 2 |
| | r^2 | r^2 | R^2 |
| Percent of farm operators with automobiles | .39 | .0004 | .39 |

It can be seen that there is a noticeable correlation between farm outputs (Factor 1) and the ownership of automobiles, but almost none between non-farm outputs (Factor 2). This is in marked contrast with the other items examined (home facilities) where the connection was closer with non-farm outputs than with anything else.

Different Consumption Patterns

To some extent, this peculiar situation may be due to different consumption habits of farm people, at least in the case of the north-eastern and central states. In the northeastern states, farmers seem to prefer home facilities, and in the mid-western states, they prefer automobiles. Mid-western farmers lead all others in the possession of automobiles. The table on the next page gives a comparison of farmers' living levels and incomes in these two regions. It shows that the net incomes of farmers in these two areas are quite similar. The mid-western farmers have larger farm outputs; but they do considerably less non-farm work.

Table 11. A Comparison of Farm Incomes and Levels
of Living for Two Regions

| Item | New England and Middle Atlantic States | East North Central and West North Central States |
|---|---|---|
| Percent of farm homes in 1940 with: | | |
| Central heating | 31 | 20 |
| Running water | 46 | 17 |
| Flush toilet | 31 | 11 |
| Bath or shower | 30 | 12 |
| Mechanical refrigerator | 28 | 16 |
| Electric lights | 66 | 41 |
| Percent of farm operators with automobiles | 71 | 82 |
| Percent of farms operated by tenants | 13 | 36 |
| Index of Farm Operators' Gross Farm Outputs | 42 | 48 |
| Average net incomes from farming, without government payments* | \$875 | \$1000 |
| Average net incomes from farming with government payments* | \$900 | \$1093 |
| Days of non-farm work performed by farm operators in 1939 | 55 | 30 |

Source of data: Tables

* Four year averages (1929, 1939, 1940, 1941) calculated from data in Income Parity for Agriculture, Part VI, U. S. Department of Agriculture, Bureau of Agricultural Economics, 1945.

All of the figures given in the above table are averages weighted according to the number of farms in each state and region.

From the data available, one cannot definitely say that farmers in the mid-western states spend more money on automobiles, and that this is the reason why they lack home facilities. More needs to be known about how many miles farmers run their automobiles each year in the different areas, as well as other data. However, it seems entirely possible that farmers in the mid-western states spend relatively more of their incomes on their automobiles than do farmers in the northeastern states.

**Costs of Home Facilities
and an Automobile**

The following estimates of costs to Michigan farmers for various home conveniences were made by Mr. W. H. Sheldon of the Department of Agricultural Engineering, Michigan State College:¹

**Estimated Annual Costs to Farmers of
Various Home Conveniences***

| | <u>Annual cost</u> |
|--|--------------------|
| Running water (Digging of well, pressure system and electricity for power) | \$62 |
| Bathroom and kitchen sink (Three bathroom fixtures, septic tank and sink) | 90 |
| Electric lights (Wiring and current) | 33 |
| Electric refrigerator (Including current for power) | 40 |
| | \$225 |

* These estimates were made in terms of 1947 prices. They include original cost, installation where hired labor is required, depreciation and maintenance at a rate of 15 percent on machinery and 8-10 percent on structures, electric power at an average cost of 3 cents^c kilowatt hour, and interest on investment.

How much does it cost a farmer to own and operate a car? It is difficult to say exactly. It varies according to many factors. Assuming, however, that a mid-western farmer drives his automobile 5200 miles a year² (probably a minimum figure), would it cost him

¹From unpublished data.

²This figure is taken from data compiled by the Bureau of Public Roads in 1941 showing average distances people in different occupations in 29 states drove their passenger cars. For people employed in agriculture, the average mileage driven (all 29 states) was 6,073. There were not large differences as between states in the distances farmers drove. Farmers in the North Central States drove their cars slightly less than the average for the 29 states.

any less than \$360 to own and operate his automobile, in terms of 1947 prices? It can easily be seen that an automobile can entail more expense than would be incurred by the possession of the home conveniences listed above, whose total annual cost approximates \$225.

Tenancy

What does the higher degree of farm tenancy in the North Central States have to do with home facilities? It seems reasonable to suppose that tenant homes will not be fixed up as much as will owner-occupied homes. It seems plausible that incomes of tenants are more apt to go into automobiles than into home improvements. However, why are there so few mechanical refrigerators in the North Central States? Refrigerators can be moved without difficulty. Lack of electricity seems not to be an important limiting factor; 41 percent of the mid-western farm homes had electric lights, yet only 16 percent had refrigerators.

The Automobile as a Possible Determinant of Home Living Standards

In the correlation analysis, wherein various factors are tested for their association with home facilities, might not the possession of automobiles be an important factor? That is, might not it be found that where the possession of automobiles is high, the possession of home facilities would be low? Attempts have been made by the author, using various statistical methods, to see if this might be the case. It appeared that the automobile was not associated (negatively) to any significant degree with home living facilities, either when tested alone, or when used in multiple correlation with other important factors, over the 48 states.

CHAPTER X

COST OF LIVING FOR FARMERS

What does it cost farmers to live? Before this question can be answered, it needs to be known what enters into farmers' standards of living. As the Census data show, farmers' levels of living vary greatly. They vary between states, and they vary within the borders of a single state.

Some people who are aware that farmers in certain regions have much less cash income than have farmers in other regions, have come to the conclusion that it costs less to live in some places than in others. While it may be true that it costs a little less to live in the warm areas of the United States than in the colder ones, this difference probably does not amount to more than 10 percent, at the most. What really vary are not costs of living, but rather, standards of living. In a previous chapter, data were presented to show what farmers got for their housing dollars in different parts of the United States. The data did not indicate large differences in value received per dollar spent for housing.

Studies showing the differences in farmers' costs of living among the various states or regions of the United States (using identical living standards as a basis for comparison are lacking. Studies of this nature have been made for city people. The Bureau of Labor Statistics made one such study in March 1945. The city with the lowest cost of living was Houston, Texas; the city with the highest cost was Seattle, Washington. It will be noted in the table on the following page that the cost of living in southern cities is a trifle lower than in northern cities.

Table 12. Relative Differences in the Cost of Equivalent Goods, Rents, and Services, March 1945¹

| City | Cost of Living |
|----------------------------|----------------|
| Washington, D. C.* | 100 |
| Atlanta, Georgia | 93 |
| Buffalo, New York | 92 |
| Chicago, Illinois | 98 |
| Houston, Texas | 88 |
| Indianapolis, Indiana | 92 |
| Memphis, Tennessee | 93 |
| Minneapolis, Minnesota | 94 |
| New Orleans, Louisiana | 91 |
| New York, New York | 102 |
| Philadelphia, Pennsylvania | 94 |
| Richmond, Virginia | 95 |
| Savannah, Georgia | 92 |
| Seranton, Pennsylvania | 90 |
| Seattle, Washington | 103 |

* Washington, D. C. is the base, equal to 100.

However, some cities in the North have a lower cost of living than some in the South. These data are not conclusive in regard to rural costs of living; yet they are indicative that costs of living do not vary greatly over the United States.

¹From a mimeographed release, "Relative Differences in the Cost of Equivalent Goods, Rents, and Services in 33 Large Cities, March 1945". Issued June 1, 1946 by the U. S. Department of Labor, Bureau of Labor Statistics.

CHAPTER XI

TENANCY AND LIVING LEVELS

Are low living standards associated with a high degree of tenancy in the United States? To find out to what extent they are associated, the "percent of farms lighted by electricity" was correlated with the "percent of farms operated by owners and managers".¹ The association was found to be rather close (" r^2 " equaled .60). This means that in areas where most of the farms are owner-operated, the proportion lighted with electricity is high. In general, the data indicate that where the degree of farm tenancy is high, farm living levels are low.

The very significant correlation between owner-operated farms and high living levels suggests that the principal causative factor affecting farm living levels might be the ownership factor. Perhaps, by combining the ownership factor with some other factor, a better explanation of farm living levels could be found than by the use of farmers' productivities. Such an attempt was made. The "percent of farms lighted by electricity" was correlated (multiple) with two factors, namely, (1) percent of farms operated by owners and managers, and (2) the Index of the Availability of Electricity as a Limiting Factor to Farm Living Levels. A high association was found (" R^2 " equaled .75).

Closer analysis revealed that the connection between tenancy and living levels was not causal, but rather associational. There was a close inverse correlation between the productivities of farmers and

¹The number of farms operated by managers is negligible. This series amounts to the percent of farms operated by owners.

the degrees of tenancy prevailing in the 48 states. When the "percent of farms operated by tenants" was correlated with the two productivity factors (Factors 1 and 2), the following results were secured:

| | <u>Simple</u> <u>Correlation</u> | | <u>Multiple</u> <u>Correlation</u> |
|--|-------------------------------------|----------------------|---------------------------------------|
| | Factor | Factor | Factors |
| | <u>1</u> | <u>2</u> | <u>1 and 2</u> |
| | <u>r²</u> | <u>r²</u> | <u>R²</u> |
| Percent of farms operated by tenants | .11 (-) | .69 (-) | .81 (-) |

These results indicate that where tenancy is high in the United States, the productivities of farm operators show a strong tendency to be low. Which is causal, and which is associational, tenancy or productivity? Correlation analysis will not yield the answer to that problem. Attention must be directed to other data, and to economists' understanding of the factors involved. Productivity appears to be the causal factor. To demonstrate this, consider the states, Iowa and Illinois. In each state, the degree of tenancy is high; yet productivities of farm operators in Iowa and Illinois are quite high.

Furthermore, it should be noted that farm tenants in some states live much better than do owner-operators in other states. It is interesting to compare two states, Massachusetts and Alabama.² In 1940, the percent of farms operated by tenants were: Massachusetts 7; Alabama 59. It will be noted from the table on the following page that, in each of these states, the living level of owner-operators was above that of tenants. It can also be noted that tenants in Massachusetts

²The point to be demonstrated here does not depend on just these two states. Other states could be used which would show the same situation.

Table 13. A Comparison of Farm Home Facilities and Rental Values in Alabama and Massachusetts, 1940

| Item | Massachusetts | | Alabama | |
|-----------------------------|-----------------|---------|-----------------|---------|
| | Owner-Operators | Tenants | Owner-Operators | Tenants |
| Percent of farm homes with: | | | | |
| Running water | 73 | 70 | 8 | 1 |
| Flush toilet | 58 | 52 | 5 | 1 |
| Bath or shower | 55 | 48 | 5 | 1 |
| Radio | 90 | 55 | 50 | 20 |
| Mechanical refrigerator | 43 | 35 | 14 | 2 |
| Ice box | 40 | 42 | 16 | 8 |
| Electric lights | 84 | 80 | 28 | 7 |
| Median rental value of home | \$28.24 | \$15.90 | \$4.36 | \$2.53 |

Source of data: 1940 Census of Housing, Volume II, Part 1
1940 Census of Agriculture, Volume III

lived much better (in terms of home facilities) than did owner-operators in Alabama.

If tenancy were the cause of low living levels, it would not be found that tenants of some states were living better than owner-operators in other states.

Tenancy as a Third Factor. It comes to mind that, since the degree of tenancy does seem to have an association with the level of farm living, it might be used as the third factor in multiple correlation, using as the first two factors, the series representing farmers' productivities. This has been tried. It was found that this third factor gave no additional correlation over using the first two alone. This points to the conclusion that tenancy is not an important independent causal factor determining farm living levels (except as it may influence productivity).

CHAPTER XII

SOUTHERN AND NORTHERN AGRICULTURE

In the settlement and development of the United States, there were fairly regular stages, as follows:

- Indian trade
- Herding
- (Lumbering, in places)
- Pioneer farms (frontier farming)
- Partially self-sufficing farmer or planter
- Commercial farmer or planter

These phases were not fulfilled everywhere in the South. In places, commercial agriculture started right away along certain rivers offering good transportation. Moreover, in some places, the development never progressed much beyond the pioneer stage (especially in the southern Appalachians) where rough topography made for isolation of people, and where poor soils and hills made agriculture difficult.

Markets Bring Evolution

What stimulated agriculture in the United States to develop beyond the pioneer stage? It was the development of markets for farm products, either domestic markets or export markets. The development of home markets depended on the growth of cities, that is, the growth of manufacturing, commerce and service employments. In the South, if conditions were favorable for the production of the great staples (at first tobacco, later cotton), a commercial plantation economy tended to supplant the pioneer self-sufficing economy. In other areas, where conditions were not favorable for the production and marketing of the staples, the development was two-fold; (1) In districts of rough topography and inferior soils, the pioneer economy (herding, hunting and

farming) continued; (2) in other areas with favorable soil, climate and topography, a diversified economy began to develop. That is, manufacturing and commercial activities grew, making for cities; this offered cash markets for many farm products. Where farmers got cash markets for their output, they took interest in increasing their production. They adopted better methods of farming. Farm production rose. Living standards tended to rise as farm products were sold to purchase city made items.

In the colonial period in the South, no important town economy (except in Charlestown) developed along the coastal plain in spite of numerous legislative encouragements. The planters along the coastal plain shipped staples from their own river landings and secured supplies from Europe delivered at their landings. Numerous important towns did develop, however, along the Piedmont, remote from the seaboard shipping facilities. Such towns were Frederick, Staunton, Hillsboro, Camden and Columbia. These places were thriving centers of small shops and mills. Later, with the development of upland cotton growing, the tendency toward the development of non-agricultural occupations was halted, as the energies of nearly all the people were turned to cotton. In some areas too far north for cotton, the occupational diversification continued (as in the Shenandoah Valley of Virginia, the Nashville "basin", the "bluegrass" region of Kentucky, and in parts of Virginia and Maryland that had abandoned tobacco).

Plantations in the South

To understand the nature of southern agriculture, it is essential to look into its historical beginnings. In the first place, it should

be noted that the plantation system took hold at a very early date in the South. The plantation system flourished in other places in the world during the period of European empire building, 1500-1850. Plantations took hold in tropical and sub-tropical places because their products were in great demand in the "mother" countries. These products (tobacco, sugar, rice, cotton) were not competitive with those of the countries of northwestern Europe. Plantations were business ventures requiring large investments in land and capital (and sometimes in slave labor). They specialized in large-scale production of crops for which there were ready cash markets (in the United States, tobacco and cotton; in the West Indies, sugar and other products). The operators were keenly aware of profit margins and not reluctant to waste soil resources. Even before 1860, southern plantation operators understood clearly that they were ruining the soil. They also understood that what they wanted was not maximum production per acre, but maximum production per laborer in order to maximize their own incomes. Land was plentiful and cheap; consequently they exploited it and moved on to new areas.

Social Evils of Plantation System

The social consequences of the plantation system of agriculture were very important, and, in the long run, very unfortunate. Faced with almost unlimited markets for their products, the plantation operators were anxious to increase their production. The limiting factor was labor supply. The great scarcity of cheap labor led to the use of indentured servants, and later to slaves. These laborers were not considered, first of all, as human beings who should be encouraged and allowed to develop themselves to the full. The educational and social

systems were not designed to encourage every individual to develop to his utmost. Rather, the workers were considered as "labor supply", especially in the case of the negroes. The social organization became aristocratic with definite castes, usually based on racial differences. The ignorance of the negro slave soon led white men to believe that negroes were inherently an inferior type of people. This belief discouraged the promotion of educational opportunities for negroes.¹ The result of this situation has been (and is today) that great human resources in the South have lain undeveloped; this applies particularly to the negroes, but also, to some extent, to many whites. The practice of strict segregation of the races has meant that the negroes have continued to live in their own culture (with some modifications), and this environment seems not to have stimulated them.

There were other evils of the early plantations. Frequently, the ownership was absentee, and this encouraged cruelty towards workers. The resulting hatred, especially when there existed a racial difference between the supervisor and the laborers, was not conducive to large production per worker. Plantation life, prior to 1860 at least, discouraged the family unit, and encouraged loose morals. When white indentured servants constituted the labor supply, the family unit of social life was nearly impossible because there was little or no place for women on the plantation (social custom forbidding the employment of white women in field work). With the introduction of negroes, women

¹ Furthermore, the expense involved in educational processes is large. The South, never wealthy, could not easily afford wide-scale education for all its people.

were employed in field labor and consequently were useful on plantations. The early plantation worker, be he indentured servant or slave, had little incentive to work hard and efficiently. In any event, all he got was bare subsistence. It was noted long ago by at least one observer that the work output per slave was much less than that of free workers.² The habits of persistent hard work day after day were not established among the laborers on plantations, and the "take-it-easy" attitude still persists in those areas.

Negro Slaves Bolster Plantation System

The plantation system was begun before the importation of negro slaves. Slaves supplanted indentured white servants on plantations because of a number of reasons. It was held that white servants were

²John Woolman, a Pennsylvania Quaker, became greatly concerned about slavery in early America. He was convinced that, from a Christian point of view, it was wrong. He set out to visit and plead with Quakers everywhere in America to use no slaves, and to get all branches of the Society to condemn slavery. Traveling in Maryland (where slavery was practiced), he noted in his Journal in the year 1757:

Wint' of fifth month -On the 11th, we crossed the rivers Patowmack and Rappahannock, and lodged at Port Royal. On the way we had the company of a colonel of the militia, who appeared to be a thoughtful man. I took occasion to remark on the difference in general betwixt a people used to labor moderately for their living, training up their children in frugality and business, and those who live on the labor of slaves; the former, in my view, being the most happy life. He concurred in the remark, and mentioned the trouble arising from the untoward, slothful disposition of the negroes, adding that one of our laborers would do as much in a day as two of their slaves. I replied, that free men, whose minds were properly on their business, found a satisfaction in improving, cultivating, and providing for their families; but negroes, laboring to support others who claim them as property, and expecting nothing but slavery during life, had not the like inducement to be industrious.

saucy, independent and unreliable. The greater intelligence of the white workers made them more dangerous, potentially. White servants had more legal rights to complain and required gentler treatment than did slaves. It was easier for white servants to escape. The supply of indentured servants dwindled and gradually disappeared soon after the Revolutionary War. Considering the time they served, indentured servants were as costly as slaves. New white immigrants avoided the South after slavery had begun; they did not want to offer their labor in competition with slaves. Moreover, after slavery had begun, the feeling spread that it was degrading for whites to do manual labor.

Family-Size Farms in the South

It is not to be assumed that the plantation system of agriculture was the only system of agriculture in the South. Indeed, there were many white family-operated farms in the South prior to 1860; and they still exist. However, the white family-operated farms were, and are, to be found mostly in the hilly regions and on the poorer soil areas. The plantation system has flourished in areas where the cash crops which require much hand labor (cotton especially) can be grown, and on the better soil areas. L. C. Gray,³ leading historian of southern agriculture, maintained that this situation had already developed prior to the Civil War, because the plantations were more efficient in their agricultural methods than were the small farmers. This suggests that the small farmers were very inefficient in their methods, an idea which is

³See Lewis Cecil Gray, History of Agriculture in the Southern United States to 1860, Washington, D. C., Carnegie Institution, 1928. This is a monumental work on the history of southern agriculture.

supported by other evidence. In any event, the plantation operators made enough profits to out-bid other farmers for the better soil areas.

Lack of Capital in the South

L. C. Gray⁴ holds that the South lacked capital (as compared with the North) because it was extravagant both in production and consumption. In production, the soil resources were wasted; in the long run, this meant difficulty in maintaining production from which both consumers' goods and capital goods must arise. In consumption, the men, in whose hands the income of the South tended to concentrate (plantation owners), followed the prevailing social customs of their region, namely luxury and conspicuous consumption. This may be contrasted with the consumption habits of the New England people and of the various religious groups of Pennsylvania where the prevailing social mores encouraged hard work, simple living and the saving of money.⁵ These traits among

⁴Ibid

⁵The observations of Dr. Benjamin Rush on the Pennsylvania Germans written in 1789 are informative on this subject. Dr. Rush's views have been summarized in Albert Bernhardt Faust, The German Element in the United States, New York, The Steuben Society, 1927, Volume I. Distinguishing characteristics of the Pennsylvania Germans were, according to Dr. Rush: They built great barns for their livestock in order to take good care of them in the winter months; they tried hard to accumulate property which, they believed, would be added to by succeeding generations of their descendants; men, women and children worked in the fields. they made little or no use of slaves or other hired help; they lived frugally in respect to dress, furniture and diet. Dr. Rush says that their savings distinctly helped to make possible the founding of the Bank of North America in 1781, the first chartered bank in this nation.

Among the people of New England, their habits of diligent work, frugal living and the desire to accumulate wealth are thought by some to have their origin in Calvinism. Pertaining to this, see R. H. Tawney, Religion and the Rise of Capitalism, New York, Harcourt Brace and Company, 1926, p. 227-53.

the people in the South appear to have been lacking to a considerable degree.

Slaves and Southern Capital

Occasionally, one hears that the South's lack of manufacturing, commercial, banking and service enterprises (as compared with the North) is due to its lack of capital; furthermore, this relative shortage of capital is attributed to the emancipation of the slaves for which the owners were not compensated. Much confusion in thinking surrounds this subject.

It is to be doubted that slaves could be properly called "capital", as this word is used in economics. In any event, whether slaves were capital or not, capital was not destroyed by the emancipation of the slaves. Claims to property were wiped out, but claims are not wealth from a social point of view.⁶ Slaves were the wealth, but they were not destroyed. Personal fortunes were redistributed by the emancipation.

Economic Backwardness of South Recognized Long Ago

It was apparent to southern leaders prior to the Civil War that the North was prospering more than was the South. Southern journals carried discussion as to why this was the case. The sentiments expressed in these journals emphasized the following as causes of this situation: The tariff program; the need to develop southern ports for

⁶Wealth must be tangible (material, concrete) from a social point of view. See Paul F. Gemmill and Ralph H. Blodgett, Economics, Principles and Problems, New York, Harpers and Brothers, 1942, p. 42., v. 1.

the exporting and importing of their own articles of commerce; the need to develop commerce and manufacturing. They believed these non-farm employments were held back in the South because labor (slaves) was so expensive. Therefore, it was felt that the prohibition on the importation of slaves should be lifted in order to promote a greater supply of cheap labor.

L. C. Gray⁷ believes that the southern leaders were not down to fundamental causes of the South's backwardness. Gray presents a number of fundamental causes. (1) The great mass of its labor was of exceedingly low quality for non-agricultural pursuits. The negroes constituted a vast lump of "ignorance and poverty". The process of assimilating so large a lump, raising the level of intelligence and work habits, would have been an immense task even under the most favorable circumstances. The small farmers of the Piedmont and Coastal Plain, and the people in the southern Appalachian highlands were not immediately efficient factory workers. They had been accustomed to a rude independence. Frequently, they were undisciplined, slovenly, careless and difficult to manage. (2) Agriculture, favored by a large supply of virgin lands prior to 1860, competed vigorously for the available labor and capital, thus tending to prevent a diversified economy. (3) There continued to be a considerable prejudice against manufacturing. (4) There were few "captains of industry" with the necessary knowledge to rapidly develop manufacturing in the South. (5) The lack of cities meant employment was restricted to mainly farming activities; an outlet

⁷Lewis Cecil Gray, op. cit.

for diverse human talents was not existent. (6) The lack of cities meant a lack of cash markets for many farm products. Virtually the only cash markets were for the non-perishable staples (at first, tobacco, then cotton) which could be shipped great distances. This held back the diversification of southern agriculture.

For the multitudes of small farmers on the poor soils and in the Appalachian highlands, for whom a considerable agricultural enterprise would have been difficult even if there had been markets for their produce, the natural course was to continue the self-sufficing pioneer type of life. Because it was rather easy for them to provide the bare essentials for themselves, their methods were slipshod. In their culture, the habits of steady diligent work were not developed as much as in some other parts of the United States.

Economic Development in Northern United States

Plantations did not take hold in northern United States. There were attempts to establish feudal-like estates in the North, but these were all unsuccessful due to the abundance of land. Workers would not remain on these estates, but rather would start farms on land of their own. Early agriculture in the North was of a subsistence character due to the absence of cash markets for the farm products of that region. The farm products of the northern colonies were competitive with those of England and the other countries of northwestern Europe. Consequently, there was little export of farm products from the northern colonies to Europe prior to the Revolutionary War. In the second half of the 19th century, agricultural exports from the northern agricultural areas to Europe increased; this occurred because of the rapidly rising urban

population in Europe, the repeal of the English Corn Laws in 1846, and the opening of the great interior agricultural area of the United States. The character of northern agriculture seems to have been largely fixed before these export outlets became large. Moreover, the growing internal market for farm products after 1860, due to the rapid growth of city population, overshadowed the importance of the foreign outlets.

In the northern colonies prior to the American Revolution, commercial interdependence with the "mother" country was slight. Farms were small since large acreages were not necessary for subsistence purposes. There was little specialization in agriculture. Colonists furnished their own labor, hence had no need to import colored races or impress into service other peoples. Immigrants from Europe settled mostly in the North. Absentee ownership was rare. There was a homogeneous population with no marked social classes. Interest began at an early date to provide education for every child. Because a great many important activities took place in the household, women were very important economically. The family unit was very cohesive. Men had an incentive to work hard in order to accumulate wealth (economic security) for themselves and their families. Rather comfortable homes were built, tending to make for permanent settlements. Interest in soil conservation developed since the farm acreages were small, and farm operators did not plan on moving westward at intervals. Local diversified manufacturing developed to meet the needs of the people for products which could not be readily made on the farms. A diversified economy gradually took shape. Incentive to provide for one's own family, religious ideals and social mores encouraged people to work hard, save their incomes, and to live simply; this made possible the accumulation of capital.

Numbers of Farms in the Eastern Half
of the United States Since 1880

It is interesting to note the conflicting trends in the numbers of farms in the five regions of the United States lying east of the Mississippi River since 1880.

Table 14. Numbers of Farms in Eastern
United States, 1880 and 1940.
(By geographic regions)

| Regions | 1880 | 1940 | Percent Change Since 1880 |
|--------------------|---------|-----------|------------------------------|
| New England | 207,232 | 135,190 | -35 |
| Middle Atlantic | 488,907 | 348,100 | -29 |
| East North Central | 985,273 | 1,006,095 | + 2 |
| South Atlantic | 644,429 | 1,019,451 | +58 |
| East South Central | 569,739 | 1,023,349 | +80 |

Source: 1940 Census of Agriculture, Volume III, p. 51-2.

All of these regions were well settled prior to 1880. The large decline in numbers of farms since 1880 in the New England and Middle Atlantic States is attributable to the rise of non-farm occupations. These northeastern states had enormous growths in city population after 1880, and it might seem that the markets for farm products which large city population provided, would have greatly stimulated agriculture. However, the numbers of farms in the New England and Middle Atlantic States declined sharply; these states came to rely on the western areas for much of their agricultural supplies. Since the natural agricultural resources of this region were not abundant, this economic alteration was a wise one.

The East North Central States had about the same number of farms in 1940 as in 1880. However, during this period, these states also experienced a very great expansion of the non-farm employments and of urban population. It is proper that the number of farms did not decline in this region, since it is an area endowed by nature with great agricultural resources. Moreover, the rise of great city population (providing markets) in this region gave a stimulus to agriculture. It appears that the economic shifts toward larger relative importance of non-farm employments which occurred in the East North Central States between 1880 and 1940 were sound.

On the other hand, the South Atlantic and East South Central States had very large increases in numbers of farms after 1880. Were these increases due to exceptional opportunities in agriculture? Was there a great increase in the demand for the farm products of this region? The answer to each of these questions is "no". Opportunities in agriculture were not attractive in these states. Except for a few areas, the South Atlantic and East South Central States are rather poorly endowed by nature with agricultural resources. In other words, many of the farms in these two regions are marginal or sub-marginal. The increases in numbers of farms are not to be explained by the growth of demand for the farm products of this area.

The real reason for the expansion in numbers of farms probably follows this line: A large birth rate made for a growing population; lack of alternative employment opportunities caused increasing population pressure on the land, resulting in small farms and farms on poor soils. It is a mistake to think of the South as being an inherently agricultural region. It is slowly becoming an area of many non-farm employments.

This evolution is taking place more slowly in the South than it took place in the other sections of the nation. This slow speed is attributable not to "natural" factors; rather, it is due to the nature of the southern socio-economic culture.

CHAPTER XIII

MARYLAND - THE PROBLEM IN MINIATURE

Just as there are differences between states in the average productivities of farm operators and their living levels, so there are among the counties of Maryland. The association between county averages of farmers' productivities and living levels in Maryland is much the same as the situation for the United States as a whole, when comparing states. The map on the following page shows the percent of farm homes with running water in the different counties of Maryland. The variation is great in Maryland. In Charles and Caroline Counties, only 11 percent of the farms had running water, whereas, in Baltimore County, the figure was 55 percent.

Farm Outputs

An Index of Farm Operators' Gross Farm Outputs was calculated for the farmers of Maryland by counties in the same manner as it was calculated for the United States by states. The Maryland index is not quite as reliable, however, due to the fact that the data, on which it is based, are not as complete as was the case for the United States index. For Maryland, data were available only for the year 1939; the data for that year were taken from the 1940 Census of Agriculture. The Census data for 1929 could not be used because there were no figures on one important expense item, namely, the purchases of livestock during the year. The index for Maryland was calculated, using averages per farm by counties, as follows:

Value of products sold, traded or used.
Less: Expenditures for labor, feed and livestock.

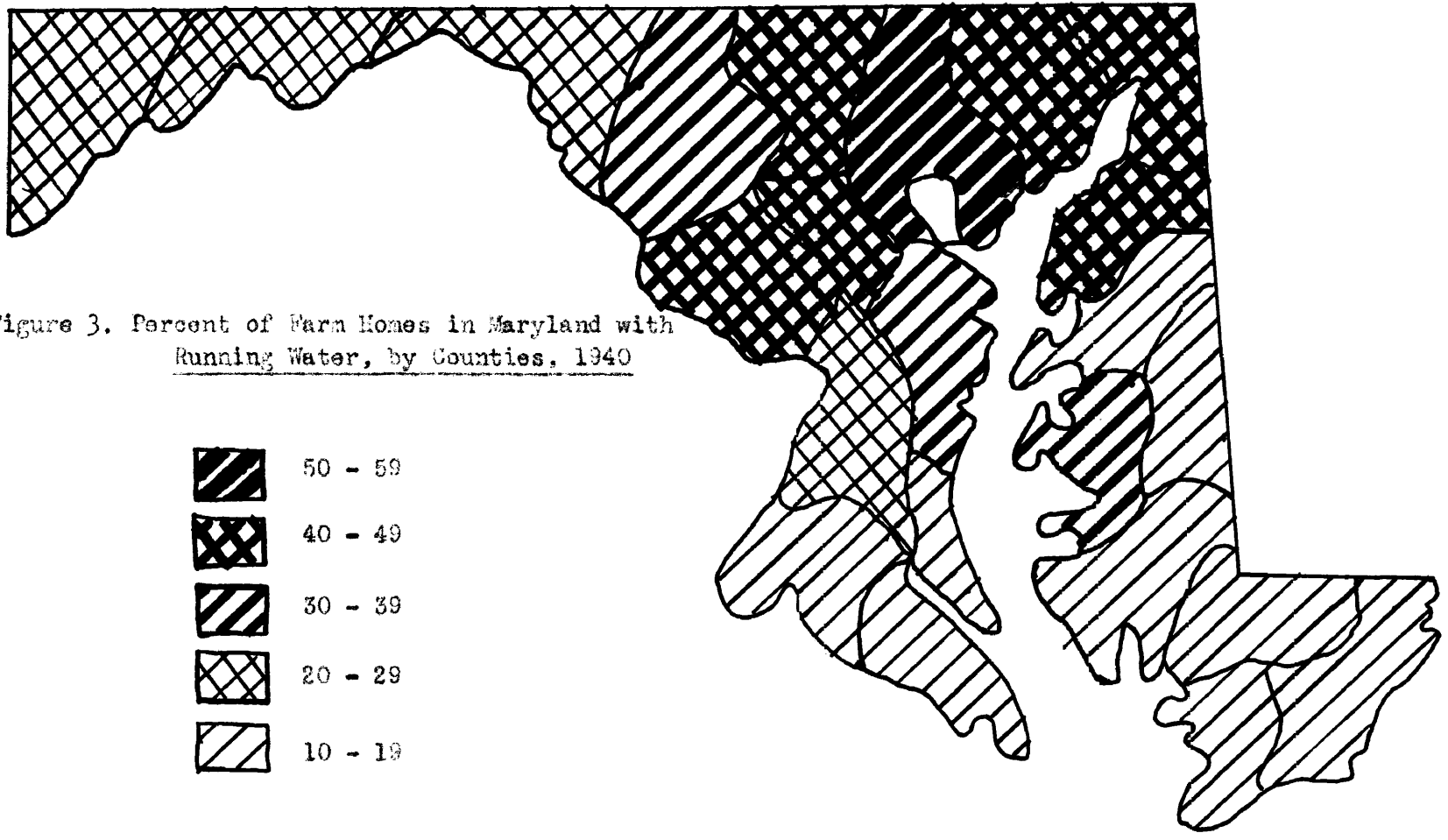
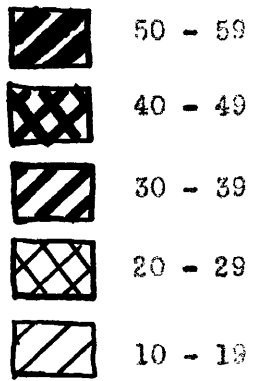


Figure 3. Percent of Farm Homes in Maryland with Running Water, by Counties, 1940



Add: Estimated income from farm work performed by farm operators on other farms.

Using the resultant figures, an index was calculated using the highest county, Kent, as the base. This index is shown in the following table.

Table 15. Indices of Farm Outputs, Days of Non-Farm Work, and Availability of Electricity, by Counties, in Maryland

| County | Index of Farm Outputs ¹ | Days of Non-Farm Work ² | Index of Availability of Electricity ³ |
|----------------|------------------------------------|------------------------------------|---|
| Allegany | 40 | 83 | 81 |
| Anne Arundel | 76 | 61 | 92 |
| Baltimore | 52 | 81 | 91 |
| Calvert | 74 | 22 | 89 |
| Caroline | 68 | 21 | 97 |
| Carroll | 73 | 37 | 80 |
| Cecil | 78 | 50 | 79 |
| Charles | 85 | 36 | 151 |
| Dorchester | 76 | 26 | 55 |
| Frederick | 88 | 34 | 82 |
| Garrett | 41 | 63 | 39 |
| Harford | 91 | 53 | 90 |
| Howard | 77 | 58 | 92 |
| Kent | 100 | 15 | 65 |
| Montgomery | 63 | 83 | 79 |
| Prince Georges | 81 | 55 | 104 |
| Queen Annes | 95 | 19 | 79 |
| St. Marys | 74 | 29 | 130 |
| Somerset | 67 | 30 | 65 |
| Talbot | 94 | 26 | 64 |
| Washington | 70 | 51 | 85 |
| Wicomico | 58 | 34 | 69 |
| Worcester | 75 | 25 | 55 |

¹ Full title, "Index of Farm Operators' Gross Farm Outputs". Kent County is the base, equal to 100.

² Full title, "Days of Non-Farm Work Performed by Farm Operators in 1939." From 1940 Census of Agriculture

³ Full title, "Index of the Availability of Electricity as a Limiting Factor to Farm Living Levels". It was calculated by dividing the percent of farms within hook-up range from an electric distribution line by the percent which make use of electricity when it is available. See explanation of this series on pages 99-102.

Table 16. Farm Home Facilities, Rental Values and Tenancy
in Maryland, by Counties, 1940

| County | Percent of Farm Homes Having | | | | | Farm Home Monthly Rental Value | Percent of Tenancy |
|----------------|------------------------------|---------------|--------------|----------------|--------------------------|--------------------------------|--------------------|
| | Electric Lights | Running Water | Flush Toilet | Bath or Shower | Mechanical Refrigeration | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Allegany | 43 | 24 | 12 | 13 | 19 | \$11.38 | 13 |
| Anne Arundel | 56 | 33 | 28 | 27 | 34 | 16.50 | 25 |
| Baltimore | 78 | 55 | 43 | 43 | 42 | 23.45 | 14 |
| Calvert | 14 | 11 | 10 | 10 | 15 | 9.78 | 51 |
| Caroline | 26 | 11 | 7 | 8 | 7 | 11.18 | 34 |
| Carroll | 60 | 42 | 22 | 22 | 27 | 16.62 | 20 |
| Cecil | 47 | 42 | 30 | 26 | 27 | 16.04 | 28 |
| Charles | 21 | 14 | 12 | 12 | 13 | 9.91 | 40 |
| Dorchester | 15 | 13 | 9 | 10 | 9 | 10.00 | 34 |
| Frederick | 43 | 30 | 15 | 15 | 23 | 13.91 | 26 |
| Garrett | 19 | 23 | 13 | 12 | 5 | 7.91 | 11 |
| Harford | 68 | 42 | 28 | 28 | 38 | 19.35 | 14 |
| Howard | 66 | 47 | 38 | 38 | 40 | 21.70 | 14 |
| Kent | 26 | 45 | 23 | 23 | 14 | 17.15 | 48 |
| Montgomery | 65 | 47 | 40 | 40 | 46 | 24.51 | 14 |
| Prince Georges | 44 | 28 | 24 | 24 | 32 | 17.16 | 36 |
| Queen Annes | 16 | 17 | 14 | 14 | 11 | 9.39 | 47 |
| St. Marys | 17 | 13 | 12 | 12 | 9 | 10.38 | 42 |
| Somerset | 25 | 13 | 8 | 10 | 13 | 8.84 | 25 |
| Talbot | 32 | 31 | 26 | 29 | 16 | 11.66 | 36 |
| Washington | 58 | 20 | 12 | 13 | 23 | 17.38 | 27 |
| Wicomico | 24 | 18 | 13 | 13 | 16 | 11.40 | 24 |
| Worcester | 24 | 16 | 12 | 12 | 11 | 7.90 | 29 |

Sources of data:

Columns 1 and 7 - 1940 Census of Agriculture

Columns 2 thru 5 - 1940 Census of Housing

Column 6 - Basic data taken from the 1940 Census of Housing. This Census gave the contract rental value of tenant-occupied rural-farm homes. It also gave the estimated value (sale value) of owner-occupied units. Following the Census rule of estimating rents (monthly rental value equals one percent of sale value), combined rental values of both owner- and tenant-occupied units were calculated. In the combined figure, the two components were weighted according to the numbers of tenant- and owner-occupied units.

Table 17. Correlation of Certain Factors with Farm Home Facilities and Rental Values in Maryland

| Item | Simple Correlations | | | Multiple Correlations | |
|-----------------------------------|---------------------|-----------|-----------|-----------------------|----------------|
| | Factor: 1 | Factor: 2 | Factor: 3 | Factors: 1,2 | Factors: 1,2,3 |
| | r^2 | r^2 | r^2 | R^2 | R^2 |
| Percent of farm homes with: | | | | | |
| Electric lights | .01 | .60 | .02 | .66 | .66 |
| Running water | .06 | .29 | .02 | .55 | .61 |
| Flush toilet | .05 | .35 | .01 | .64 | .65 |
| Bath or shower | .01 | .30 | .00 | .61 | .63 |
| Mechanical refrigerator | .00 | .48 | .05 | .75 | .75 |
| Monthly rental value of farm home | .00 | .35 | .19* | .61 | .70* |

Factor 1 - Index of Farm Operators' Gross Farm Outputs

2 - Days of Non-Farm Work Performed by Farm Operators in 1939

3 - Index of the Availability of Electricity as a Limiting Factor to Farm Living Levels

* The third factor in this instance is "Size of Home".

As indicated in the above table, there is no correlation between home living levels and farm outputs (Factor 1) among farms in the various counties of Maryland. This does not mean that farm outputs are insignificant. It means that a high level of home facilities is not associated with any particular level of farm output. For example, Baltimore County (which has a high farm living level) has low average gross farm outputs per operator, whereas farmers in two of Maryland's poorest counties, Charles and St. Marys, have considerably higher farm outputs.

The correlation between farm living levels and Factor 2 is very noticeable. This indicates clearly that in counties where farm operators do considerable non-farm work, the farm living levels are high. These are the areas around the big cities, Washington and Baltimore.

Farm operators in the counties with higher living levels have no larger farm outputs, on the average, than those in the poorer counties; it appears that the difference in living levels is due to the non-farm work factor. If five days of non-farm work were the usual length of the work week in 1939, it may be noted that in three counties (Alleghany, Baltimore and Montgomery), farm operators averaged over 16 weeks of non-farm work in that year.

Tenancy and Farm Living Levels

Are low levels of farm facilities associated with tenancy in Maryland? There does seem to be an association, but not a very close one. Note the following results:

| | <u>Percent of farms operated by tenants, 1940</u> |
|--|---|
| | r^2 |
| Percent of farm homes with running water | .24 (-) |

Livestock Agriculture and Living Levels

Do those counties of Maryland have higher farm living levels whose farm outputs consist of a large proportion of livestock and livestock products? The evidence indicates that they do.

| | <u>Percent of farm output made up of livestock and livestock products</u> |
|--|---|
| | r^2 |
| Percent of farm homes with running water | .45 |
| Monthly rental value of farm homes | .26 |

The association between the extent of livestock production and the proportion of farm homes with running water is closer than is the

association with rental values of homes. However, running water constitutes a better indicator of the connection between livestock agriculture and farm living levels because numerous other important farm facilities run parallel to running water. There is a closer association between livestock agriculture and higher farm living levels in Maryland than for the United States as a whole.

CHAPTER XIV

WAYS TO INCREASE FARMERS' PRODUCTIVITIES

If low productivity is the principal cause of the existence of areas of rural poverty (which is the contention of this study), then the principal remedy is to bring about higher outputs per farmer. It is essential to keep in mind that farmers can increase their outputs, not only in terms of farm products, but also in terms of non-farm work.

Ways to Increase Farm Outputs

The methods to be discussed apply to all areas of low productivity. Since the greatest areas of low productivity are in the South, the discussion centers around that area.

(1) Larger Farms and Mechanization. A principal cause of low farm outputs per farm in the southern states, the greatest area of rural poverty, is the small amount of resources (land and capital) per farmer.¹ Average farm acreage is smaller in the South than in other areas, as can be seen from Table 18 on the following page. Although the average southern farm is small, it can be seen from Table 18 that farms in New England and in the Middle Atlantic States are nearly as small. However, farm operators in these northeastern states have been able to achieve rather large total outputs by means of a combination of intensive agriculture and much non-farm work.

¹See D. Gale Johnson, "Contribution of Price Policy to the Income and Resource Problem in Agriculture." Journal of Farm Economics, 26:4 p. 631-64.

Table 18. Average Size of Farms and Land Available for Crops in the Major Geographic Regions of the United States, 1940

| Regions | Average Acreage per Farm | Acreage Available for Crops per Farm |
|--------------------|--------------------------|--------------------------------------|
| New England | 98.9 | 39.8 |
| Middle Atlantic | 96.6 | 60.4 |
| East North Central | 113.0 | 81.1 |
| West North Central | 251.6 | 170.8 |
| South Atlantic | 90.8 | 43.0 |
| East South Central | 75.3 | 44.7 |
| West South Central | 207.9 | 87.3 |
| Mountain | 821.9 | 199.0 |
| Pacific | 230.6 | 96.5 |

Source: 1940 Census of Agriculture, Volume III, p. 44-5

A more complete picture of agricultural resources per farm operator in the various regions of the United States is shown in the following table.

Table 19. Agricultural Resources per Farm Operator in the Major Geographic Regions of the United States, 1940

| Regions | Value of Land, Buildings, Implements, Machinery and Livestock per Farm | Working Value of Farm House | Working Value of Agricultural Resources per Farm |
|--------------------|--|-----------------------------|--|
| | (1) | (2) | (3) |
| New England | \$6,714 | \$1,768 | \$4,946 |
| Middle Atlantic | 7,674 | 1,649 | 6,025 |
| East North Central | 8,987 | 1,170 | 7,717 |
| West North Central | 10,000 | 866 | 9,134 |
| South Atlantic | 3,684 | 437 | 3,247 |
| East South Central | 2,779 | 347 | 2,432 |
| West South Central | 5,339 | 396 | 4,943 |
| Mountain | 10,099 | 603 | 9,496 |
| Pacific | 13,474 | 1,151 | 12,323 |

Sources: (1) 1940 Census of Agriculture, Volume III, p. 48
 (2) 1940 Census of Housing, Volume II, p. 107. Monthly rental value multiplied by 100.
 (3) Column 1 minus Column 2

These data in Table 19 show more fully how few resources farm operators in the South have with which to work.

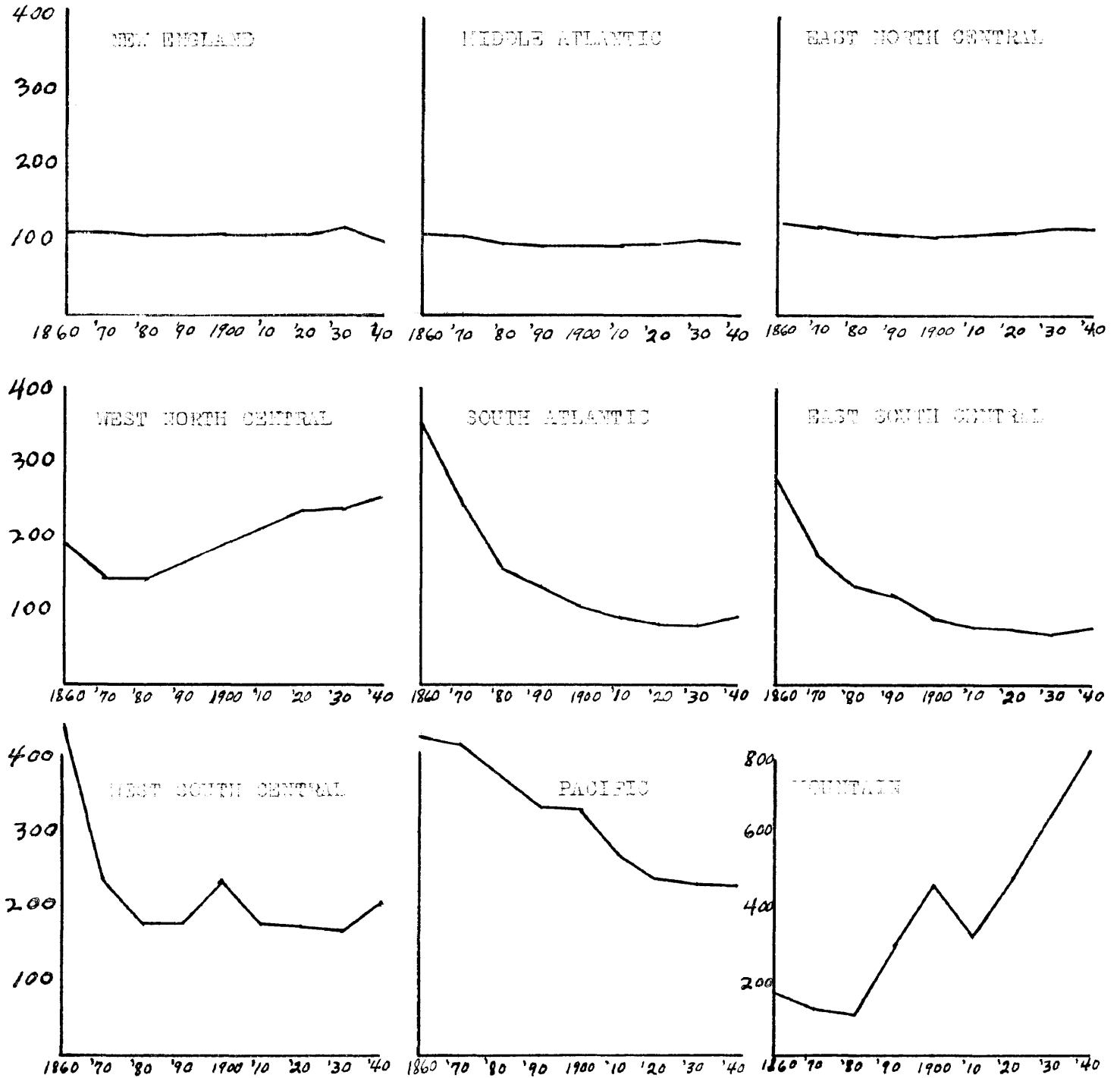
It is not to be assumed that the usual size of farms prevailing in any area is "natural" or given". Figure 4 shows the trends in farm sizes between 1860 and 1940. In the New England, Middle Atlantic and East North Central States, farms have stayed almost constant in size since 1860. Farms in the South Atlantic and East South Central States were large in 1860; surprising as it may seem, they averaged two or two and a half times as large as farms in the North! What caused the farms in the South to become so small over the course of 80 years? It appears to have been largely due to this: A large birth rate caused increasing population pressure on the land; the lack of non-farm employment and the immobility of people meant more and more families sought a living from the soil.

Farms east of the Mississippi are smaller than those to the west for a number of reasons: (1) The east was forested, and a farm operator took about as much land as he thought he could clear in his lifetime (said to be about 80 acres); (2) areas in the east were settled at a time when hand cultivation was the rule which meant that farmers could handle only a few acres; (3) the western areas lack rainfall, and to carry on a profitable farm enterprise, farm operators must have large acreages.

Farms will get larger in our low output areas when some of the operators leave agriculture as their means of livelihood. This will occur, if and when non-farm employments develop on a considerable scale in these regions. Larger farms (if not too hilly) will make it feasible to employ more machinery in the farming operations. This will make

Figure 4. Average Sizes of Farms in the Major Geographic Regions of the United States, 1860-1940

ACRES



Source: 1940 Census of Agriculture, Volume III, p. 51-2.

possible considerably larger farm outputs per worker.

(2) Soil Conservation. Soils have been abused in many places in the United States; they have become severely eroded in the South.² Soil conservation methods, if applied, will increase yields per acre, thereby tending to increase farm outputs.

(3) Intensive Types of Farming. It is well known to students of farm management that farm outputs can be increased on small acreages by adopting types of farming which require much labor and relatively little land. In the New England and Middle Atlantic States is found much intensive agriculture; for example, fruit and vegetable production, dairy and poultry farms (using much grain from the west).

Could these types of farming be adopted in other areas which have small farms, such as in the South, with as much success? It is to be doubted. The principal drawback for the southern farmers is their distance from the great urban centers of population. Milk is expensive to ship because of its bulk and perishable nature. Furthermore, milk is normally acceptable only within a small radius of a big city from farms which have been inspected by city health authorities.³ Even though it is technically possible to produce a great deal more milk in the South than is now produced, a large expansion is not to be expected. Lacking large urban centers nearby needing fluid milk, the milk would have

²See O. E. Baker Graphic Summary of Physical Features and Land Utilization in the United States. United States Department of Agriculture, Miscellaneous Publication 260, May 1937, p. 15.

³Health inspection also serves as a tool to keep milk from distant producers out of the market, thereby serving the interests of local dairy farmers.

to go into manufactured dairy products. This would mean competition with Wisconsin, Iowa, South Dakota, Minnesota and other states which are naturally better suited to dairying than are the southern states. Milk production for the use of the farmer's own family could be increased, but this would not amount to much of an increase in productivity.

Eggs are also difficult to ship long distances, and can be economically transported only in large quantities. Car-lot shipments can be arranged thru farmers' cooperatives or egg dealers. However, the egg producers close to the big cities of the Northeast (the principal market area) have a large advantage in that they can market their eggs quickly and in small lots. Their eggs reaching the market in a condition of high quality, receive premium prices.

It is difficult to say how great an expansion of fruit and vegetable production could occur in the South. In the production of citrus and off-season products for the great cities of the North, the farmers in the far South have had a large opportunity. They will receive increasing competition in these markets from frozen food products in the future.

Increase Non-Farm Outputs

It is not widely recognized how important nearby cities are to farming. They benefit agriculture in several ways. (1) They provide non-farm employment opportunities to farm operators, thus offering them an opportunity to increase their total productivities. This opportunity is especially valuable in farming areas where the farms are small, the terrain hilly or otherwise unsuited to highly productive farming. (2) Cities draw workers out of agriculture completely, thus relieving

population pressure on the land, and making possible a combination of small farms into large units. This facilitates the use of machinery.

(3) Cities provide markets for a great variety of farm products. Without these markets, farmers generally engage in subsistence agriculture, or produce a few products such as grain or cotton which can be shipped long distances economically.

An investigation into the history of American and European agriculture will show that, with few exceptions, progressive agriculture has arisen in areas where cities have appeared (non-farm employment).⁴ Exceptions in the United States are the producers in California and a few other places who geared their production to distant markets. They combined skill in production, marketing and cooperative activity to achieve a very progressive agriculture.

It is important that no program be recommended to elevate farmers' productivities that would greatly increase total farm production in the United States. There were, in 1940, approximately one and a quarter million small-scale farmers.⁵ If they could somehow be made into large-scale farmers, it would mean a substantial increase in total agricultural output in the United States. This would be a serious mistake, because it now appears problematical to find satisfactory markets for all the

⁴For a description of how progressive agriculture came to northwestern Europe see Samuel van Valkenburg and Ellsworth Huntington, Europe, New York, John Wiley and Sons, Inc., 1935. p. 104-5.

⁵By a small-scale farmer is meant one with a total gross farm output under \$600, less than 65 years of age and doing less than 100 days of work off his farm in a year. For a classification of farms in the United States, see M. R. Benedict, F. F. Elliott, H. R. Tolley and Conrad Taeuber, "Need for a New Classification of Farms", Journal of Farm Economics, 26:4, November 1944, p. 694-708.

farm products which the existent large-output farmers will produce a few years hence.⁶ Consequently, the factor which will provide the best solution for the problem of low output areas is the growth of nearby cities, whose beneficial threefold effects were described on pages 82-3.

Is there any need for more workers in the non-farm employments? There has been a migration from rural areas to the cities for more than a 100 years in this country. Could it be that the limit has been reached? It is believed that this trend can still continue. This belief rests, fundamentally, on another belief; namely, that while the total demand for agricultural products is rather inelastic (in the case of the United States which is approaching a stationary population), the total demand for non-agricultural goods and services is very elastic.⁷

⁶See address of Sherman E. Johnson, "Production Adjustments - 1945 and Post-War", delivered at the 22nd Annual Agricultural Outlook Conference, Washington, D. C., November 14, 1944. Also see, What Peace Can Mean to American Farmers, United States Department of Agriculture, Miscellaneous Publication 562, 1945.

⁷Relative to the elasticity of demand for farm products see Theodore W. Schultz, Agriculture in an Unstable Economy, New York, McGraw Hill Book Company, Inc., 1945. In the section, "Gauging Present Elasticity" (p.65 and following), Schultz estimates the income elasticity for farm products at .25.

CHAPTER XV

SUMMARY

In the United States, there are rural areas with very low material living levels. This should be of deep concern to agricultural economists because the elevation of farm living levels is the primary objective of state and national farm policy. It is essential that the chief factors that affect farm living levels be known in order that farm policy might be rightly directed. The purposes of this inquiry were: (1) To find out the principal factors affecting farm living levels; (2) to recommend ways by which farm living levels could be raised.

Various factors believed to affect farm living levels were tested by correlation analysis to find which were most closely associated with farm living levels. It was found that farmers' outputs, more than any other factor, determine farm living levels. The statistical analysis was applied to aggregative data; that is, averages for states or counties. Since the study was directed towards conditions over the entire United States with its six million farms, it was impractical to attempt to work with data on single farms. The basic data were taken from the United States Census and from publications of the United States Department of Agriculture.

A very close association was found between the presence of home facilities and farmers' total productivities (a combination of farm and non-farm outputs). This study emphasizes the large importance of the non-farm work done by farm operators, a factor which has been largely overlooked by other investigators.

The association between farmers' productivities and the rental

values of farm homes was quite close, but not as close as in the case of home facilities. Another important factor affecting rental values was the size of the farm home; sizes of farm homes vary greatly over the United States. Farm housing and rental rates were examined, and it was found that rental rates varied closely with the quality of housing.

The association between farmers' productivities and their possession of automobiles was very noticeable, yet not very close. A more nearly complete explanation of the factors that determine the possession of automobiles was not found.

Tenancy was found to be rather closely associated (inversely) with farm living levels. However, evidence was presented which indicated that tenancy was not an important independent causal factor affecting living levels (except as it might tend to cause lower productivity). Tenancy and productivity were found to be very closely associated (inversely).

Evidence was presented which indicated that, for the United States as a whole, the unavailability of electricity was not an important factor limiting farm living levels.

Farm operators' farm outputs were found to be high where they had many resources (land and capital) with which to work. It was noted that the existing wealth per farm operator was, in part, the accumulation of many generations. Farm outputs were also found to be high in areas where there is much non-farm employment competing for the labor supply. There was found a very noticeable tendency for rural birth rates to be high in areas where farmers' total outputs were low. This population situation tends to aggravate the economic situation by bringing pressure on the land in the low output areas where resources per worker are

already inadequate.

Farm living levels were not found to vary necessarily with the quality of agricultural resources for the United States as a whole. However, the quality of land within limited areas would be a factor affecting the level of farm output for a specific type of farm enterprise.

Large differences in farm living levels were noted among the counties of Maryland. By and large, it was found that the factors determining farm living levels among the counties of Maryland were the same as those operating for the United States as a whole.

In an endeavor to explore more deeply into the causes of low productivity which prevails in southern United States, the history of agriculture in the North and in the South was reviewed. It was found that in each section, men had followed what they believed to be their own best economic interests. Reacting to circumstances over which they had little control, very different socio-economic cultures developed over time in these two regions. In early America, there were no large cash markets for northern agricultural products; northern farmers could not sell crops and buy foreign made items. Since opportunities in agriculture were so limited, men turned to other activities. Local industry began to develop in order to supply the manufactured products needed. Commerce, shipping, banking and other non-farm employments developed. Moreover, in the North, the labor supply from natural increase and immigration was adequate for the needs; the bitter racial and class problems of the South were largely avoided.

Early southern agriculture found great cash markets for its products which could not be grown economically in northwestern Europe, nor in northern America because of climatic reasons. Men found it to

their advantage to specialize in the production of one (or a few) staple which could be sold for cash; foreign made items were purchased in quantity. To achieve large-scale production, plantations were widely developed. Small-scale white farmers tended to locate on the poorer soils and in the hills, being unable to compete with the plantations for the best lands. They continued a semi-pioneer type of farming, a subsistence agriculture. Plantation operators, ever anxious for cheap labor, imported negro slaves. Agriculture absorbed most all the southern capital available, though not a great deal of capital was accumulated. The end results of this socio-economic culture were not good. Bitter racial problems, large human resources undeveloped, low productivity per worker, inability to accumulate capital, a high birth rate making for population pressure on the land, little development of non-farm employments -- these were the results.

The chief remedy for the low productivity found in certain areas lies outside of agriculture. There is no adequate demand in sight for all the farm products that would result if a considerable share of the small-scale farmers in the United States were somehow to achieve substantial levels of output. Consequently, the adjustment most needed is to develop non-farm employments in the vicinity of the areas of low farm outputs. This will be beneficial in several ways. It will take some workers entirely out of agriculture, thus making possible the combination of small farms into larger farms. The farm families which leave agriculture entirely will become purchasers of farm products, thereby enlarging the commercial market for agricultural products. Also, some of the small-scale farmers will find jobs in non-farm employments; though continuing to live on their farms, their farming will be of a non-commercial sort (small-scale production for family use).

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APPENDIX I

MEASUREMENT OF FARM OPERATORS' PRODUCTIVITIES

Two Components

Farm operators' productivities consist of two parts, namely, their farm outputs and the amount of non-farm work they perform.¹

Non-Farm Work. Agricultural economists have noted that many of our farm operators (as a farm operator is defined in the Census of Agriculture) do a considerable amount of non-farm work.² This has led some people to suggest that the definition of a farm operator be revised so as to exclude those who do much non-farm work. It is frequently believed that farm operators who do as much as 100 days of non-farm work in a year must operate farm enterprises hardly larger than family gardens. However, an examination of the data will show a quite different situation. In 1940, the Census of Agriculture showed the following details concerning farm operators who performed 100 days or more of non-farm work in 1939:

- (1) There were 943,581 farmers who belonged in this category.
- (2) The average size farm operated by these farmers was 88.7 acres.
- (3) The average value of land and buildings per acre for these farms was \$40.91.

A group as large and important as this should not be excluded from our agricultural statistics. Consequently, the Census definition of a farm should remain as it is. Agricultural economists and others should adjust

¹In a sense, farmers may have other productivity arising from the ownership of non-farm wealth (stocks, bonds). Data on this subject are lacking. It has been assumed in this study that the amount of income received by the average farmer from his ownership of non-farm wealth is negligible.

²See Table 6 for average amounts of non-farm work performed by farm operators in 1939.

their thinking to include as farm operators those who may do a considerable amount of non-farm work.

Farm Output. When an attempt is made to construct an index of farm operators' farm outputs, there is a question which immediately arises. Which should be used, gross outputs or net outputs? From the standpoint of economic theory, it would be better to use net outputs; that is, gross income minus all expenses of production except the farm operator's own labor. Expenses represent, roughly, factors of production supplied by other people. There are objections to this concept, however, when used for the purposes of this study. It would be said that to compare farm living levels with farmers' net incomes from farming would not be deserving of examination. It would also be said, "Get behind net income. Are the instances of low net incomes due to small gross incomes (that is, low outputs), or are they due to excessively high production costs?" It makes a great deal of difference, from the standpoint of agricultural policy, which of these factors is the cause of low farm net incomes.

On the other hand, if one bases his index on farm operators' gross outputs, there are other objections. For one thing, an index based on gross outputs makes a farm operator seem exceedingly productive who employs large amounts of other people's capital and land in his production, as compared with a farmer who uses his own land and capital. Actually, after deducting the costs of land and capital, one farmer may have been no more productive than the other.

To see if it made any difference which were used, indices of both gross and net output were calculated for the purposes of this inquiry. It was found that it made very little difference which was

used.³ For example, in correlating these two different indices of operators' farm outputs with the "percent of farm homes with bath or shower" in the 48 states, the following results were secured:

| | <u>Simple Correlation</u> | | <u>Multiple Correlation*</u> | |
|---|---------------------------|----------------------|------------------------------|----------------------|
| | <u>Modified</u> | | <u>Modified</u> | |
| | <u>Gross Output</u> | <u>Net Output</u> | <u>Gross Output</u> | <u>Net Output</u> |
| | <u>r²</u> | <u>r²</u> | <u>R²</u> | <u>R²</u> |
| Percent of farm homes with bath or shower | .24 | .25 | .81 | .78 |

*In multiple correlation, the two other factors, with which these output series were used, were Factors 1 and 3, explained on page

Index of Farm Operators Gross Farm Outputs

The index of operators' farm outputs used in this study is based on modified gross outputs. An average was calculated for the years 1929, 1939, 1940 and 1941. This period includes some years of prosperity and some of relative depression. This index was calculated for the 48 states by these steps:

Average-per-farm figures for each state on:

Gross income.⁴ (Includes receipts from farm products sold, value of farm products consumed as food and fuel by the family and laborers on the farm, and annual rental

³An index was constructed using data on farm operators' net incomes taken from Income Parity for Agriculture, Bureau of Agricultural Economics, United States Department of Agriculture, 1945. It was based on average net incomes for the years 1929, 1939, 1940 and 1941. It was assumed that net incomes measured farmers' net outputs. Government payments were not included in the net income figures.

⁴Data taken from Income Parity for Agriculture, Part VI, State Estimates of Income and Production Expenses, Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C., 1945, p. 30-3.

value of the farm residence.)
 Less: Expenses for purchases of feed, livestock and labor.⁴
 (Hired labor expense includes cash plus the value of
 food, lodging and other perquisites furnished to hired
 laborers.)

Deductions were made for the purchase of feed, livestock and labor because they do not represent the farm operator's own output. It is not difficult for a farmer to show a large gross income if he purchases much livestock for fattening, uses purchased feeds, and hires much help. A compensation should be made for these items, in order to get the operator's own output.

Using this resultant series (gross income less certain expenses), a preliminary index was calculated using the average figure for the entire United States as the base. Because two corrections remained to be made, which could be made only in terms of 1939 dollars, the next step was to convert these relatives into 1939 figures.

To make this conversion, an average figure for all United States farms was secured as follows: 1939 gross income of all farmers in the United States less their expenditures in that year for feed, livestock and labor; this result was divided by the number of farms. Then, to get the productivities of each state in terms of 1939 dollars, the United States average amount was multiplied by the previously calculated series of relatives.

Next, two minor corrections were made for: (1) Days of farm work performed by farm operators on other farms, (2) rental value of the farm home. Actually, the amount of farm work performed by farm operators on other farms than their own is a negligible factor. Farm operators in

⁴Ibid, p. 38-44

the United States averaged only about five days of this sort of work in 1939. To make the correction for this factor, the average number of days worked was multiplied by the prevailing state wage rates for farm labor.⁵ This resultant was added to the previously calculated productivity figure for each state.

Deductions were made for the annual rental values of the farm homes because it was felt this was not something which should be considered as a part of the farm operator's gross output.⁶ It was included in the gross income figures with which these calculations started. Actually, this correction was a rather negligible one.

After these refinements were made, this series, in terms of 1939 dollars, was not quite in usable shape because the numbers had too many digits. Small figures were needed in the basic series to which multiple correlation analysis was to be applied, in order to avoid working with huge numbers. Therefore, this dollar series was converted into an index series, using the State of California (the state with highest productivity) as the base. This is the final Index of Farm Operators' Gross Farm Outputs; it is given in Table 6.

Productivity Measured by Value Outputs. When farmers' outputs are measured in terms of value produced, it should be noted that value is composed of two parts, namely, the number of units produced and the

⁵Data on the number of days of farm work performed by farm operators on other farms in 1939 were taken from the 1940 Census of Agriculture. Prevailing farm wage rates were found in Agricultural Statistics, 1940, United States Department of Agriculture, p. 580-I.

⁶Data on the rental value of farm homes were taken from the Census of Housing, 1940.

price per unit. This brings up an objection to the use of value produced as a yardstick of different farmers' productivities. It will be said that one group of farmers may look unproductive as compared with another group simply because their prices were unfavorable.

In reply to this, it should be kept in mind that the meaning of production, in economic theory, is the creation of value. Value is a market phenomenon, resulting from the interplay of supply and demand, in the type of economic system we have. In so far as there is no artificial restriction of supply in order to enhance price, if one group of farmers produce more value than another group, the former group is the more productive. While it is true that for some of the years selected in this study, there were attempts by the federal government to restrict production of certain items, it is not clear that production was, in fact, materially reduced. In any event, it is assumed in this study, that restriction of production, in order to get higher unit prices, does not account for any significant part of the differences in farmers' productivities in the United States.

There is another reason for using value produced as the yardstick of farmers' productivities; namely, that there is no better way to compare the outputs of farmers producing unlike commodities. The Bureau of Agricultural Economics of the United States Department of Agriculture uses value produced when it compares outputs of farmers in the United States. To measure farmers' outputs, the Bureau of Agricultural Economics multiplies the number of units produced of each item by weights which are average prices.⁷

⁷See G. T. Barton and M. G. Cooper, Farm Production in War and Peace, Bureau of Agricultural Economics, United States Department of Agriculture, December 1945, p. 56.

Some people make an attempt to weight units of production by the number of hours of labor it takes to produce a unit. This is very objectionable for the purposes of this study. It assumes that one hour of labor by one farmer equals that of another farmer. It completely hides the difference in productivity between farm operators. There is another objection to the idea of weights based on hours of labor inputs; namely, whose labor input will you use? Producers of the same item in one locality vary greatly in their labor inputs per unit of output. Moreover, there are significant regional differences in labor inputs.

APPENDIX II

THE MEASUREMENT OF THE IMPORTANCE OF THE AVAILABILITY OF ELECTRICITY

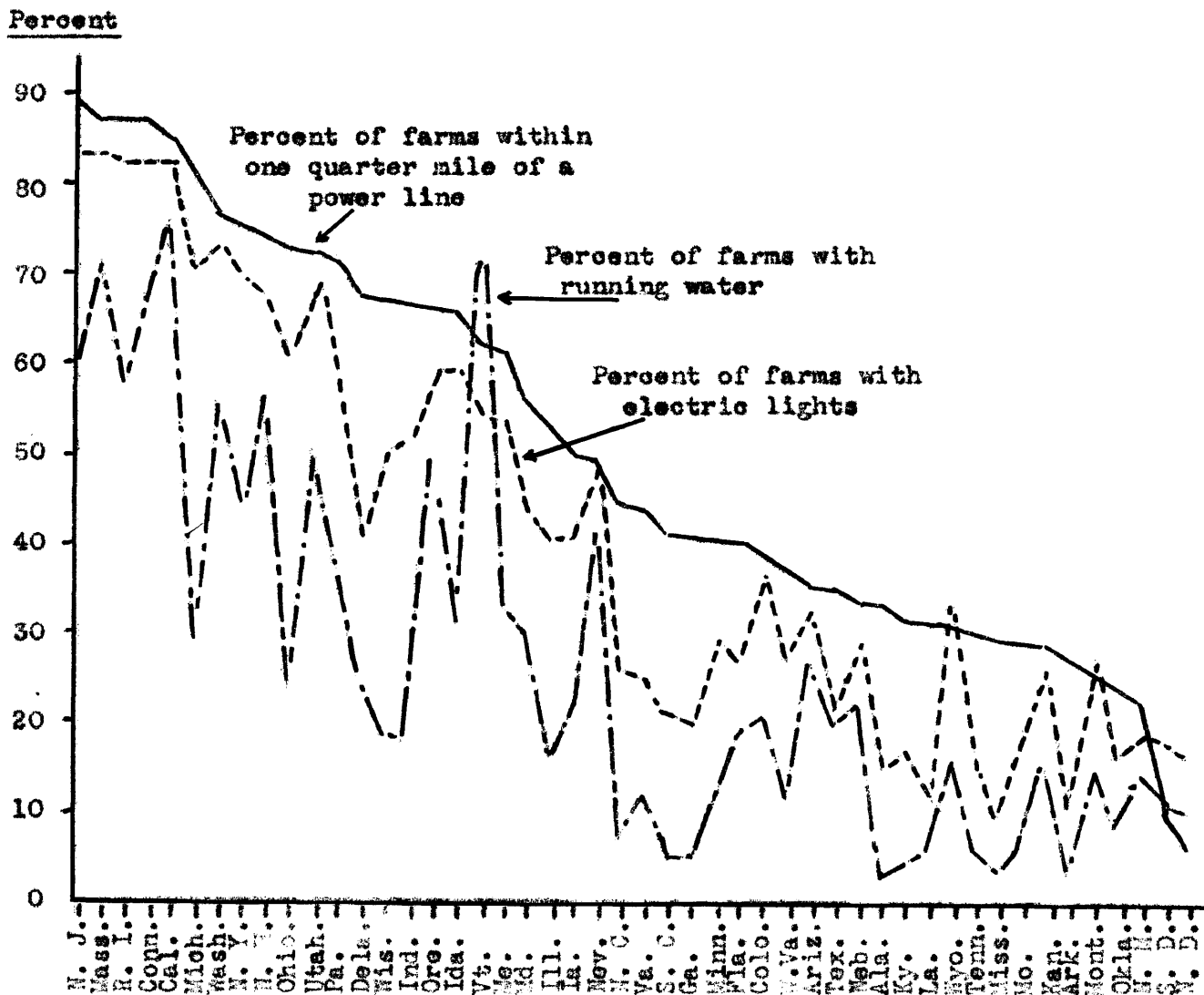
The graph on the next page shows the availability of electricity in 1940, and the extent to which farmers made use of it. Note that in a considerable number of states (those with low incomes) the proportion of farms having electric lights was only about one-half of the proportion which were within hook-up distance from a power line (one-quarter mile). For some of the midwestern states (Wisconsin, Minnesota, Illinois, Iowa, Indiana), the proportion having electric lights was about 70 percent of the proportion which were within hook-up distance. In about two-thirds of the states, the percent of homes with running water was about one-half of the percent with electric lights. This graph helps to demonstrate that there was far more available electricity in 1940 than farmers made use of.

The Calculation of an Index

How can the availability of electricity as a limiting factor to farm living levels be expressed in mathematical terms? It can be expressed by dividing the percent of farms within hook-up range by the percent which made use of electricity when they were within this range. If the resulting figure (the quotient) is large, it may be said that the availability of electricity is not an important limiting factor. Conversely, the smaller the figure, the greater its importance as a limiting factor.

The data for calculating this series came from the United States Census of Agriculture for 1940. Specifically, the Census gave figures

Figure 5. Percent of Farm Homes within Hook-Up Range of an Electric Power Line, and with Certain Facilities, 1940



for each state on:

- A - The number and percent of farms within one-quarter mile of an electric distribution line.
- B - The number of farms within one-quarter mile of an electric distribution line but without service from the electric distribution line.
- C - The number of farm homes within one-quarter mile of an electric distribution line but lighted from home electric plant. (In most cases, this was a negligible number.)

The percent of farms within hook-up distance which made use of the power line was calculated as follows:

A minus B plus C gave the number making use of electricity when it was available.

This figure was divided by the total number of farms within one-quarter mile of an electric distribution line in order to get the percent within hook-up range which made use of the electric line.

Here is how this index works out for two states:

| | <u>Within hook-up range</u> | <u>Within range, using power</u> | <u>Resulting index number</u> |
|-------------|-------------------------------------|--|---------------------------------------|
| Montana | 25.4% divided by | 76.9% yields | 33 |
| Mississippi | 29.4% divided by | 30.9% yields | 95 |

The Index of the Availability of Electricity as a Limiting Factor to Farm Living Levels is presented on the next page.

Table 20. Index of the Availability of Electricity
as a Limiting Factor to Farm Living Levels

| State | Index |
|----------------|-------|
| North Dakota | 18.8 |
| South Dakota | 20.8 |
| Montana | 33.0 |
| New Mexico | 36.6 |
| Wyoming | 39.6 |
| Arizona | 41.4 |
| Kansas | 44.0 |
| Oklahoma | 48.2 |
| Colorado | 61.2 |
| Missouri | 52.6 |
| West Virginia | 53.8 |
| Nevada | 55.1 |
| Nebraska | 55.9 |
| Tennessee | 58.7 |
| Minnesota | 62.2 |
| Texas | 63.5 |
| Kentucky | 63.8 |
| Florida | 64.2 |
| Iowa | 70.2 |
| Arkansas | 72.7 |
| Maine | 73.5 |
| Illinois | 74.2 |
| Idaho | 74.8 |
| Oregon | 75.2 |
| Alabama | 75.3 |
| Vermont | 75.8 |
| Maryland | 76.6 |
| Utah | 77.0 |
| Virginia | 79.9 |
| North Carolina | 80.7 |
| Washington | 82.5 |
| South Carolina | 83.7 |
| Georgia | 84.3 |
| New Hampshire | 84.8 |
| New York | 84.8 |
| Louisiana | 88.4 |
| Indiana | 89.1 |
| Ohio | 89.3 |
| California | 90.0 |
| Pennsylvania | 90.8 |
| Massachusetts | 93.4 |
| Rhode Island | 93.8 |
| Wisconsin | 94.4 |
| Connecticut | 94.6 |
| Michigan | 94.7 |
| Mississippi | 95.1 |
| New Jersey | 95.8 |
| Delaware | 114.5 |